ATTACHMENT 3: LABORATORY ANALYTICAL REPORTS

This attachment contains the laboratory analytical reports prepared by Alpha Analytical Inc. of Sparks, Nevada and Columbia Analytical Services (CAS) of Simi Valley, California.

ALPHA

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *10-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Work Order: BMI12042403 **Cooler Temp:** 2 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12042403-01A	MW-7	Aqueous
12042403-02A	MW-16	Aqueous
12042403-03A	DUPE-8-2Q12	Aqueous
12042403-04A	MW-15	Aqueous
12042403-05A	MW-14-5	Aqueous
12042403-06A	MW-14-4	Aqueous
12042403-07A	MW-14-3	Aqueous
12042403-08A	MW-14-2	Aqueous
12042403-09A	MW-14-1	Aqueous
12042403-10A	EB-1-4/23/12	Aqueous
12042403-11A	TB-1-4/23/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
12042403-02A	EPA Method 314.0	Perchlorate
12042403-03A	EPA Method 314.0	Perchlorate

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/24/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-7**					
Lab ID : BMI12042403-01A	Chloride	55	0.50 mg/L	04/25/12 09:01	04/25/12 09:49
Date Sampled 04/23/12 10:16	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 09:49
	Nitrate (NO3) - N	1.4	0.25 mg/L	04/25/12 09:01	04/25/12 09:49
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 09:49
	Sulfate (SO4)	45	0.50 mg/L	04/25/12 09:01	04/25/12 09:49
Client ID: **MW-16**					
Lab ID : BMI12042403-02A	Chloride	55	0.50 mg/L	04/25/12 09:01	04/25/12 11:51
Date Sampled 04/23/12 12:27	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 11:51
	Nitrate (NO3) - N	1.3	0.25 mg/L	04/25/12 09:01	04/25/12 11:51
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 11:51
	Sulfate (SO4)	44	0.50 mg/L	04/25/12 09:01	04/25/12 11:51
Client ID: **DUPE-8-2Q12**					
Lab ID : BMI12042403-03A	Chloride	55	0.50 mg/L	04/25/12 09:01	04/25/12 12:10
Date Sampled 04/23/12 12:27	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 12:10
	Nitrate (NO3) - N	1.2	0.25 mg/L	04/25/12 09:01	04/25/12 12:10
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 12:10
	Sulfate (SO4)	44	0.50 mg/L	04/25/12 09:01	04/25/12 12:10
Client ID: **MW-15**					
Lab ID : BMI12042403-04A	Chloride	11	0.50 mg/L	04/25/12 09:01	04/25/12 12:47
Date Sampled 04/23/12 13:36	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 12:47
	Nitrate (NO3) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 12:47
	Sulfate (SO4)	31	0.50 mg/L	04/25/12 09:01	04/25/12 12:47
Client ID: **MW-14-5**					
Lab ID : BMI12042403-05A	Chloride	9.4	0.50 mg/L	04/25/12 09:01	04/25/12 09:12
Date Sampled 04/23/12 09:34	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 09:12
	Nitrate (NO3) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 09:12
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 09:12
	Sulfate (SO4)	18	0.50 mg/L	04/25/12 09:01	04/25/12 09:12
Client ID: **MW-14-4**					
Lab ID : BMI12042403-06A	Chloride	74	0.50 mg/L	04/25/12 09:01	04/25/12 09:31
Date Sampled 04/23/12 10:12	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 09:31
	Nitrate (NO3) - N	14	0.25 mg/L	04/25/12 09:01	04/25/12 09:31
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 09:31
	Sulfate (SO4)	80	0.50 mg/L	04/25/12 09:01	04/25/12 09:31
Client ID: **MW-14-3**					
Lab ID : BMI12042403-07A	Chloride	110	75 mg/L	04/25/12 09:01	04/25/12 10:08
Date Sampled 04/23/12 11:21	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 10:08
	Nitrate (NO3) - N	15	0.25 mg/L	04/25/12 09:01	04/25/12 10:08
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 10:08
	Sulfate (SO4)	160	75 mg/L	04/25/12 09:01	04/25/12 10:08

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Client ID: **MW-14-2**					
Lab ID : BMI12042403-08A	Chloride	120	75 mg/L	04/25/12 09:01	04/25/12 11:14
Date Sampled 04/23/12 11:55	Nitrite (NO2) - N	0.82	0.25 mg/L	04/25/12 09:01	04/25/12 11:14
	Nitrate (NO3) - N	13	0.25 mg/L	04/25/12 09:01	04/25/12 11:14
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 11:14
	Sulfate (SO4)	190	75 mg/L	04/25/12 09:01	04/25/12 11:14
Client ID: **MW-14-1**					
Lab ID : BMI12042403-09A	Chloride	120	75 mg/L	04/25/12 09:01	04/25/12 12:28
Date Sampled 04/23/12 12:28	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 12:28
	Nitrate (NO3) - N	14	0.25 mg/L	04/25/12 09:01	04/25/12 12:28
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 12:28
	Sulfate (SO4)	190	75 mg/L	04/25/12 09:01	04/25/12 12:28
Client ID: **EB-1-4/23/12**					
Lab ID : BMI12042403-10A	Chloride	ND	0.50 mg/L	04/25/12 09:01	04/25/12 11:33
Date Sampled 04/23/12 12:15	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 11:33
	Nitrate (NO3) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 11:33
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 11:33
	Sulfate (SO4)	ND	0.50 mg/L	04/25/12 09:01	04/25/12 11:33

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/7/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/24/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration		Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-7**					
Lab ID : BMI12042403-01A Perchlorate	1.28		1.00 µg/L	04/26/12 17:32	04/27/12 01:46
Date Sampled 04/23/12 10:16					
Client ID: **MW-16**					
Lab ID : BMI12042403-02A Perchlorate	2.86	*	1.00 µg/L	04/26/12 17:32	04/27/12 02:05
Date Sampled 04/23/12 12:27					
Client ID: **DUPE-8-2Q12**					
Lab ID : BMI12042403-03A Perchlorate	2.82	*	1.00 µg/L	04/26/12 17:32	04/27/12 02:23
Date Sampled 04/23/12 12:27					
Client ID: **MW-15**					
Lab ID : BMI12042403-04A Perchlorate	ND		1.00 µg/L	04/26/12 17:32	04/27/12 02:41
Date Sampled 04/23/12 13:36					
Client ID: **MW-14-5**					
Lab ID : BMI12042403-05A Perchlorate	ND		1.00 µg/L	04/26/12 17:32	04/27/12 03:37
Date Sampled 04/23/12 09:34					
Client ID: **MW-14-4**					
Lab ID : BMI12042403-06A Perchlorate	5.52		1.00 µg/L	04/26/12 17:32	04/27/12 03:55
Date Sampled 04/23/12 10:12					
Client ID: **MW-14-3**					
Lab ID : BMI12042403-07A Perchlorate	6.08		1.00 µg/L	04/26/12 17:32	04/27/12 04:13
Date Sampled 04/23/12 11:21					
Client ID: **MW-14-2**					
Lab ID : BMI12042403-08A Perchlorate	3.73		1.00 µg/L	04/26/12 17:32	04/27/12 04:32
Date Sampled 04/23/12 11:55					
Client ID: **MW-14-1**					
Lab ID : BMI12042403-09A Perchlorate	3.55		1.00 µg/L	04/26/12 17:32	04/27/12 08:47
Date Sampled 04/23/12 12:28					
Client ID: **EB-1-4/23/12**					
Lab ID : BMI12042403-10A Perchlorate	ND		1.00 µg/L	04/26/12 17:32	04/27/12 05:09
Date Sampled 04/23/12 12:15					

Alpha Analytical, Inc.

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* Possible Matrix Interference.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/24/12

Job: 100006114/JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-7**					
Lab ID : BMI12042403-01A	Alkalinity, Bicarbonate (As CaCO3)	200	10 mg/L	04/24/12 15:18	04/24/12 15:18
Date Sampled 04/23/12 10:16	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/24/12 15:18	04/24/12 15:18
	Alkalinity, Total (As CaCO3 at pH 4.5)	200	10 mg/L	04/24/12 15:18	04/24/12 15:18
Client ID: **MW-16**					
Lab ID : BMI12042403-02A	Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	04/24/12 15:24	04/24/12 15:24
Date Sampled 04/23/12 12:27	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/24/12 15:24	04/24/12 15:24
	Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	04/24/12 15:24	04/24/12 15:24
Client ID: **DUPE-8-2Q12**					
Lab ID : BMI12042403-03A	Alkalinity, Bicarbonate (As CaCO3)	200	10 mg/L	04/24/12 15:30	04/24/12 15:30
Date Sampled 04/23/12 12:27	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/24/12 15:30	04/24/12 15:30
	Alkalinity, Total (As CaCO3 at pH 4.5)	200	10 mg/L	04/24/12 15:30	04/24/12 15:30
Client ID: **MW-15**					
Lab ID : BMI12042403-04A	Alkalinity, Bicarbonate (As CaCO3)	200	10 mg/L	04/24/12 15:36	04/24/12 15:36
Date Sampled 04/23/12 13:36	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/24/12 15:36	04/24/12 15:36
	Alkalinity, Total (As CaCO3 at pH 4.5)	200	10 mg/L	04/24/12 15:36	04/24/12 15:36
Client ID: **MW-14-5**					
Lab ID : BMI12042403-05A	Alkalinity, Bicarbonate (As CaCO3)	170	10 mg/L	04/24/12 15:48	04/24/12 15:48
Date Sampled 04/23/12 09:34	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/24/12 15:48	04/24/12 15:48
	Alkalinity, Total (As CaCO3 at pH 4.5)	170	10 mg/L	04/24/12 15:48	04/24/12 15:48
Client ID: **MW-14-4**					
Lab ID : BMI12042403-06A	Alkalinity, Bicarbonate (As CaCO3)	200	10 mg/L	04/24/12 15:53	04/24/12 15:53
Date Sampled 04/23/12 10:12	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/24/12 15:53	04/24/12 15:53
	Alkalinity, Total (As CaCO3 at pH 4.5)	200	10 mg/L	04/24/12 15:53	04/24/12 15:53
Client ID: **MW-14-3**					
Lab ID : BMI12042403-07A	Alkalinity, Bicarbonate (As CaCO3)	260	10 mg/L	04/24/12 15:59	04/24/12 15:59
Date Sampled 04/23/12 11:21	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/24/12 15:59	04/24/12 15:59
	Alkalinity, Total (As CaCO3 at pH 4.5)	260	10 mg/L	04/24/12 15:59	04/24/12 15:59
Client ID: **MW-14-2**					
Lab ID : BMI12042403-08A	Alkalinity, Bicarbonate (As CaCO3)	270	10 mg/L	04/24/12 16:05	04/24/12 16:05
Date Sampled 04/23/12 11:55	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/24/12 16:05	04/24/12 16:05
	Alkalinity, Total (As CaCO3 at pH 4.5)	270	10 mg/L	04/24/12 16:05	04/24/12 16:05
Client ID: **MW-14-1**					
Lab ID : BMI12042403-09A	Alkalinity, Bicarbonate (As CaCO3)	220	10 mg/L	04/24/12 16:10	04/24/12 16:10
Date Sampled 04/23/12 12:28	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/24/12 16:10	04/24/12 16:10
	Alkalinity, Total (As CaCO3 at pH 4.5)	220	10 mg/L	04/24/12 16:10	04/24/12 16:10

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Client ID: **EB-1-4/23/12**

Lab ID : BMI12042403-10A	Alkalinity, Bicarbonate (As CaCO3)	ND	10 mg/L	04/24/12 16:14	04/24/12 16:14
Date Sampled 04/23/12 12:15	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/24/12 16:14	04/24/12 16:14
	Alkalinity, Total (As CaCO3 at pH 4.5)	ND	10 mg/L	04/24/12 16:14	04/24/12 16:14

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

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✓

5/7/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/24/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-7**				
Lab ID : BMI12042403-01A Sodium (Na)	33	0.50 mg/L	04/25/12 16:59	05/05/12 02:43
Date Sampled 04/23/12 10:16 Magnesium (Mg)	18	0.50 mg/L	04/25/12 16:59	05/05/12 02:43
Potassium (K)	3.4	0.50 mg/L	04/25/12 16:59	05/05/12 02:43
Calcium (Ca)	55	0.50 mg/L	04/25/12 16:59	05/05/12 02:43
Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 02:43
Iron (Fe)	0.83	0.30 mg/L	04/25/12 16:59	05/05/12 02:43
Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 02:43
Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 02:43
Client ID: **MW-16**				
Lab ID : BMI12042403-02A Sodium (Na)	33	0.50 mg/L	04/25/12 16:59	05/05/12 02:49
Date Sampled 04/23/12 12:27 Magnesium (Mg)	18	0.50 mg/L	04/25/12 16:59	05/05/12 02:49
Potassium (K)	3.0	0.50 mg/L	04/25/12 16:59	05/05/12 02:49
Calcium (Ca)	54	0.50 mg/L	04/25/12 16:59	05/05/12 02:49
Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 02:49
Iron (Fe)	0.75	0.30 mg/L	04/25/12 16:59	05/05/12 02:49
Arsenic (As)	0.0067	0.0020 mg/L	04/25/12 16:59	05/05/12 01:32
Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 02:49
Client ID: **DUPE-8-2Q12**				
Lab ID : BMI12042403-03A Sodium (Na)	33	0.50 mg/L	04/25/12 16:59	05/05/12 02:54
Date Sampled 04/23/12 12:27 Magnesium (Mg)	18	0.50 mg/L	04/25/12 16:59	05/05/12 02:54
Potassium (K)	3.0	0.50 mg/L	04/25/12 16:59	05/05/12 02:54
Calcium (Ca)	53	0.50 mg/L	04/25/12 16:59	05/05/12 02:54
Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 02:54
Iron (Fe)	0.71	0.30 mg/L	04/25/12 16:59	05/05/12 02:54
Arsenic (As)	0.0068	0.0020 mg/L	04/25/12 16:59	05/05/12 02:54
Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 02:54
Client ID: **MW-15**				
Lab ID : BMI12042403-04A Sodium (Na)	20	0.50 mg/L	04/25/12 16:59	05/05/12 02:20
Date Sampled 04/23/12 13:36 Magnesium (Mg)	15	0.50 mg/L	04/25/12 16:59	05/05/12 02:20
Potassium (K)	5.5	0.50 mg/L	04/25/12 16:59	05/05/12 02:20
Calcium (Ca)	45	0.50 mg/L	04/25/12 16:59	05/05/12 02:20
Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 02:20
Iron (Fe)	0.59	0.30 mg/L	04/25/12 16:59	05/05/12 02:20
Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 02:20
Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 02:20

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Client ID: **MW-14-5**					
Lab ID : BMI12042403-05A	Sodium (Na)	31	0.50 mg/L	04/25/12 16:59	05/05/12 03:00
Date Sampled 04/23/12 09:34	Magnesium (Mg)	12	0.50 mg/L	04/25/12 16:59	05/05/12 03:00
	Potassium (K)	2.0	0.50 mg/L	04/25/12 16:59	05/05/12 03:00
	Calcium (Ca)	19	0.50 mg/L	04/25/12 16:59	05/05/12 03:00
	Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 03:00
	Iron (Fe)	0.41	0.30 mg/L	04/25/12 16:59	05/05/12 03:00
	Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 03:00
	Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 03:00
Client ID: **MW-14-4**					
Lab ID : BMI12042403-06A	Sodium (Na)	32	0.50 mg/L	04/25/12 16:59	05/05/12 03:06
Date Sampled 04/23/12 10:12	Magnesium (Mg)	26	0.50 mg/L	04/25/12 16:59	05/05/12 03:06
	Potassium (K)	2.3	0.50 mg/L	04/25/12 16:59	05/05/12 03:06
	Calcium (Ca)	76	0.50 mg/L	04/25/12 16:59	05/05/12 03:06
	Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 03:06
	Iron (Fe)	0.99	0.30 mg/L	04/25/12 16:59	05/05/12 03:06
	Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 03:06
	Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 03:06
Client ID: **MW-14-3**					
Lab ID : BMI12042403-07A	Sodium (Na)	40	0.50 mg/L	04/25/12 16:59	05/05/12 03:12
Date Sampled 04/23/12 11:21	Magnesium (Mg)	45	0.50 mg/L	04/25/12 16:59	05/05/12 03:12
	Potassium (K)	2.8	0.50 mg/L	04/25/12 16:59	05/05/12 03:12
	Calcium (Ca)	110	0.50 mg/L	04/25/12 16:59	05/05/12 03:12
	Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 03:12
	Iron (Fe)	1.5	0.30 mg/L	04/25/12 16:59	05/05/12 03:12
	Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 03:12
	Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 03:12
Client ID: **MW-14-2**					
Lab ID : BMI12042403-08A	Sodium (Na)	37	0.50 mg/L	04/25/12 16:59	05/05/12 03:18
Date Sampled 04/23/12 11:55	Magnesium (Mg)	46	0.50 mg/L	04/25/12 16:59	05/05/12 03:18
	Potassium (K)	2.6	0.50 mg/L	04/25/12 16:59	05/05/12 03:18
	Calcium (Ca)	140	0.50 mg/L	04/25/12 16:59	05/05/12 03:18
	Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 03:18
	Iron (Fe)	1.7	0.30 mg/L	04/25/12 16:59	05/05/12 03:18
	Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 03:18
	Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 03:18
Client ID: **MW-14-1**					
Lab ID : BMI12042403-09A	Sodium (Na)	63	0.50 mg/L	04/25/12 16:59	05/05/12 03:24
Date Sampled 04/23/12 12:28	Magnesium (Mg)	37	0.50 mg/L	04/25/12 16:59	05/05/12 03:24
	Potassium (K)	2.5	0.50 mg/L	04/25/12 16:59	05/05/12 03:24
	Calcium (Ca)	110	0.50 mg/L	04/25/12 16:59	05/05/12 03:24
	Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 03:24
	Iron (Fe)	1.5	0.30 mg/L	04/25/12 16:59	05/05/12 03:24
	Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/07/12 16:44
	Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 03:24
Client ID: **EB-1-4/23/12**					
Lab ID : BMI12042403-10A	Sodium (Na)	ND	0.50 mg/L	04/25/12 16:59	05/05/12 03:29
Date Sampled 04/23/12 12:15	Magnesium (Mg)	ND	0.50 mg/L	04/25/12 16:59	05/05/12 03:29
	Potassium (K)	ND	0.50 mg/L	04/25/12 16:59	05/05/12 03:29
	Calcium (Ca)	ND	0.50 mg/L	04/25/12 16:59	05/05/12 03:29
	Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 03:29
	Iron (Fe)	ND	0.30 mg/L	04/25/12 16:59	05/05/12 03:29
	Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 03:29
	Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 03:29

Alpha Analytical, Inc.

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

This replaces the report signed 5/8/12 due to change in the analyte list for -10A, due to lab error.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

✓ **7/2/12**

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/24/12

Job: 100006114/JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-7**					
Lab ID : BMI12042403-01A	pH	7.3	1.7 pH Units	04/24/12 15:12	04/24/12 15:12
Date Sampled 04/23/12 10:16	pH - Temperature	21	1.0 °C	04/24/12 15:12	04/24/12 15:12
Client ID: **MW-16**					
Lab ID : BMI12042403-02A	pH	7.2	1.7 pH Units	04/24/12 15:13	04/24/12 15:13
Date Sampled 04/23/12 12:27	pH - Temperature	20	1.0 °C	04/24/12 15:13	04/24/12 15:13
Client ID: **DUPE-8-2Q12**					
Lab ID : BMI12042403-03A	pH	7.2	1.7 pH Units	04/24/12 15:15	04/24/12 15:15
Date Sampled 04/23/12 12:27	pH - Temperature	20	1.0 °C	04/24/12 15:15	04/24/12 15:15
Client ID: **MW-15**					
Lab ID : BMI12042403-04A	pH	7.3	1.7 pH Units	04/24/12 15:17	04/24/12 15:17
Date Sampled 04/23/12 13:36	pH - Temperature	19	1.0 °C	04/24/12 15:17	04/24/12 15:17
Client ID: **MW-14-5**					
Lab ID : BMI12042403-05A	pH	8.5	1.7 pH Units	04/24/12 15:21	04/24/12 15:21
Date Sampled 04/23/12 09:34	pH - Temperature	19	1.0 °C	04/24/12 15:21	04/24/12 15:21
Client ID: **MW-14-4**					
Lab ID : BMI12042403-06A	pH	8.0	1.7 pH Units	04/24/12 15:23	04/24/12 15:23
Date Sampled 04/23/12 10:12	pH - Temperature	19	1.0 °C	04/24/12 15:23	04/24/12 15:23
Client ID: **MW-14-3**					
Lab ID : BMI12042403-07A	pH	7.7	1.7 pH Units	04/24/12 15:23	04/24/12 15:23
Date Sampled 04/23/12 11:21	pH - Temperature	20	1.0 °C	04/24/12 15:23	04/24/12 15:23
Client ID: **MW-14-2**					
Lab ID : BMI12042403-08A	pH	7.4	1.7 pH Units	04/24/12 15:26	04/24/12 15:26
Date Sampled 04/23/12 11:55	pH - Temperature	20	1.0 °C	04/24/12 15:26	04/24/12 15:26
Client ID: **MW-14-1**					
Lab ID : BMI12042403-09A	pH	6.8	1.7 pH Units	04/24/12 15:29	04/24/12 15:29
Date Sampled 04/23/12 12:28	pH - Temperature	21	1.0 °C	04/24/12 15:29	04/24/12 15:29
Client ID: **EB-1-4/23/12**					
Lab ID : BMI12042403-10A	pH	6.9	1.7 pH Units	04/24/12 15:37	04/24/12 15:37
Date Sampled 04/23/12 12:15	pH - Temperature	21	1.0 °C	04/24/12 15:37	04/24/12 15:37

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.

The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/7/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/24/12

Job: 100006114/JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-7**					
Lab ID : BMI12042403-01A	Solids, Total Dissolved (TDS)	350	10 mg/L	04/25/12	04/25/12
Date Sampled 04/23/12 10:16					
Client ID: **MW-16**					
Lab ID : BMI12042403-02A	Solids, Total Dissolved (TDS)	340	10 mg/L	04/25/12	04/25/12
Date Sampled 04/23/12 12:27					
Client ID: **DUPE-8-2Q12**					
Lab ID : BMI12042403-03A	Solids, Total Dissolved (TDS)	330	10 mg/L	04/25/12	04/25/12
Date Sampled 04/23/12 12:27					
Client ID: **MW-15**					
Lab ID : BMI12042403-04A	Solids, Total Dissolved (TDS)	240	10 mg/L	04/25/12	04/25/12
Date Sampled 04/23/12 13:36					
Client ID: **MW-14-5**					
Lab ID : BMI12042403-05A	Solids, Total Dissolved (TDS)	190	10 mg/L	04/25/12	04/25/12
Date Sampled 04/23/12 09:34					
Client ID: **MW-14-4**					
Lab ID : BMI12042403-06A	Solids, Total Dissolved (TDS)	440	10 mg/L	04/25/12	04/25/12
Date Sampled 04/23/12 10:12					
Client ID: **MW-14-3**					
Lab ID : BMI12042403-07A	Solids, Total Dissolved (TDS)	680	10 mg/L	04/25/12	04/25/12
Date Sampled 04/23/12 11:21					
Client ID: **MW-14-2**					
Lab ID : BMI12042403-08A	Solids, Total Dissolved (TDS)	760	10 mg/L	04/25/12	04/25/12
Date Sampled 04/23/12 11:55					
Client ID: **MW-14-1**					
Lab ID : BMI12042403-09A	Solids, Total Dissolved (TDS)	730	10 mg/L	04/25/12	04/25/12
Date Sampled 04/23/12 12:28					
Client ID: **EB-1-4/23/12**					
Lab ID : BMI12042403-10A	Solids, Total Dissolved (TDS)	ND	10 mg/L	04/25/12	04/25/12
Date Sampled 04/23/12 12:15					

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/7/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
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Date: *07-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Work Order: BMI12042403 **Cooler Temp:** 2 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12042403-01A	MW-7	Aqueous
12042403-02A	MW-16	Aqueous
12042403-03A	DUPE-8-2Q12	Aqueous
12042403-04A	MW-15	Aqueous
12042403-05A	MW-14-5	Aqueous
12042403-06A	MW-14-4	Aqueous
12042403-07A	MW-14-3	Aqueous
12042403-08A	MW-14-2	Aqueous
12042403-09A	MW-14-1	Aqueous
12042403-10A	EB-1-4/23/12	Aqueous
12042403-11A	TB-1-4/23/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/24/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-7**					
Lab ID : BMI12042403-01A	Acrylonitrile	ND	10 µg/L	04/30/12 15:05	04/30/12 15:05
Date Sampled 04/23/12 10:16	Allyl chloride	ND	2.0 µg/L	04/30/12 15:05	04/30/12 15:05
	Carbon disulfide	ND	2.0 µg/L	04/30/12 15:05	04/30/12 15:05
	Chloroacetonitrile	ND	10 µg/L	04/30/12 15:05	04/30/12 15:05
	1-Chlorobutane	ND	2.0 µg/L	04/30/12 15:05	04/30/12 15:05
	1,1-Dichloropropanone	ND	10 µg/L	04/30/12 15:05	04/30/12 15:05
	Diethyl ether	ND	2.0 µg/L	04/30/12 15:05	04/30/12 15:05
	Ethyl methacrylate	ND	10 µg/L	04/30/12 15:05	04/30/12 15:05
	Hexachloroethane	ND	10 µg/L	04/30/12 15:05	04/30/12 15:05
	Methacrylonitrile	ND	10 µg/L	04/30/12 15:05	04/30/12 15:05
	Methyl acrylate	ND	10 µg/L	04/30/12 15:05	04/30/12 15:05
	Methyl iodide	ND	2.0 µg/L	04/30/12 15:05	04/30/12 15:05
	Methyl methacrylate	ND	10 µg/L	04/30/12 15:05	04/30/12 15:05
	Nitrobenzene	ND	10 µg/L	04/30/12 15:05	04/30/12 15:05
	2-Nitropropane	ND	2.0 µg/L	04/30/12 15:05	04/30/12 15:05
	Pentachloroethane	ND	2.0 µg/L	04/30/12 15:05	04/30/12 15:05
	Propionitrile	ND	50 µg/L	04/30/12 15:05	04/30/12 15:05
	Tetrahydrofuran	ND	10 µg/L	04/30/12 15:05	04/30/12 15:05
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	04/30/12 15:05	04/30/12 15:05
Client ID: **MW-16**					
Lab ID : BMI12042403-02A	Acrylonitrile	ND	10 µg/L	04/30/12 15:27	04/30/12 15:27
Date Sampled 04/23/12 12:27	Allyl chloride	ND	2.0 µg/L	04/30/12 15:27	04/30/12 15:27
	Carbon disulfide	ND	2.0 µg/L	04/30/12 15:27	04/30/12 15:27
	Chloroacetonitrile	ND	10 µg/L	04/30/12 15:27	04/30/12 15:27
	1-Chlorobutane	ND	2.0 µg/L	04/30/12 15:27	04/30/12 15:27
	1,1-Dichloropropanone	ND	10 µg/L	04/30/12 15:27	04/30/12 15:27
	Diethyl ether	ND	2.0 µg/L	04/30/12 15:27	04/30/12 15:27
	Ethyl methacrylate	ND	10 µg/L	04/30/12 15:27	04/30/12 15:27
	Hexachloroethane	ND	10 µg/L	04/30/12 15:27	04/30/12 15:27
	Methacrylonitrile	ND	10 µg/L	04/30/12 15:27	04/30/12 15:27
	Methyl acrylate	ND	10 µg/L	04/30/12 15:27	04/30/12 15:27
	Methyl iodide	ND	2.0 µg/L	04/30/12 15:27	04/30/12 15:27
	Methyl methacrylate	ND	10 µg/L	04/30/12 15:27	04/30/12 15:27
	Nitrobenzene	ND	10 µg/L	04/30/12 15:27	04/30/12 15:27
	2-Nitropropane	ND	2.0 µg/L	04/30/12 15:27	04/30/12 15:27
	Pentachloroethane	ND	2.0 µg/L	04/30/12 15:27	04/30/12 15:27
	Propionitrile	ND	50 µg/L	04/30/12 15:27	04/30/12 15:27
	Tetrahydrofuran	ND	10 µg/L	04/30/12 15:27	04/30/12 15:27
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	04/30/12 15:27	04/30/12 15:27

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Client ID: **DUPE-8-2Q12**					
Lab ID : BMI12042403-03A	Acrylonitrile	ND	10 µg/L	04/30/12 15:49	04/30/12 15:49
Date Sampled 04/23/12 12:27	Allyl chloride	ND	2.0 µg/L	04/30/12 15:49	04/30/12 15:49
	Carbon disulfide	ND	2.0 µg/L	04/30/12 15:49	04/30/12 15:49
	Chloroacetonitrile	ND	10 µg/L	04/30/12 15:49	04/30/12 15:49
	1-Chlorobutane	ND	2.0 µg/L	04/30/12 15:49	04/30/12 15:49
	1,1-Dichloropropanone	ND	10 µg/L	04/30/12 15:49	04/30/12 15:49
	Diethyl ether	ND	2.0 µg/L	04/30/12 15:49	04/30/12 15:49
	Ethyl methacrylate	ND	10 µg/L	04/30/12 15:49	04/30/12 15:49
	Hexachloroethane	ND	10 µg/L	04/30/12 15:49	04/30/12 15:49
	Methacrylonitrile	ND	10 µg/L	04/30/12 15:49	04/30/12 15:49
	Methyl acrylate	ND	10 µg/L	04/30/12 15:49	04/30/12 15:49
	Methyl iodide	ND	2.0 µg/L	04/30/12 15:49	04/30/12 15:49
	Methyl methacrylate	ND	10 µg/L	04/30/12 15:49	04/30/12 15:49
	Nitrobenzene	ND	10 µg/L	04/30/12 15:49	04/30/12 15:49
	2-Nitropropane	ND	2.0 µg/L	04/30/12 15:49	04/30/12 15:49
	Pentachloroethane	ND	2.0 µg/L	04/30/12 15:49	04/30/12 15:49
	Propionitrile	ND	50 µg/L	04/30/12 15:49	04/30/12 15:49
	Tetrahydrofuran	ND	10 µg/L	04/30/12 15:49	04/30/12 15:49
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	04/30/12 15:49	04/30/12 15:49
Client ID: **MW-15**					
Lab ID : BMI12042403-04A	Acrylonitrile	ND	10 µg/L	04/30/12 16:10	04/30/12 16:10
Date Sampled 04/23/12 13:36	Allyl chloride	ND	2.0 µg/L	04/30/12 16:10	04/30/12 16:10
	Carbon disulfide	ND	2.0 µg/L	04/30/12 16:10	04/30/12 16:10
	Chloroacetonitrile	ND	10 µg/L	04/30/12 16:10	04/30/12 16:10
	1-Chlorobutane	ND	2.0 µg/L	04/30/12 16:10	04/30/12 16:10
	1,1-Dichloropropanone	ND	10 µg/L	04/30/12 16:10	04/30/12 16:10
	Diethyl ether	ND	2.0 µg/L	04/30/12 16:10	04/30/12 16:10
	Ethyl methacrylate	ND	10 µg/L	04/30/12 16:10	04/30/12 16:10
	Hexachloroethane	ND	10 µg/L	04/30/12 16:10	04/30/12 16:10
	Methacrylonitrile	ND	10 µg/L	04/30/12 16:10	04/30/12 16:10
	Methyl acrylate	ND	10 µg/L	04/30/12 16:10	04/30/12 16:10
	Methyl iodide	ND	2.0 µg/L	04/30/12 16:10	04/30/12 16:10
	Methyl methacrylate	ND	10 µg/L	04/30/12 16:10	04/30/12 16:10
	Nitrobenzene	ND	10 µg/L	04/30/12 16:10	04/30/12 16:10
	2-Nitropropane	ND	2.0 µg/L	04/30/12 16:10	04/30/12 16:10
	Pentachloroethane	ND	2.0 µg/L	04/30/12 16:10	04/30/12 16:10
	Propionitrile	ND	50 µg/L	04/30/12 16:10	04/30/12 16:10
	Tetrahydrofuran	ND	10 µg/L	04/30/12 16:10	04/30/12 16:10
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	04/30/12 16:10	04/30/12 16:10
Client ID: **MW-14-5**					
Lab ID : BMI12042403-05A	Acrylonitrile	ND	10 µg/L	04/30/12 16:32	04/30/12 16:32
Date Sampled 04/23/12 09:34	Allyl chloride	ND	2.0 µg/L	04/30/12 16:32	04/30/12 16:32
	Carbon disulfide	ND	2.0 µg/L	04/30/12 16:32	04/30/12 16:32
	Chloroacetonitrile	ND	10 µg/L	04/30/12 16:32	04/30/12 16:32
	1-Chlorobutane	ND	2.0 µg/L	04/30/12 16:32	04/30/12 16:32
	1,1-Dichloropropanone	ND	10 µg/L	04/30/12 16:32	04/30/12 16:32
	Diethyl ether	ND	2.0 µg/L	04/30/12 16:32	04/30/12 16:32
	Ethyl methacrylate	ND	10 µg/L	04/30/12 16:32	04/30/12 16:32
	Hexachloroethane	ND	10 µg/L	04/30/12 16:32	04/30/12 16:32
	Methacrylonitrile	ND	10 µg/L	04/30/12 16:32	04/30/12 16:32
	Methyl acrylate	ND	10 µg/L	04/30/12 16:32	04/30/12 16:32
	Methyl iodide	ND	2.0 µg/L	04/30/12 16:32	04/30/12 16:32
	Methyl methacrylate	ND	10 µg/L	04/30/12 16:32	04/30/12 16:32
	Nitrobenzene	ND	10 µg/L	04/30/12 16:32	04/30/12 16:32
	2-Nitropropane	ND	2.0 µg/L	04/30/12 16:32	04/30/12 16:32
	Pentachloroethane	ND	2.0 µg/L	04/30/12 16:32	04/30/12 16:32
	Propionitrile	ND	50 µg/L	04/30/12 16:32	04/30/12 16:32
	Tetrahydrofuran	ND	10 µg/L	04/30/12 16:32	04/30/12 16:32
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	04/30/12 16:32	04/30/12 16:32

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Client ID: **MW-14-4**					
Lab ID : BMI12042403-06A	Acrylonitrile	ND	10 µg/L	04/30/12 16:54	04/30/12 16:54
Date Sampled 04/23/12 10:12	Allyl chloride	ND	2.0 µg/L	04/30/12 16:54	04/30/12 16:54
	Carbon disulfide	ND	2.0 µg/L	04/30/12 16:54	04/30/12 16:54
	Chloroacetonitrile	ND	10 µg/L	04/30/12 16:54	04/30/12 16:54
	1-Chlorobutane	ND	2.0 µg/L	04/30/12 16:54	04/30/12 16:54
	1,1-Dichloropropanone	ND	10 µg/L	04/30/12 16:54	04/30/12 16:54
	Diethyl ether	ND	2.0 µg/L	04/30/12 16:54	04/30/12 16:54
	Ethyl methacrylate	ND	10 µg/L	04/30/12 16:54	04/30/12 16:54
	Hexachloroethane	ND	10 µg/L	04/30/12 16:54	04/30/12 16:54
	Methacrylonitrile	ND	10 µg/L	04/30/12 16:54	04/30/12 16:54
	Methyl acrylate	ND	10 µg/L	04/30/12 16:54	04/30/12 16:54
	Methyl iodide	ND	2.0 µg/L	04/30/12 16:54	04/30/12 16:54
	Methyl methacrylate	ND	10 µg/L	04/30/12 16:54	04/30/12 16:54
	Nitrobenzene	ND	10 µg/L	04/30/12 16:54	04/30/12 16:54
	2-Nitropropane	ND	2.0 µg/L	04/30/12 16:54	04/30/12 16:54
	Pentachloroethane	ND	2.0 µg/L	04/30/12 16:54	04/30/12 16:54
	Propionitrile	ND	50 µg/L	04/30/12 16:54	04/30/12 16:54
	Tetrahydrofuran	ND	10 µg/L	04/30/12 16:54	04/30/12 16:54
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	04/30/12 16:54	04/30/12 16:54
Client ID: **MW-14-3**					
Lab ID : BMI12042403-07A	Acrylonitrile	ND	10 µg/L	04/30/12 17:15	04/30/12 17:15
Date Sampled 04/23/12 11:21	Allyl chloride	ND	2.0 µg/L	04/30/12 17:15	04/30/12 17:15
	Carbon disulfide	ND	2.0 µg/L	04/30/12 17:15	04/30/12 17:15
	Chloroacetonitrile	ND	10 µg/L	04/30/12 17:15	04/30/12 17:15
	1-Chlorobutane	ND	2.0 µg/L	04/30/12 17:15	04/30/12 17:15
	1,1-Dichloropropanone	ND	10 µg/L	04/30/12 17:15	04/30/12 17:15
	Diethyl ether	ND	2.0 µg/L	04/30/12 17:15	04/30/12 17:15
	Ethyl methacrylate	ND	10 µg/L	04/30/12 17:15	04/30/12 17:15
	Hexachloroethane	ND	10 µg/L	04/30/12 17:15	04/30/12 17:15
	Methacrylonitrile	ND	10 µg/L	04/30/12 17:15	04/30/12 17:15
	Methyl acrylate	ND	10 µg/L	04/30/12 17:15	04/30/12 17:15
	Methyl iodide	ND	2.0 µg/L	04/30/12 17:15	04/30/12 17:15
	Methyl methacrylate	ND	10 µg/L	04/30/12 17:15	04/30/12 17:15
	Nitrobenzene	ND	10 µg/L	04/30/12 17:15	04/30/12 17:15
	2-Nitropropane	ND	2.0 µg/L	04/30/12 17:15	04/30/12 17:15
	Pentachloroethane	ND	2.0 µg/L	04/30/12 17:15	04/30/12 17:15
	Propionitrile	ND	50 µg/L	04/30/12 17:15	04/30/12 17:15
	Tetrahydrofuran	ND	10 µg/L	04/30/12 17:15	04/30/12 17:15
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	04/30/12 17:15	04/30/12 17:15
Client ID: **MW-14-2**					
Lab ID : BMI12042403-08A	Acrylonitrile	ND	10 µg/L	04/30/12 17:37	04/30/12 17:37
Date Sampled 04/23/12 11:55	Allyl chloride	ND	2.0 µg/L	04/30/12 17:37	04/30/12 17:37
	Carbon disulfide	ND	2.0 µg/L	04/30/12 17:37	04/30/12 17:37
	Chloroacetonitrile	ND	10 µg/L	04/30/12 17:37	04/30/12 17:37
	1-Chlorobutane	ND	2.0 µg/L	04/30/12 17:37	04/30/12 17:37
	1,1-Dichloropropanone	ND	10 µg/L	04/30/12 17:37	04/30/12 17:37
	Diethyl ether	ND	2.0 µg/L	04/30/12 17:37	04/30/12 17:37
	Ethyl methacrylate	ND	10 µg/L	04/30/12 17:37	04/30/12 17:37
	Hexachloroethane	ND	10 µg/L	04/30/12 17:37	04/30/12 17:37
	Methacrylonitrile	ND	10 µg/L	04/30/12 17:37	04/30/12 17:37
	Methyl acrylate	ND	10 µg/L	04/30/12 17:37	04/30/12 17:37
	Methyl iodide	ND	2.0 µg/L	04/30/12 17:37	04/30/12 17:37
	Methyl methacrylate	ND	10 µg/L	04/30/12 17:37	04/30/12 17:37
	Nitrobenzene	ND	10 µg/L	04/30/12 17:37	04/30/12 17:37
	2-Nitropropane	ND	2.0 µg/L	04/30/12 17:37	04/30/12 17:37
	Pentachloroethane	ND	2.0 µg/L	04/30/12 17:37	04/30/12 17:37
	Propionitrile	ND	50 µg/L	04/30/12 17:37	04/30/12 17:37
	Tetrahydrofuran	ND	10 µg/L	04/30/12 17:37	04/30/12 17:37
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	04/30/12 17:37	04/30/12 17:37

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Client ID: **MW-14-1**					
Lab ID : BMI12042403-09A	Acrylonitrile	ND	10 µg/L	04/30/12 17:59	04/30/12 17:59
Date Sampled 04/23/12 12:28	Allyl chloride	ND	2.0 µg/L	04/30/12 17:59	04/30/12 17:59
	Carbon disulfide	ND	2.0 µg/L	04/30/12 17:59	04/30/12 17:59
	Chloroacetonitrile	ND	10 µg/L	04/30/12 17:59	04/30/12 17:59
	1-Chlorobutane	ND	2.0 µg/L	04/30/12 17:59	04/30/12 17:59
	1,1-Dichloropropanone	ND	10 µg/L	04/30/12 17:59	04/30/12 17:59
	Diethyl ether	ND	2.0 µg/L	04/30/12 17:59	04/30/12 17:59
	Ethyl methacrylate	ND	10 µg/L	04/30/12 17:59	04/30/12 17:59
	Hexachloroethane	ND	10 µg/L	04/30/12 17:59	04/30/12 17:59
	Methacrylonitrile	ND	10 µg/L	04/30/12 17:59	04/30/12 17:59
	Methyl acrylate	ND	10 µg/L	04/30/12 17:59	04/30/12 17:59
	Methyl iodide	ND	2.0 µg/L	04/30/12 17:59	04/30/12 17:59
	Methyl methacrylate	ND	10 µg/L	04/30/12 17:59	04/30/12 17:59
	Nitrobenzene	ND	10 µg/L	04/30/12 17:59	04/30/12 17:59
	2-Nitropropane	ND	2.0 µg/L	04/30/12 17:59	04/30/12 17:59
	Pentachloroethane	ND	2.0 µg/L	04/30/12 17:59	04/30/12 17:59
	Propionitrile	ND	50 µg/L	04/30/12 17:59	04/30/12 17:59
	Tetrahydrofuran	ND	10 µg/L	04/30/12 17:59	04/30/12 17:59
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	04/30/12 17:59	04/30/12 17:59
Client ID: **EB-1-4/23/12**					
Lab ID : BMI12042403-10A	Acrylonitrile	ND	10 µg/L	04/30/12 18:21	04/30/12 18:21
Date Sampled 04/23/12 12:15	Allyl chloride	ND	2.0 µg/L	04/30/12 18:21	04/30/12 18:21
	Carbon disulfide	ND	2.0 µg/L	04/30/12 18:21	04/30/12 18:21
	Chloroacetonitrile	ND	10 µg/L	04/30/12 18:21	04/30/12 18:21
	1-Chlorobutane	ND	2.0 µg/L	04/30/12 18:21	04/30/12 18:21
	1,1-Dichloropropanone	ND	10 µg/L	04/30/12 18:21	04/30/12 18:21
	Diethyl ether	ND	2.0 µg/L	04/30/12 18:21	04/30/12 18:21
	Ethyl methacrylate	ND	10 µg/L	04/30/12 18:21	04/30/12 18:21
	Hexachloroethane	ND	10 µg/L	04/30/12 18:21	04/30/12 18:21
	Methacrylonitrile	ND	10 µg/L	04/30/12 18:21	04/30/12 18:21
	Methyl acrylate	ND	10 µg/L	04/30/12 18:21	04/30/12 18:21
	Methyl iodide	ND	2.0 µg/L	04/30/12 18:21	04/30/12 18:21
	Methyl methacrylate	ND	10 µg/L	04/30/12 18:21	04/30/12 18:21
	Nitrobenzene	ND	10 µg/L	04/30/12 18:21	04/30/12 18:21
	2-Nitropropane	ND	2.0 µg/L	04/30/12 18:21	04/30/12 18:21
	Pentachloroethane	ND	2.0 µg/L	04/30/12 18:21	04/30/12 18:21
	Propionitrile	ND	50 µg/L	04/30/12 18:21	04/30/12 18:21
	Tetrahydrofuran	ND	10 µg/L	04/30/12 18:21	04/30/12 18:21
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	04/30/12 18:21	04/30/12 18:21
Client ID: **TB-1-4/23/12**					
Lab ID : BMI12042403-11A	Acrylonitrile	ND	10 µg/L	04/26/12 06:11	04/26/12 06:11
Date Sampled 04/23/12 07:00	Allyl chloride	ND	2.0 µg/L	04/26/12 06:11	04/26/12 06:11
	Carbon disulfide	ND	2.0 µg/L	04/26/12 06:11	04/26/12 06:11
	Chloroacetonitrile	ND	10 µg/L	04/26/12 06:11	04/26/12 06:11
	1-Chlorobutane	ND	2.0 µg/L	04/26/12 06:11	04/26/12 06:11
	1,1-Dichloropropanone	ND	10 µg/L	04/26/12 06:11	04/26/12 06:11
	Diethyl ether	ND	2.0 µg/L	04/26/12 06:11	04/26/12 06:11
	Ethyl methacrylate	ND	10 µg/L	04/26/12 06:11	04/26/12 06:11
	Hexachloroethane	ND	10 µg/L	04/26/12 06:11	04/26/12 06:11
	Methacrylonitrile	ND	10 µg/L	04/26/12 06:11	04/26/12 06:11
	Methyl acrylate	ND	10 µg/L	04/26/12 06:11	04/26/12 06:11
	Methyl iodide	ND	2.0 µg/L	04/26/12 06:11	04/26/12 06:11
	Methyl methacrylate	ND	10 µg/L	04/26/12 06:11	04/26/12 06:11
	Nitrobenzene	ND	10 µg/L	04/26/12 06:11	04/26/12 06:11
	2-Nitropropane	ND	2.0 µg/L	04/26/12 06:11	04/26/12 06:11
	Pentachloroethane	ND	2.0 µg/L	04/26/12 06:11	04/26/12 06:11
	Propionitrile	ND	50 µg/L	04/26/12 06:11	04/26/12 06:11
	Tetrahydrofuran	ND	10 µg/L	04/26/12 06:11	04/26/12 06:11
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	04/26/12 06:11	04/26/12 06:11

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Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/7/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042403-01A
Client I.D. Number: MW-7

Sampled: 04/23/12 10:16
Received: 04/24/12
Extracted: 04/30/12 15:05
Analyzed: 04/30/12 15:05

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	103	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/7/12
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042403-02A
Client I.D. Number: MW-16

Sampled: 04/23/12 12:27
Received: 04/24/12
Extracted: 04/30/12 15:27
Analyzed: 04/30/12 15:27

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37 Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/7/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042403-03A
Client I.D. Number: DUPE-8-2Q12

Sampled: 04/23/12 12:27
Received: 04/24/12
Extracted: 04/30/12 15:49
Analyzed: 04/30/12 15:49

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/7/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042403-04A
Client I.D. Number: MW-15

Sampled: 04/23/12 13:36
Received: 04/24/12
Extracted: 04/30/12 16:10
Analyzed: 04/30/12 16:10

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	103	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/7/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042403-05A
Client I.D. Number: MW-14-5

Sampled: 04/23/12 09:34
Received: 04/24/12
Extracted: 04/30/12 16:32
Analyzed: 04/30/12 16:32

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	104	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • Randy Gardner, Laboratory Manager • Walter Hinchman, Quality Assurance Officer

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042403-06A
Client I.D. Number: MW-14-4

Sampled: 04/23/12 10:12
Received: 04/24/12
Extracted: 04/30/12 16:54
Analyzed: 04/30/12 16:54

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/7/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042403-07A
Client I.D. Number: MW-14-3

Sampled: 04/23/12 11:21
Received: 04/24/12
Extracted: 04/30/12 17:15
Analyzed: 04/30/12 17:15

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	1.4	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/7/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042403-08A
Client I.D. Number: MW-14-2

Sampled: 04/23/12 11:55
Received: 04/24/12
Extracted: 04/30/12 17:37
Analyzed: 04/30/12 17:37

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	3.7	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	107	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/7/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042403-09A
Client I.D. Number: MW-14-1

Sampled: 04/23/12 12:28
Received: 04/24/12
Extracted: 04/30/12 17:59
Analyzed: 04/30/12 17:59

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	1.8	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042403-10A
Client I.D. Number: EB-1-4/23/12

Sampled: 04/23/12 12:15
Received: 04/24/12
Extracted: 04/30/12 18:21
Analyzed: 04/30/12 18:21

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	88	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/7/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042403-11A
Client I.D. Number: TB-1-4/23/12

Sampled: 04/23/12 07:00
Received: 04/24/12
Extracted: 04/26/12 06:11
Analyzed: 04/26/12 06:11

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	99	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	104	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	88	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/7/12

Report Date

Alpha Analytical, Inc.

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VOC Sample Preservation Report

Work Order: BMI12042403 **Job:** 100006114 / JPL Groundwater Monitoring

Alpha's Sample ID	Client's Sample ID	Matrix	pH
12042403-01A	MW-7	Aqueous	2
12042403-02A	MW-16	Aqueous	2
12042403-03A	DUPE-8-2Q12	Aqueous	2
12042403-04A	MW-15	Aqueous	2
12042403-05A	MW-14-5	Aqueous	2
12042403-06A	MW-14-4	Aqueous	2
12042403-07A	MW-14-3	Aqueous	2
12042403-08A	MW-14-2	Aqueous	2
12042403-09A	MW-14-1	Aqueous	2
12042403-10A	EB-1-4/23/12	Aqueous	2
12042403-11A	TB-1-4/23/12	Aqueous	2

5/7/12

Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *30-Apr-12*

QC Summary Report

Work Order: 12042403

Method Blank

Type **MBLK** Test Code: **EPA Method 300.0**

File ID: **29** Batch ID: **28587K** Analysis Date: **04/25/2012 10:56**

Sample ID: **MB-28587** Units : **mg/L** Run ID: **IC_1_120425B** Prep Date: **04/25/2012 09:01**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0**

File ID: **38** Batch ID: **28587K** Analysis Date: **04/25/2012 13:42**

Sample ID: **LFB-28587** Units : **mg/L** Run ID: **IC_1_120425B** Prep Date: **04/25/2012 09:01**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	50.6	0.5	50		101	90	110			
Nitrite (NO2) - N	5.17	0.25	5		103	90	110			
Nitrate (NO3) - N	5.47	0.25	5		109	90	110			
Phosphate, ortho - P	5.01	0.5	5		100	90	110			
Sulfate (SO4)	103	0.5	100		103	90	110			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0**

File ID: **36** Batch ID: **28587K** Analysis Date: **04/25/2012 13:05**

Sample ID: **12042403-04ALFM** Units : **mg/L** Run ID: **IC_1_120425B** Prep Date: **04/25/2012 09:01**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	267	1.3	250	11.13	102	90	110			
Nitrite (NO2) - N	26.5	0.63	25	0	106	90	110			
Nitrate (NO3) - N	27.8	0.63	25	0	111	90	110			M1
Phosphate, ortho - P	27	1.3	25	0	108	90	110			
Sulfate (SO4)	552	1.3	500	31.01	104	90	110			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0**

File ID: **37** Batch ID: **28587K** Analysis Date: **04/25/2012 13:24**

Sample ID: **12042403-04ALFMD** Units : **mg/L** Run ID: **IC_1_120425B** Prep Date: **04/25/2012 09:01**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	269	1.3	250	11.13	103	90	110	267.1	0.6(15)	
Nitrite (NO2) - N	25.9	0.63	25	0	104	90	110	26.53	2.5(15)	
Nitrate (NO3) - N	27.9	0.63	25	0	112	90	110	27.84	0.2(15)	M1
Phosphate, ortho - P	27.2	1.3	25	0	109	90	110	26.95	1.1(15)	
Sulfate (SO4)	557	1.3	500	31.01	105	90	110	552.1	0.9(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

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Date: *04-May-12*

QC Summary Report

Work Order: 12042403

Method Blank

Type **MBLK** Test Code: **EPA Method 314.0**

File ID: **41** Batch ID: **28607K** Analysis Date: **04/27/2012 00:51**

Sample ID: **MB-28607** Units : **µg/L** Run ID: **IC_3_120426B** Prep Date: **04/26/2012 17:32**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 314.0**

File ID: **42** Batch ID: **28607K** Analysis Date: **04/27/2012 01:09**

Sample ID: **LFB-28607** Units : **µg/L** Run ID: **IC_3_120426B** Prep Date: **04/26/2012 17:32**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.2	2	25		101	85	115			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 314.0**

File ID: **48** Batch ID: **28607K** Analysis Date: **04/27/2012 03:00**

Sample ID: **12042403-04ALFM** Units : **µg/L** Run ID: **IC_3_120426B** Prep Date: **04/26/2012 17:32**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.4	2	25	0	102	85	115			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 314.0**

File ID: **49** Batch ID: **28607K** Analysis Date: **04/27/2012 03:18**

Sample ID: **12042403-04ALFMD** Units : **µg/L** Run ID: **IC_3_120426B** Prep Date: **04/26/2012 17:32**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.5	2	25	0	102	85	115	25.42	0.3(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *30-Apr-12*

QC Summary Report

Work Order: 12042403

Laboratory Control Spike Type **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0424ALA** Analysis Date: **04/24/2012 15:12**

Sample ID: **LCS-W0424ALA** Units : **mg/L** Run ID: **WETLAB_120424H** Prep Date: **04/24/2012 15:12**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	251.7	10	250		101	80	120			
Alkalinity, Carbonate (As CaCO3)	251.7	10	250		101	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	252	10	250		101	80	120			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *10-May-12*

QC Summary Report

Work Order: 12042403

Method Blank

Type: **MBLK** Test Code: **EPA Method 200.8**

File ID: **050412.B\134_M.D** Batch ID: **28597K** Analysis Date: **05/05/2012 01:51**

Sample ID: **MB-28597** Units : **mg/L** Run ID: **ICP/MS_120505A** Prep Date: **04/25/2012 16:59**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 200.8**

File ID: **050412.B\135_M.D** Batch ID: **28597K** Analysis Date: **05/05/2012 01:57**

Sample ID: **LCS-28597** Units : **mg/L** Run ID: **ICP/MS_120505A** Prep Date: **04/25/2012 16:59**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	5.04	0.5	5		101	80	120			
Magnesium (Mg)	4.87	0.5	5		97	80	120			
Potassium (K)	5.01	0.5	5		100	80	120			
Calcium (Ca)	5.06	0.5	5		101	80	120			
Chromium (Cr)	0.0499	0.005	0.05		99.8	80	120			
Iron (Fe)	5.05	0.3	5		101	80	120			
Arsenic (As)	0.0494	0.002	0.05		99	80	120			
Lead (Pb)	0.051	0.005	0.05		102	80	120			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method 200.8**

File ID: **050412.B\140_M.D** Batch ID: **28597K** Analysis Date: **05/05/2012 02:25**

Sample ID: **12042403-04AMS** Units : **mg/L** Run ID: **ICP/MS_120505A** Prep Date: **04/25/2012 16:59**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	24.9	0.5	5	19.7	103	80	120			
Magnesium (Mg)	19.6	0.5	5	14.59	101	80	120			
Potassium (K)	7.58	0.5	5	2.481	102	80	120			
Calcium (Ca)	50.1	0.5	5	44.92	104	80	120			
Chromium (Cr)	0.0563	0.005	0.05	0	113	80	120			
Iron (Fe)	5.66	0.3	5	0.5917	101	80	120			
Arsenic (As)	0.0529	0.002	0.05	0	106	80	120			
Lead (Pb)	0.0494	0.005	0.05	0	99	80	120			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method 200.8**

File ID: **050412.B\141_M.D** Batch ID: **28597K** Analysis Date: **05/05/2012 02:31**

Sample ID: **12042403-04AMSD** Units : **mg/L** Run ID: **ICP/MS_120505A** Prep Date: **04/25/2012 16:59**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	24.1	0.5	5	19.7	88	80	120	24.86	3.1(20)	
Magnesium (Mg)	19.1	0.5	5	14.59	90	80	120	19.62	2.6(20)	
Potassium (K)	7.13	0.5	5	2.481	93	80	120	7.579	6.1(20)	
Calcium (Ca)	48.5	0.5	5	44.92	72	80	120	50.1	3.2(20)	M3
Chromium (Cr)	0.0501	0.005	0.05	0	100	80	120	0.05628	11.5(20)	
Iron (Fe)	5.25	0.3	5	0.5917	93	80	120	5.66	7.5(20)	
Arsenic (As)	0.0484	0.002	0.05	0	97	80	120	0.05289	9.0(20)	
Lead (Pb)	0.0457	0.005	0.05	0	91	80	120	0.04944	7.9(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M3 = The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to the spike level. The method control sample recovery was acceptable.

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Date: *30-Apr-12*

QC Summary Report

Work Order: 12042403

Laboratory Control Spike Type **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0424PH** Analysis Date: **04/24/2012 15:07**

Sample ID: **LCS-W0424PH** Units : **pH Units** Run ID: **WETLAB_120424G** Prep Date: **04/24/2012 15:07**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5.06	1.7	5		101	90	110			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *30-Apr-12*

QC Summary Report

Work Order: 12042403

Method Blank

Type **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0424DS** Analysis Date: **04/25/2012 00:00**

Sample ID: **MBLK-W0424DS** Units : **mg/L** Run ID: **WETLAB_120424C** Prep Date: **04/25/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0424DS** Analysis Date: **04/25/2012 00:00**

Sample ID: **LCS-W0424DS** Units : **mg/L** Run ID: **WETLAB_120424C** Prep Date: **04/25/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	92	10	100		92	70	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *07-May-12*

QC Summary Report

Work Order: 12042403

Method Blank Type: **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12042540.D** Batch ID: **MS15W0425M** Analysis Date: **04/25/2012 22:36**

Sample ID: **MBLK MS15W0425M** Units : **µg/L** Run ID: **MSD_15_120425B** Prep Date: **04/25/2012 22:36**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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Date: *07-May-12*

QC Summary Report

Work Order: 12042403

Surr: 1,2-Dichloroethane-d4	10.3	10	103	70	130	
Surr: Toluene-d8	10.3	10	103	70	130	
Surr: 4-Bromofluorobenzene	9.06	10	91	70	130	

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QC Summary Report

Work Order: 12042403

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method SW8260B**

File ID: **12042536.D** Batch ID: **MS15W0425M** Analysis Date: **04/25/2012 21:09**

Sample ID: **LCS MS15W0425M** Units : **µg/L** Run ID: **MSD_15_120425B** Prep Date: **04/25/2012 21:09**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	7.49	1	10		75	70	130			
Chloromethane	10.1	2	10		101	70	130			
Vinyl chloride	11.4	1	10		114	70	130			
Chloroethane	11.1	1	10		111	70	130			
Bromomethane	11.3	2	10		113	70	130			
Trichlorofluoromethane	12	1	10		120	70	130			
Acetone	374	10	200		187	36	171(171)			L51
1,1-Dichloroethene	12.7	1	10		127	70	130			
Dichloromethane	11.7	2	10		117	70	130			
Freon-113	11.7	1	10		117	70	137			
trans-1,2-Dichloroethene	12.9	1	10		129	70	130			
Methyl tert-butyl ether (MTBE)	12.2	0.5	10		122	70	130			
1,1-Dichloroethane	12.8	1	10		128	70	130			
2-Butanone (MEK)	312	10	200		156	70	130(130)			L51
cis-1,2-Dichloroethene	13.2	1	10		132	70	130(130)			L51
Bromochloromethane	13.8	1	10		138	70	130(130)			L51
Chloroform	11.7	1	10		117	70	130			
2,2-Dichloropropane	9.86	1	10		99	70	130			
1,2-Dichloroethane	13.3	1	10		133	70	130(130)			L51
1,1,1-Trichloroethane	12.8	1	10		128	70	130			
1,1-Dichloropropene	13.5	1	10		135	70	130(130)			L51
Carbon tetrachloride	11.4	1	10		114	70	130			
Benzene	13	0.5	10		130	70	130			
Dibromomethane	13.6	1	10		136	70	130(130)			L51
1,2-Dichloropropane	12.2	1	10		122	70	130			
Trichloroethene	13.6	1	10		136	70	130(130)			L51
Bromodichloromethane	11.8	1	10		118	70	130			
4-Methyl-2-pentanone (MIBK)	31.9	2.5	25		128	20	182			
cis-1,3-Dichloropropene	11.7	1	10		117	70	130			
trans-1,3-Dichloropropene	11.7	1	10		117	70	130			
1,1,2-Trichloroethane	14	1	10		140	70	130(130)			L51
Toluene	12.2	0.5	10		122	70	130			
1,3-Dichloropropane	13.5	1	10		135	70	130(130)			L51
2-Hexanone	139	5	100		139	20	182			
Dibromochloromethane	11.8	1	10		118	70	130			
1,2-Dibromoethane (EDB)	26.6	2	20		133	70	130(130)			L51
Tetrachloroethene	12.6	1	10		126	70	130			
1,1,1,2-Tetrachloroethane	13.9	1	10		139	70	130(130)			L51
Chlorobenzene	12.9	1	10		129	70	130			
Ethylbenzene	12.4	0.5	10		124	70	130			
m,p-Xylene	12	0.5	10		120	70	130			
Bromoform	11.6	1	10		116	70	130			
Styrene	11.1	1	10		111	70	130			
o-Xylene	12.2	0.5	10		122	70	130			
1,1,2,2-Tetrachloroethane	13.2	1	10		132	70	130(130)			L51
1,2,3-Trichloropropane	29	2	20		145	70	130(130)			L51
Isopropylbenzene	11.7	1	10		117	70	130			
Bromobenzene	12.6	1	10		126	70	130			
n-Propylbenzene	11.8	1	10		118	70	130			
4-Chlorotoluene	12.2	1	10		122	70	130			
2-Chlorotoluene	12	1	10		120	70	130			
1,3,5-Trimethylbenzene	12.1	1	10		121	70	130			
tert-Butylbenzene	11.6	1	10		116	70	130			
1,2,4-Trimethylbenzene	12.2	1	10		122	70	130			
sec-Butylbenzene	11.5	1	10		115	70	130			
1,3-Dichlorobenzene	11.7	1	10		117	70	130			
1,4-Dichlorobenzene	12.5	1	10		125	70	130			
4-Isopropyltoluene	11.8	1	10		118	70	130			
1,2-Dichlorobenzene	12.3	1	10		123	70	130			
n-Butylbenzene	11.2	1	10		112	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	66.9	3	50		134	67	130(130)			L51
1,2,4-Trichlorobenzene	12.3	2	10		123	70	130			

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QC Summary Report

Work Order: 12042403

Naphthalene	11.7	2	10	117	70	130
Hexachlorobutadiene	21.7	2	20	108	70	130
1,2,3-Trichlorobenzene	11.5	2	10	115	70	130
Surr: 1,2-Dichloroethane-d4	10.3		10	103	70	130
Surr: Toluene-d8	9.91		10	99	70	130
Surr: 4-Bromofluorobenzene	9.12		10	91	70	130

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QC Summary Report

Work Order: 12042403

Sample Matrix Spike Type: **MS** Test Code: **EPA Method SW8260B**

File ID: **12042541.D** Batch ID: **MS15W0425M** Analysis Date: **04/25/2012 22:58**

Sample ID: **12042403-04AMS** Units : **µg/L** Run ID: **MSD_15_120425B** Prep Date: **04/25/2012 22:58**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	54.6	2.5	50	0	109	21	138			
Chloromethane	49.6	10	50	0	99	23	144			
Vinyl chloride	52.8	2.5	50	0	106	49	136			
Chloroethane	45.1	2.5	50	0	90	21	159			
Bromomethane	44.1	10	50	0	88	10	174			
Trichlorofluoromethane	54.3	2.5	50	0	109	32	154			
Acetone	626	50	1000	0	63	10	171			
1,1-Dichloroethene	52.2	2.5	50	0	104	64	130			
Dichloromethane	46.6	10	50	0	93	69	130			
Freon-113	56.1	2.5	50	0	112	55	141			
trans-1,2-Dichloroethene	51.8	2.5	50	0	104	63	130			
Methyl tert-butyl ether (MTBE)	47.4	1.3	50	0	95	47	150			
1,1-Dichloroethane	51.4	2.5	50	0	103	66	130			
2-Butanone (MEK)	781	50	1000	0	78	23	182			
cis-1,2-Dichloroethene	52.6	2.5	50	0	105	70	130			
Bromochloromethane	54.4	2.5	50	0	109	70	132			
Chloroform	47	2.5	50	0	94	70	130			
2,2-Dichloropropane	38.3	2.5	50	0	77	38	154			
1,2-Dichloroethane	51.4	2.5	50	0	103	65	134			
1,1,1-Trichloroethane	52.9	2.5	50	0	106	65	136			
1,1-Dichloropropene	55.9	2.5	50	0	112	68	132			
Carbon tetrachloride	47.9	2.5	50	0	96	58	148			
Benzene	51.4	1.3	50	0	103	59	138			
Dibromomethane	52.3	2.5	50	0	105	70	130			
1,2-Dichloropropane	48.6	2.5	50	0	97	70	131			
Trichloroethene	52	2.5	50	0	104	65	144			
Bromodichloromethane	46.7	2.5	50	0	93	50	157			
4-Methyl-2-pentanone (MIBK)	116	13	125	0	93	20	182			
cis-1,3-Dichloropropene	43.4	2.5	50	0	87	63	131			
trans-1,3-Dichloropropene	43.9	2.5	50	0	88	65	136			
1,1,2-Trichloroethane	52.9	2.5	50	0	106	70	131			
Toluene	49.1	1.3	50	0	98	68	130			
1,3-Dichloropropane	51.6	2.5	50	0	103	70	130			
2-Hexanone	367	25	500	0	73	20	182			
Dibromochloromethane	45.2	2.5	50	0	90	42	155			
1,2-Dibromoethane (EDB)	100	5	100	0	100	70	130			
Tetrachloroethene	52.5	2.5	50	0	105	65	130			
1,1,1,2-Tetrachloroethane	55	2.5	50	0	110	70	130			
Chlorobenzene	52.3	2.5	50	0	105	70	130			
Ethylbenzene	50.8	1.3	50	0	102	68	130			
m,p-Xylene	49.2	1.3	50	0	98	68	131			
Bromoform	42.9	2.5	50	0	86	65	143			
Styrene	44.4	2.5	50	0	89	59	153			
o-Xylene	49.1	1.3	50	0	98	70	130			
1,1,2,2-Tetrachloroethane	52.5	2.5	50	0	105	67	130			
1,2,3-Trichloropropane	108	10	100	0	108	70	130			
Isopropylbenzene	50.1	2.5	50	0	100	55	138			
Bromobenzene	50.9	2.5	50	0	102	70	130			
n-Propylbenzene	51.6	2.5	50	0	103	67	133			
4-Chlorotoluene	51	2.5	50	0	102	70	130			
2-Chlorotoluene	50.3	2.5	50	0	101	70	130			
1,3,5-Trimethylbenzene	51.8	2.5	50	0	104	67	134			
tert-Butylbenzene	51	2.5	50	0	102	55	147			
1,2,4-Trimethylbenzene	51.5	2.5	50	0	103	65	135			
sec-Butylbenzene	52	2.5	50	0	104	68	135			
1,3-Dichlorobenzene	48.1	2.5	50	0	96	70	130			
1,4-Dichlorobenzene	50.9	2.5	50	0	102	70	130			
4-Isopropyltoluene	52.3	2.5	50	0	105	68	132			
1,2-Dichlorobenzene	49.1	2.5	50	0	98	70	130			
n-Butylbenzene	51.4	2.5	50	0	103	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	258	15	250	0	103	64	130			
1,2,4-Trichlorobenzene	48	10	50	0	96	62	133			
Naphthalene	42.5	10	50	0	85	32	166			
Hexachlorobutadiene	101	10	100	0	101	63	130			
1,2,3-Trichlorobenzene	40.5	10	50	0	81	55	138			

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Date: *07-May-12*

QC Summary Report

Work Order: 12042403

Surr: 1,2-Dichloroethane-d4	51.2	50	102	70	130
Surr: Toluene-d8	49.4	50	99	70	130
Surr: 4-Bromofluorobenzene	46.4	50	93	70	130

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Date: 07-May-12

QC Summary Report

Work Order: 12042403

Sample Matrix Spike Duplicate Type: **MSD** Test Code: **EPA Method SW8260B**

File ID: **12042542.D** Batch ID: **MS15W0425M** Analysis Date: **04/25/2012 23:19**

Sample ID: **12042403-04AMSD** Units : **µg/L** Run ID: **MSD_15_120425B** Prep Date: **04/25/2012 23:19**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	54.9	2.5	50	0	110	21	138	54.64	0.4(33)	
Chloromethane	50.3	10	50	0	101	23	144	49.61	1.4(27)	
Vinyl chloride	53.2	2.5	50	0	106	49	136	52.78	0.8(21)	
Chloroethane	45.6	2.5	50	0	91	21	159	45.13	1.1(40)	
Bromomethane	49.1	10	50	0	98	10	174	44.08	10.8(40)	
Trichlorofluoromethane	55.1	2.5	50	0	110	32	154	54.26	1.5(37)	
Acetone	637	50	1000	0	64	10	171	625.7	1.7(23)	
1,1-Dichloroethene	52.1	2.5	50	0	104	64	130	52.15	0.1(21)	
Dichloromethane	46.8	10	50	0	94	69	130	46.56	0.5(20)	
Freon-113	55.3	2.5	50	0	111	55	141	56.14	1.5(40)	
trans-1,2-Dichloroethene	52.4	2.5	50	0	105	63	130	51.79	1.1(20)	
Methyl tert-butyl ether (MTBE)	48.2	1.3	50	0	96	47	150	47.35	1.8(40)	
1,1-Dichloroethane	51.7	2.5	50	0	103	66	130	51.36	0.6(20)	
2-Butanone (MEK)	795	50	1000	0	79	23	182	780.5	1.8(22)	
cis-1,2-Dichloroethene	52.8	2.5	50	0	106	70	130	52.59	0.4(20)	
Bromochloromethane	55.5	2.5	50	0	111	70	132	54.43	2.0(20)	
Chloroform	46.7	2.5	50	0	93	70	130	47	0.6(20)	
2,2-Dichloropropane	39.1	2.5	50	0	78	38	154	38.34	1.9(22)	
1,2-Dichloroethane	52.3	2.5	50	0	105	65	134	51.37	1.8(20)	
1,1,1-Trichloroethane	53.9	2.5	50	0	108	65	136	52.85	2.0(20)	
1,1-Dichloropropene	56.5	2.5	50	0	113	68	132	55.92	1.0(20)	
Carbon tetrachloride	48.4	2.5	50	0	97	58	148	47.88	1.1(20)	
Benzene	51.8	1.3	50	0	104	59	138	51.37	0.9(21)	
Dibromomethane	53.1	2.5	50	0	106	70	130	52.29	1.5(20)	
1,2-Dichloropropane	48.9	2.5	50	0	98	70	131	48.62	0.6(20)	
Trichloroethene	52.4	2.5	50	0	105	65	144	52.04	0.7(20)	
Bromodichloromethane	47.4	2.5	50	0	95	50	157	46.73	1.4(20)	
4-Methyl-2-pentanone (MIBK)	118	13	125	0	94	20	182	115.7	2.0(20)	
cis-1,3-Dichloropropene	44.9	2.5	50	0	90	63	131	43.44	3.2(20)	
trans-1,3-Dichloropropene	44.9	2.5	50	0	90	65	136	43.91	2.3(20)	
1,1,2-Trichloroethane	53.5	2.5	50	0	107	70	131	52.9	1.0(20)	
Toluene	49.6	1.3	50	0	99	68	130	49.14	1.0(20)	
1,3-Dichloropropane	52.3	2.5	50	0	105	70	130	51.62	1.4(20)	
2-Hexanone	376	25	500	0	75	20	182	366.8	2.4(20)	
Dibromochloromethane	46.1	2.5	50	0	92	42	155	45.21	2.0(20)	
1,2-Dibromoethane (EDB)	103	5	100	0	103	70	130	100.3	2.8(20)	
Tetrachloroethene	53.3	2.5	50	0	107	65	130	52.53	1.4(20)	
1,1,1,2-Tetrachloroethane	55.9	2.5	50	0	112	70	130	55.03	1.6(20)	
Chlorobenzene	52.8	2.5	50	0	106	70	130	52.29	0.9(20)	
Ethylbenzene	51.5	1.3	50	0	103	68	130	50.75	1.5(20)	
m,p-Xylene	50.1	1.3	50	0	100	68	131	49.24	1.7(20)	
Bromoform	45.1	2.5	50	0	90	65	143	42.9	5.1(20)	
Styrene	45.9	2.5	50	0	92	59	153	44.4	3.3(37)	
o-Xylene	50.3	1.3	50	0	101	70	130	49.07	2.5(20)	
1,1,2,2-Tetrachloroethane	53.3	2.5	50	0	107	67	130	52.48	1.6(20)	
1,2,3-Trichloropropane	110	10	100	0	110	70	130	107.6	2.3(20)	
Isopropylbenzene	51.3	2.5	50	0	103	55	138	50.13	2.2(20)	
Bromobenzene	52.6	2.5	50	0	105	70	130	50.94	3.2(20)	
n-Propylbenzene	53.1	2.5	50	0	106	67	133	51.6	2.9(30)	
4-Chlorotoluene	52.6	2.5	50	0	105	70	130	51.01	3.2(20)	
2-Chlorotoluene	52	2.5	50	0	104	70	130	50.27	3.4(20)	
1,3,5-Trimethylbenzene	53.6	2.5	50	0	107	67	134	51.83	3.4(21)	
tert-Butylbenzene	52.4	2.5	50	0	105	55	147	51.01	2.8(20)	
1,2,4-Trimethylbenzene	53.3	2.5	50	0	107	65	135	51.51	3.4(25)	
sec-Butylbenzene	53.4	2.5	50	0	107	68	135	51.95	2.7(20)	
1,3-Dichlorobenzene	50	2.5	50	0	99.9	70	130	48.08	3.9(20)	
1,4-Dichlorobenzene	52.5	2.5	50	0	105	70	130	50.87	3.2(20)	
4-Isopropyltoluene	54.4	2.5	50	0	109	68	132	52.33	3.8(20)	
1,2-Dichlorobenzene	50.9	2.5	50	0	102	70	130	49.12	3.6(20)	
n-Butylbenzene	53.7	2.5	50	0	107	62	134	51.38	4.3(21)	
1,2-Dibromo-3-chloropropane (DBCP)	268	15	250	0	107	64	130	258.1	3.7(20)	
1,2,4-Trichlorobenzene	50	10	50	0	99.9	62	133	48.03	4.0(29)	
Naphthalene	43.4	10	50	0	87	32	166	42.53	2.1(40)	
Hexachlorobutadiene	104	10	100	0	104	63	130	101	3.1(21)	
1,2,3-Trichlorobenzene	42.1	10	50	0	84	55	138	40.49	3.8(36)	

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Date: *07-May-12*

QC Summary Report

Work Order: 12042403

Surr: 1,2-Dichloroethane-d4	50		50	99.9	70	130
Surr: Toluene-d8	49.2		50	98	70	130
Surr: 4-Bromofluorobenzene	46.8		50	94	70	130

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

L51 = Analyte recovery was above acceptance limits for the LCS, but was acceptable in the MS/MSD.

Alpha Analytical, Inc.

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Date: 07-May-12

QC Summary Report

Work Order: 12042403

Method Blank Type: **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12043013.D** Batch ID: **MS15W0430M** Analysis Date: **04/30/2012 14:43**

Sample ID: **MBLK MS15W0430M** Units : **µg/L** Run ID: **MSD_15_120430B** Prep Date: **04/30/2012 14:43**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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QC Summary Report

Work Order: 12042403

Surr: 1,2-Dichloroethane-d4	10.4	10	104	70	130	
Surr: Toluene-d8	10.1	10	101	70	130	
Surr: 4-Bromofluorobenzene	9.05	10	91	70	130	

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Date: 07-May-12

QC Summary Report

Work Order: 12042403

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method SW8260B**

File ID: **12043011.D** Batch ID: **MS15W0430M** Analysis Date: **04/30/2012 13:47**

Sample ID: **LCS MS15W0430M** Units : **µg/L** Run ID: **MSD_15_120430B** Prep Date: **04/30/2012 13:47**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	13.8	1	10		138	70	130(130)			L51
Chloromethane	8.06	2	10		81	70	130			
Vinyl chloride	11.9	1	10		119	70	130			
Chloroethane	9.77	1	10		98	70	130			
Bromomethane	8.17	2	10		82	70	130			
Trichlorofluoromethane	11.7	1	10		117	70	130			
Acetone	334	10	200		167	36	171			
1,1-Dichloroethene	11.2	1	10		112	70	130			
Dichloromethane	9.5	2	10		95	70	130			
Freon-113	12.1	1	10		121	70	137			
trans-1,2-Dichloroethene	11	1	10		110	70	130			
Methyl tert-butyl ether (MTBE)	9.07	0.5	10		91	70	130			
1,1-Dichloroethane	10.8	1	10		108	70	130			
2-Butanone (MEK)	279	10	200		139	70	130(130)			L51
cis-1,2-Dichloroethene	11	1	10		110	70	130			
Bromochloromethane	10.1	1	10		101	70	130			
Chloroform	9.82	1	10		98	70	130			
2,2-Dichloropropane	10.8	1	10		108	70	130			
1,2-Dichloroethane	10.2	1	10		102	70	130			
1,1,1-Trichloroethane	11.2	1	10		112	70	130			
1,1-Dichloropropene	11.7	1	10		117	70	130			
Carbon tetrachloride	10.1	1	10		101	70	130			
Benzene	10.7	0.5	10		107	70	130			
Dibromomethane	10.2	1	10		102	70	130			
1,2-Dichloropropane	9.8	1	10		98	70	130			
Trichloroethene	11	1	10		110	70	130			
Bromodichloromethane	9.42	1	10		94	70	130			
4-Methyl-2-pentanone (MIBK)	25.2	2.5	25		101	20	182			
cis-1,3-Dichloropropene	9.55	1	10		96	70	130			
trans-1,3-Dichloropropene	9.28	1	10		93	70	130			
1,1,2-Trichloroethane	10.2	1	10		102	70	130			
Toluene	10.3	0.5	10		103	70	130			
1,3-Dichloropropane	10.1	1	10		101	70	130			
2-Hexanone	130	5	100		130	20	182			
Dibromochloromethane	9.11	1	10		91	70	130			
1,2-Dibromoethane (EDB)	19.9	2	20		99	70	130			
Tetrachloroethene	11.1	1	10		111	70	130			
1,1,1,2-Tetrachloroethane	11.2	1	10		112	70	130			
Chlorobenzene	10.7	1	10		107	70	130			
Ethylbenzene	10.5	0.5	10		105	70	130			
m,p-Xylene	10.3	0.5	10		103	70	130			
Bromoform	8.85	1	10		89	70	130			
Styrene	9.18	1	10		92	70	130			
o-Xylene	10.2	0.5	10		102	70	130			
1,1,2,2-Tetrachloroethane	10.1	1	10		101	70	130			
1,2,3-Trichloropropane	21.1	2	20		105	70	130			
Isopropylbenzene	10.4	1	10		104	70	130			
Bromobenzene	10.3	1	10		103	70	130			
n-Propylbenzene	10.9	1	10		109	70	130			
4-Chlorotoluene	10.5	1	10		105	70	130			
2-Chlorotoluene	10.5	1	10		105	70	130			
1,3,5-Trimethylbenzene	10.8	1	10		108	70	130			
tert-Butylbenzene	10.6	1	10		106	70	130			
1,2,4-Trimethylbenzene	10.7	1	10		107	70	130			
sec-Butylbenzene	10.8	1	10		108	70	130			
1,3-Dichlorobenzene	9.92	1	10		99	70	130			
1,4-Dichlorobenzene	10.3	1	10		103	70	130			
4-Isopropyltoluene	11	1	10		110	70	130			
1,2-Dichlorobenzene	9.85	1	10		99	70	130			
n-Butylbenzene	10.8	1	10		108	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	51.1	3	50		102	67	130			
1,2,4-Trichlorobenzene	9.79	2	10		98	70	130			
Naphthalene	8.22	2	10		82	70	130			
Hexachlorobutadiene	20.5	2	20		103	70	130			

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Date: *07-May-12*

QC Summary Report

Work Order: 12042403

1,2,3-Trichlorobenzene	8	2	10	80	70	130	
Surr: 1,2-Dichloroethane-d4	9.94		10	99	70	130	
Surr: Toluene-d8	9.98		10	99.8	70	130	
Surr: 4-Bromofluorobenzene	9.36		10	94	70	130	

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QC Summary Report

Work Order: 12042403

Sample Matrix Spike Type: **MS** Test Code: **EPA Method SW8260B**

File ID: **12043025.D** Batch ID: **MS15W0430M** Analysis Date: **04/30/2012 19:04**

Sample ID: **12042403-04AMS** Units : **µg/L** Run ID: **MSD_15_120430B** Prep Date: **04/30/2012 19:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	48.4	2.5	50	0	97	21	138			
Chloromethane	39	10	50	0	78	23	144			
Vinyl chloride	53.5	2.5	50	0	107	49	136			
Chloroethane	46.7	2.5	50	0	93	21	159			
Bromomethane	38.2	10	50	0	76	10	174			
Trichlorofluoromethane	59.1	2.5	50	0	118	32	154			
Acetone	651	50	1000	0	65	10	171			
1,1-Dichloroethene	52.7	2.5	50	0	105	64	130			
Dichloromethane	46	10	50	0	92	69	130			
Freon-113	55.5	2.5	50	0	111	55	141			
trans-1,2-Dichloroethene	51.5	2.5	50	0	103	63	130			
Methyl tert-butyl ether (MTBE)	46.2	1.3	50	0	92	47	150			
1,1-Dichloroethane	51.2	2.5	50	0	102	66	130			
2-Butanone (MEK)	809	50	1000	0	81	23	182			
cis-1,2-Dichloroethene	52.3	2.5	50	0	105	70	130			
Bromochloromethane	52.1	2.5	50	0	104	70	132			
Chloroform	47.3	2.5	50	0	95	70	130			
2,2-Dichloropropane	40.1	2.5	50	0	80	38	154			
1,2-Dichloroethane	52.5	2.5	50	0	105	65	134			
1,1,1-Trichloroethane	52.1	2.5	50	0	104	65	136			
1,1-Dichloropropene	56.3	2.5	50	0	113	68	132			
Carbon tetrachloride	47.7	2.5	50	0	95	58	148			
Benzene	52.2	1.3	50	0	104	59	138			
Dibromomethane	53.2	2.5	50	0	106	70	130			
1,2-Dichloropropane	48.4	2.5	50	0	97	70	131			
Trichloroethene	52.3	2.5	50	0	105	65	144			
Bromodichloromethane	47.9	2.5	50	0	96	50	157			
4-Methyl-2-pentanone (MIBK)	120	13	125	0	96	20	182			
cis-1,3-Dichloropropene	44	2.5	50	0	88	63	131			
trans-1,3-Dichloropropene	45.3	2.5	50	0	91	65	136			
1,1,2-Trichloroethane	55.3	2.5	50	0	111	70	131			
Toluene	48.9	1.3	50	0	98	68	130			
1,3-Dichloropropane	51.7	2.5	50	0	103	70	130			
2-Hexanone	375	25	500	0	75	20	182			
Dibromochloromethane	46.2	2.5	50	0	92	42	155			
1,2-Dibromoethane (EDB)	100	5	100	0	100	70	130			
Tetrachloroethene	51.6	2.5	50	0	103	65	130			
1,1,1,2-Tetrachloroethane	55.8	2.5	50	0	112	70	130			
Chlorobenzene	52.7	2.5	50	0	105	70	130			
Ethylbenzene	50.8	1.3	50	0	102	68	130			
m,p-Xylene	49.5	1.3	50	0	99	68	131			
Bromoform	46.6	2.5	50	0	93	65	143			
Styrene	45.1	2.5	50	0	90	59	153			
o-Xylene	49.6	1.3	50	0	99	70	130			
1,1,2,2-Tetrachloroethane	55.5	2.5	50	0	111	67	130			
1,2,3-Trichloropropane	113	10	100	0	113	70	130			
Isopropylbenzene	49	2.5	50	0	98	55	138			
Bromobenzene	51	2.5	50	0	102	70	130			
n-Propylbenzene	50.8	2.5	50	0	102	67	133			
4-Chlorotoluene	50.5	2.5	50	0	101	70	130			
2-Chlorotoluene	49.9	2.5	50	0	99.8	70	130			
1,3,5-Trimethylbenzene	51.2	2.5	50	0	102	67	134			
tert-Butylbenzene	50.1	2.5	50	0	100	55	147			
1,2,4-Trimethylbenzene	50.8	2.5	50	0	102	65	135			
sec-Butylbenzene	51.4	2.5	50	0	103	68	135			
1,3-Dichlorobenzene	48	2.5	50	0	96	70	130			
1,4-Dichlorobenzene	50.4	2.5	50	0	101	70	130			
4-Isopropyltoluene	51.6	2.5	50	0	103	68	132			
1,2-Dichlorobenzene	49.6	2.5	50	0	99	70	130			
n-Butylbenzene	50.7	2.5	50	0	101	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	269	15	250	0	107	64	130			
1,2,4-Trichlorobenzene	47.7	10	50	0	95	62	133			
Naphthalene	42.8	10	50	0	86	32	166			
Hexachlorobutadiene	99.8	10	100	0	99.8	63	130			
1,2,3-Trichlorobenzene	40.6	10	50	0	81	55	138			

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QC Summary Report

Work Order: 12042403

Surr: 1,2-Dichloroethane-d4	52	50	104	70	130
Surr: Toluene-d8	48.3	50	97	70	130
Surr: 4-Bromofluorobenzene	45	50	90	70	130

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Date: 07-May-12

QC Summary Report

Work Order: 12042403

Sample Matrix Spike Duplicate Type: **MSD** Test Code: **EPA Method SW8260B**

File ID: **12043026.D** Batch ID: **MS15W0430M** Analysis Date: **04/30/2012 19:26**

Sample ID: **12042403-04AMSD** Units : **µg/L** Run ID: **MSD_15_120430B** Prep Date: **04/30/2012 19:26**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	48.1	2.5	50	0	96	21	138	48.39	0.6(33)	
Chloromethane	37.6	10	50	0	75	23	144	38.96	3.5(27)	
Vinyl chloride	51.7	2.5	50	0	103	49	136	53.53	3.5(21)	
Chloroethane	45.1	2.5	50	0	90	21	159	46.67	3.4(40)	
Bromomethane	40.9	10	50	0	82	10	174	38.23	6.8(40)	
Trichlorofluoromethane	54.4	2.5	50	0	109	32	154	59.07	8.3(37)	
Acetone	660	50	1000	0	66	10	171	650.5	1.4(23)	
1,1-Dichloroethene	50.3	2.5	50	0	101	64	130	52.74	4.8(21)	
Dichloromethane	44.9	10	50	0	90	69	130	46	2.5(20)	
Freon-113	54	2.5	50	0	108	55	141	55.54	2.8(40)	
trans-1,2-Dichloroethene	50	2.5	50	0	100	63	130	51.45	2.8(20)	
Methyl tert-butyl ether (MTBE)	48.4	1.3	50	0	97	47	150	46.24	4.6(40)	
1,1-Dichloroethane	49.7	2.5	50	0	99	66	130	51.17	2.9(20)	
2-Butanone (MEK)	820	50	1000	0	82	23	182	809.2	1.3(22)	
cis-1,2-Dichloroethene	51.4	2.5	50	0	103	70	130	52.29	1.8(20)	
Bromochloromethane	53.4	2.5	50	0	107	70	132	52.11	2.5(20)	
Chloroform	46.2	2.5	50	0	92	70	130	47.3	2.4(20)	
2,2-Dichloropropane	39.9	2.5	50	0	80	38	154	40.06	0.3(22)	
1,2-Dichloroethane	52.1	2.5	50	0	104	65	134	52.48	0.8(20)	
1,1,1-Trichloroethane	51.3	2.5	50	0	103	65	136	52.05	1.5(20)	
1,1-Dichloropropene	54	2.5	50	0	108	68	132	56.32	4.3(20)	
Carbon tetrachloride	46.7	2.5	50	0	93	58	148	47.65	1.9(20)	
Benzene	49.9	1.3	50	0	99.9	59	138	52.21	4.4(21)	
Dibromomethane	52.6	2.5	50	0	105	70	130	53.23	1.1(20)	
1,2-Dichloropropane	47.6	2.5	50	0	95	70	131	48.41	1.7(20)	
Trichloroethene	50.5	2.5	50	0	101	65	144	52.34	3.6(20)	
Bromodichloromethane	47.2	2.5	50	0	94	50	157	47.94	1.6(20)	
4-Methyl-2-pentanone (MIBK)	121	13	125	0	97	20	182	119.5	1.5(20)	
cis-1,3-Dichloropropene	43.9	2.5	50	0	88	63	131	44.01	0.3(20)	
trans-1,3-Dichloropropene	45	2.5	50	0	90	65	136	45.3	0.7(20)	
1,1,2-Trichloroethane	53.7	2.5	50	0	107	70	131	55.27	2.9(20)	
Toluene	47.9	1.3	50	0	96	68	130	48.93	2.2(20)	
1,3-Dichloropropane	52.6	2.5	50	0	105	70	130	51.68	1.7(20)	
2-Hexanone	391	25	500	0	78	20	182	375.3	4.2(20)	
Dibromochloromethane	46.8	2.5	50	0	94	42	155	46.22	1.3(20)	
1,2-Dibromoethane (EDB)	102	5	100	0	102	70	130	100.2	2.1(20)	
Tetrachloroethene	50.5	2.5	50	0	101	65	130	51.61	2.2(20)	
1,1,1,2-Tetrachloroethane	54.9	2.5	50	0	110	70	130	55.77	1.7(20)	
Chlorobenzene	51.3	2.5	50	0	103	70	130	52.69	2.7(20)	
Ethylbenzene	49.2	1.3	50	0	98	68	130	50.77	3.1(20)	
m,p-Xylene	47.7	1.3	50	0	95	68	131	49.5	3.6(20)	
Bromoform	47	2.5	50	0	94	65	143	46.57	0.8(20)	
Styrene	44.2	2.5	50	0	88	59	153	45.13	2.2(37)	
o-Xylene	48.2	1.3	50	0	96	70	130	49.62	3.0(20)	
1,1,2,2-Tetrachloroethane	55.3	2.5	50	0	111	67	130	55.5	0.3(20)	
1,2,3-Trichloropropane	114	10	100	0	114	70	130	113.3	0.6(20)	
Isopropylbenzene	48.1	2.5	50	0	96	55	138	48.96	1.8(20)	
Bromobenzene	51.4	2.5	50	0	103	70	130	50.96	0.8(20)	
n-Propylbenzene	50.3	2.5	50	0	101	67	133	50.8	0.9(30)	
4-Chlorotoluene	50.2	2.5	50	0	100	70	130	50.5	0.6(20)	
2-Chlorotoluene	49	2.5	50	0	98	70	130	49.9	1.9(20)	
1,3,5-Trimethylbenzene	50.5	2.5	50	0	101	67	134	51.19	1.4(21)	
tert-Butylbenzene	49.4	2.5	50	0	99	55	147	50.1	1.5(20)	
1,2,4-Trimethylbenzene	50	2.5	50	0	100	65	135	50.84	1.6(25)	
sec-Butylbenzene	49.9	2.5	50	0	99.9	68	135	51.42	2.9(20)	
1,3-Dichlorobenzene	47.8	2.5	50	0	96	70	130	48.02	0.5(20)	
1,4-Dichlorobenzene	50.5	2.5	50	0	101	70	130	50.4	0.2(20)	
4-Isopropyltoluene	50.8	2.5	50	0	102	68	132	51.56	1.5(20)	
1,2-Dichlorobenzene	49.4	2.5	50	0	99	70	130	49.62	0.5(20)	
n-Butylbenzene	49.9	2.5	50	0	99.8	62	134	50.69	1.6(21)	
1,2-Dibromo-3-chloropropane (DBCP)	281	15	250	0	112	64	130	268.6	4.5(20)	
1,2,4-Trichlorobenzene	49.4	10	50	0	99	62	133	47.69	3.5(29)	
Naphthalene	47	10	50	0	94	32	166	42.77	9.4(40)	
Hexachlorobutadiene	101	10	100	0	101	63	130	99.75	1.0(21)	
1,2,3-Trichlorobenzene	44	10	50	0	88	55	138	40.55	8.1(36)	

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *07-May-12*

QC Summary Report

Work Order: 12042403

Surr: 1,2-Dichloroethane-d4	51.1	50	102	70	130
Surr: Toluene-d8	49	50	98	70	130
Surr: 4-Bromofluorobenzene	45.6	50	91	70	130

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

L51 = Analyte recovery was above acceptance limits for the LCS, but was acceptable in the MS/MSD.

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12042403

Report Due By : 5:00 PM On : 08-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : David Loera, Chase Brogdon

PO : 287215

Client's COC # : 53785, 53777 Job : 100006114/JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
2 °C	24-Apr-12	**24-Apr-12**

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12042403-01A	MW-7	AQ	04/23/12 10:16	5	0	10	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042403-02A	MW-16	AQ	04/23/12 12:27	5	0	10	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042403-03A	DUPE-8-2Q12	AQ	04/23/12 12:27	5	0	10	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042403-04A	MW-15	AQ	04/23/12 13:36	10	0	10	Cl, NO3, NO2,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	MS/MSD
BMI12042403-05A	MW-14-5	AQ	04/23/12 09:34	5	0	10	Cl, NO3, NO2, P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042403-06A	MW-14-4	AQ	04/23/12 10:12	10	0	10	Cl, NO3, NO2, P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	MS/MSD
BMI12042403-07A	MW-14-3	AQ	04/23/12 11:21	5	0	10	Cl, NO3, NO2, P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042403-08A	MW-14-2	AQ	04/23/12 11:55	5	0	10	Cl, NO3, NO2, P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	

Comments: No Security seals. Frozen IceTemp. Blank #7280, 9771 received @2°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Saralotte	Saralotte	**Alpha Analytical, Inc.**	4/24/12 12:50

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

CA

WorkOrder : BMIS12042403

Report Due By : 5:00 PM On : 08-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : David Loera, Chase Brogdon

PO : 287215

Client's COC # : 53785, 53777 Job : 100006114/JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
2 °C	24-Apr-12	24-Apr-12

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12042403-09A	MW-14-1	AQ	04/23/12 12:28	5	0	10	Cl, NO3, NO2, P,SO4	Perchlorate	Alk (Bicarb/carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042403-10A	EB-1-4/23/12	AQ	04/23/12 12:15	5	0	10	Cl, NO3, NO2, P,SO4	Perchlorate	Alk (Bicarb/carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042403-11A	TB-1-4/23/12	AQ	04/23/12 07:00	1	0	10							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 1/9/12

Comments: No Security seals. Frozen IceTemp. Blank #7280, 9771 received @2°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Loffee	Sara Loffee	Alpha Analytical, Inc.	4/24/12 12:50

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

55785

Billing Information:
Company Name Battelle
Attn:
Address 505 King Ave
City, State, Zip Columbus, OH 43201
Phone Number 614-726-7311 Fax 614-458-6641

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ___ CA X NV ___ WA ___ DOD Site ___
ID ___ OR ___ OTHER ___ Page # 1 of 1

Consultant / Client Name: David Conner
Address:
City, State, Zip:
Job # 100006114 Job Name: JPL-GW-2012
Report Attention / Project Manager
Name: David Conner
Email: Connerd@battelle.org
Phone: 614-726-7311 Mobile: 614-458-6641
P.O. # 287215

Data Validation Level: III or IV
EDD / EDF? YES ___ NO ___
Global ID # ___

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	# Containers**	Analyses Required: VOCs	Anions*	Cations**	Perchlorate	pH, TDS	Alkalinity	Dissolved Carbonate	REMARKS
1016	4-23-12	AQ	BMI1204403-01A	MW-7	10		2P 3V	X	X	X	X	X	X	X	
1227	4-23-12	AQ	-02A	MW-16	10		2P 3V	X	X	X	X	X	X	X	
1227	4-23-12	AQ	-03A	DUPE-8-2012	10		2P 3V	X	X	X	X	X	X	X	
1336	4-23-12	AQ	-04A	MW-15	10		4P 6V	X	X	X	X	X	X	X	MS/MSD; pH, orthophosphate

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: *Chloride, Nitrate, Nitrite, Orthophosphate, Sulfate **Total Cr, Pb, Ca, Mg, As, Fe, Na, K

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: David Loera

Relinquished by: (Signature/Affiliation) David L / Battelle	Received by: (Signature/Affiliation) / IDEAS	Date: 4/23/12	Time: 1400
Relinquished by: (Signature/Affiliation) / INSIGHT	Received by: (Signature/Affiliation) FED-EX tracking # 8989 1206 7764	Date: 4/23/12	Time: 1500
Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation) Anneliese / alpha	Date: 4/24/12	Time: 9:40

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

53777

Billing Information:
Company Name BATTELLE
Attn: GERALD TOMPKINS
Address 505 KING AVE.
City, State, Zip COLUMBUS, OH 43201
Phone Number ______ Fax ______

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ___ **CA** X **NV** ___ **WA** ___ **DOD Site** ___
ID ___ **OR** ___ **OTHER** ___ **Page #** 1 **of** 1

Consultant / Client Name: BATTELLE / DAVID CONNER
Address: 3990 OLD TOWN AVE, C-205
City, State, Zip: SAN DIEGO, CA 92110
P.O. # 286479

Job # 100006114 / PO#286479
Job Name: SPL GW MON. 2012

Report Attention / Project Manager
Name: DAVID CONNER
Email: connerd@battelle.org
Phone: ______ Mobile: (619) 726-7311

Analyses Required: (524.2) VOCs; (200.8) *; PERCHLORATE (314.0); (SM2320B, SM2540C, 150.2) *; (300.0) *

Data Validation Level: (III) or IV
EDD / EDF? YES ___ NO ___
Global ID # ___

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number	Office (Use Only)	Sample Description	TAT	Field Filtered	# Containers**	(524.2) VOCs	(200.8) *	Perchlorate (314.0)	(SM2320B, SM2540C, 150.2) *	(300.0) *			REMARKS
0934	4/23/12	AQ		-05A	MW-14-5			3V, 2P	X	X	X	X	X			
1012	↓	↓		-06A	MW-14-4			6V, 4P	X	X	X	X	X			MS/MSD
1121	↓	↓		-07A	MW-14-3			3V, 2P	X	X	X	X	X			
1155	↓	↓		-08A	MW-14-2			3V, 2P	X	X	X	X	X			
1228	↓	↓		-09A	MW-14-1			3V, 2P	X	X	X	X	X			
1215	↓	↓		-10A	EB-1 - 4/23/12			3V, 2P	X	X	X	X	X			EQUIP BLANK
0700	4/23/12	AQ		-11A	TB-1 - 4/23/12			1V	X							TRIP BLANK

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: *(200.8) - TOTAL Cr, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320B, SM2540C, 150.2) - CO_3, HCO_3, TDS, PH, ALK. *(300.0) - CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: CHASE BROGDON.

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:
[signature] / INSIGHT	FED-EX TRACKING # 8989 1206 7764	4/23/12	1500
	[signature] / alpha	4/24/12	9:40

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *11-Jun-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Work Order: BMI12042502 **Cooler Temp:** 0 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12042502-01A	MW-6	Aqueous
12042502-02A	MW-13	Aqueous
12042502-03A	MW-8	Aqueous
12042502-04A	MW-22-5	Aqueous
12042502-05A	MW-22-4	Aqueous
12042502-06A	MW-22-3	Aqueous
12042502-07A	MW-22-2	Aqueous
12042502-08A	MW-22-1	Aqueous
12042502-09A	DUPE-1-2Q12	Aqueous
12042502-10A	EB-2-4/24/12	Aqueous
12042502-11A	TB-2-4/24/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/25/12

Job: 100006114/JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-6**					
Lab ID : BMI12042502-01A	Chloride	130	50 mg/L	04/25/12 09:01	04/27/12 07:51
Date Sampled 04/24/12 08:58	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 16:10
	Nitrate (NO3) - N	14	0.25 mg/L	04/25/12 09:01	04/25/12 16:10
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 16:10
	Sulfate (SO4)	190	75 mg/L	04/25/12 09:01	04/27/12 07:51
Client ID: **MW-13**					
Lab ID : BMI12042502-02A	Chloride	72	0.50 mg/L	04/25/12 09:01	04/25/12 16:29
Date Sampled 04/24/12 11:00	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 16:29
	Nitrate (NO3) - N	3.2	0.25 mg/L	04/25/12 09:01	04/25/12 16:29
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 16:29
	Sulfate (SO4)	53	0.50 mg/L	04/25/12 09:01	04/25/12 16:29
Client ID: **MW-8**					
Lab ID : BMI12042502-03A	Chloride	9.2	0.50 mg/L	04/25/12 09:01	04/25/12 16:47
Date Sampled 04/24/12 12:57	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 16:47
	Nitrate (NO3) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 16:47
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 16:47
	Sulfate (SO4)	21	0.50 mg/L	04/25/12 09:01	04/25/12 16:47
Client ID: **MW-22-5**					
Lab ID : BMI12042502-04A	Chloride	7.0	0.50 mg/L	04/25/12 09:01	04/25/12 17:06
Date Sampled 04/24/12 08:40	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 17:06
	Nitrate (NO3) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 17:06
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 17:06
	Sulfate (SO4)	29	0.50 mg/L	04/25/12 09:01	04/25/12 17:06
Client ID: **MW-22-4**					
Lab ID : BMI12042502-05A	Chloride	15	0.50 mg/L	04/25/12 09:01	04/25/12 17:24
Date Sampled 04/24/12 09:10	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 17:24
	Nitrate (NO3) - N	3.6	0.25 mg/L	04/25/12 09:01	04/25/12 17:24
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 17:24
	Sulfate (SO4)	18	0.50 mg/L	04/25/12 09:01	04/25/12 17:24
Client ID: **MW-22-3**					
Lab ID : BMI12042502-06A	Chloride	58	0.50 mg/L	04/25/12 09:01	04/25/12 18:20
Date Sampled 04/24/12 09:44	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 18:20
	Nitrate (NO3) - N	11	0.25 mg/L	04/25/12 09:01	04/25/12 18:20
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 18:20
	Sulfate (SO4)	65	0.50 mg/L	04/25/12 09:01	04/25/12 18:20
Client ID: **MW-22-2**					
Lab ID : BMI12042502-07A	Chloride	76	50 mg/L	04/25/12 09:01	04/27/12 08:09
Date Sampled 04/24/12 10:16	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 18:38
	Nitrate (NO3) - N	8.8	0.25 mg/L	04/25/12 09:01	04/25/12 18:38
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 18:38
	Sulfate (SO4)	86	0.50 mg/L	04/25/12 09:01	04/25/12 18:38

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

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Client ID: **MW-22-1**					
Lab ID : BMI12042502-08A	Chloride	110	50 mg/L	04/25/12 09:01	04/27/12 08:28
Date Sampled 04/24/12 10:50	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 18:57
	Nitrate (NO3) - N	9.4	0.25 mg/L	04/25/12 09:01	04/25/12 18:57
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 18:57
	Sulfate (SO4)	140	0.50 mg/L	04/25/12 09:01	04/25/12 18:57
Client ID: **DUPE-1-2Q12**					
Lab ID : BMI12042502-09A	Chloride	110	50 mg/L	04/25/12 09:01	04/27/12 08:46
Date Sampled 04/24/12 00:00	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 19:15
	Nitrate (NO3) - N	9.5	0.25 mg/L	04/25/12 09:01	04/25/12 19:15
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 19:15
	Sulfate (SO4)	140	0.50 mg/L	04/25/12 09:01	04/25/12 19:15
Client ID: **EB-2-4/24/12**					
Lab ID : BMI12042502-10A	Chloride	ND	0.50 mg/L	04/25/12 09:01	04/25/12 19:34
Date Sampled 04/24/12 10:34	Nitrite (NO2) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 19:34
	Nitrate (NO3) - N	ND	0.25 mg/L	04/25/12 09:01	04/25/12 19:34
	Phosphate, ortho - P	ND	0.50 mg/L	04/25/12 09:01	04/25/12 19:34
	Sulfate (SO4)	ND	0.50 mg/L	04/25/12 09:01	04/25/12 19:34

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

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5/4/12

Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/25/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-6**				
Lab ID : BMI12042502-01A Perchlorate	3.43	1.00 µg/L	04/26/12 15:29	04/26/12 17:48
Date Sampled 04/24/12 08:58				
Client ID: **MW-13**				
Lab ID : BMI12042502-02A Perchlorate	189	10.0 µg/L	04/26/12 15:29	04/27/12 07:19
Date Sampled 04/24/12 11:00				
Client ID: **MW-8**				
Lab ID : BMI12042502-03A Perchlorate	ND	1.00 µg/L	04/26/12 15:29	04/26/12 19:01
Date Sampled 04/24/12 12:57				
Client ID: **MW-22-5**				
Lab ID : BMI12042502-04A Perchlorate	ND	1.00 µg/L	04/26/12 15:29	04/26/12 19:20
Date Sampled 04/24/12 08:40				
Client ID: **MW-22-4**				
Lab ID : BMI12042502-05A Perchlorate	ND	1.00 µg/L	04/26/12 15:29	04/26/12 19:38
Date Sampled 04/24/12 09:10				
Client ID: **MW-22-3**				
Lab ID : BMI12042502-06A Perchlorate	4.05	1.00 µg/L	04/26/12 15:29	04/26/12 19:57
Date Sampled 04/24/12 09:44				
Client ID: **MW-22-2**				
Lab ID : BMI12042502-07A Perchlorate	3.15	1.00 µg/L	04/26/12 15:29	04/26/12 20:15
Date Sampled 04/24/12 10:16				
Client ID: **MW-22-1**				
Lab ID : BMI12042502-08A Perchlorate	6.53	1.00 µg/L	04/26/12 15:29	04/26/12 20:33
Date Sampled 04/24/12 10:50				
Client ID: **DUPE-1-2Q12**				
Lab ID : BMI12042502-09A Perchlorate	6.51	1.00 µg/L	04/26/12 15:29	04/26/12 20:52
Date Sampled 04/24/12 00:00				
Client ID: **EB-2-4/24/12**				
Lab ID : BMI12042502-10A Perchlorate	ND	1.00 µg/L	04/26/12 15:29	04/26/12 21:29
Date Sampled 04/24/12 10:34				

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

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Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/25/12

Job: 100006114/JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-6**				
Lab ID : BMI12042502-01A Alkalinity, Bicarbonate (As CaCO3)	220	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 08:58 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12	04/26/12
Alkalinity, Total (As CaCO3 at pH 4.5)	220	10 mg/L	04/26/12	04/26/12
Client ID: **MW-13**				
Lab ID : BMI12042502-02A Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 11:00 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12	04/26/12
Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	04/26/12	04/26/12
Client ID: **MW-8**				
Lab ID : BMI12042502-03A Alkalinity, Bicarbonate (As CaCO3)	200	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 12:57 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12	04/26/12
Alkalinity, Total (As CaCO3 at pH 4.5)	200	10 mg/L	04/26/12	04/26/12
Client ID: **MW-22-5**				
Lab ID : BMI12042502-04A Alkalinity, Bicarbonate (As CaCO3)	140	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 08:40 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12	04/26/12
Alkalinity, Total (As CaCO3 at pH 4.5)	140	10 mg/L	04/26/12	04/26/12
Client ID: **MW-22-4**				
Lab ID : BMI12042502-05A Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 09:10 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12	04/26/12
Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	04/26/12	04/26/12
Client ID: **MW-22-3**				
Lab ID : BMI12042502-06A Alkalinity, Bicarbonate (As CaCO3)	180	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 09:44 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12	04/26/12
Alkalinity, Total (As CaCO3 at pH 4.5)	180	10 mg/L	04/26/12	04/26/12
Client ID: **MW-22-2**				
Lab ID : BMI12042502-07A Alkalinity, Bicarbonate (As CaCO3)	230	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 10:16 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12	04/26/12
Alkalinity, Total (As CaCO3 at pH 4.5)	230	10 mg/L	04/26/12	04/26/12
Client ID: **MW-22-1**				
Lab ID : BMI12042502-08A Alkalinity, Bicarbonate (As CaCO3)	280	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 10:50 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12	04/26/12
Alkalinity, Total (As CaCO3 at pH 4.5)	280	10 mg/L	04/26/12	04/26/12
Client ID: **DUPE-1-2Q12**				
Lab ID : BMI12042502-09A Alkalinity, Bicarbonate (As CaCO3)	280	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 00:00 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12	04/26/12
Alkalinity, Total (As CaCO3 at pH 4.5)	280	10 mg/L	04/26/12	04/26/12

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Client ID: **EB-2-4/24/12**

Lab ID : BMI12042502-10A

Date Sampled 04/24/12 10:34

Alkalinity, Bicarbonate (As CaCO3)	ND	10 mg/L	04/26/12	04/26/12
Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12	04/26/12
Alkalinity, Total (As CaCO3 at pH 4.5)	ND	10 mg/L	04/26/12	04/26/12

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/25/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-6**				
Lab ID : BMI12042502-01A Sodium (Na)	42	0.50 mg/L	04/25/12 16:59	05/05/12 04:10
Date Sampled 04/24/12 08:58 Magnesium (Mg)	46	0.50 mg/L	04/25/12 16:59	05/05/12 04:10
Potassium (K)	2.6	0.50 mg/L	04/25/12 16:59	05/05/12 04:10
Calcium (Ca)	140	0.50 mg/L	04/25/12 16:59	05/05/12 04:10
Chromium (Cr)	0.083	0.0050 mg/L	04/25/12 16:59	05/05/12 04:10
Iron (Fe)	3.3	0.30 mg/L	04/25/12 16:59	05/05/12 04:10
Arsenic (As)	0.0025	0.0020 mg/L	04/25/12 16:59	05/05/12 04:10
Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:10
Client ID: **MW-13**				
Lab ID : BMI12042502-02A Sodium (Na)	28	0.50 mg/L	04/25/12 16:59	05/05/12 04:15
Date Sampled 04/24/12 11:00 Magnesium (Mg)	21	0.50 mg/L	04/25/12 16:59	05/05/12 04:15
Potassium (K)	2.6	0.50 mg/L	04/25/12 16:59	05/05/12 04:15
Calcium (Ca)	63	0.50 mg/L	04/25/12 16:59	05/05/12 04:15
Chromium (Cr)	0.011	0.0050 mg/L	04/25/12 16:59	05/05/12 04:15
Iron (Fe)	0.69	0.30 mg/L	04/25/12 16:59	05/05/12 04:15
Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 04:15
Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:15
Client ID: **MW-8**				
Lab ID : BMI12042502-03A Sodium (Na)	20	0.50 mg/L	04/25/12 16:59	05/05/12 04:21
Date Sampled 04/24/12 12:57 Magnesium (Mg)	15	0.50 mg/L	04/25/12 16:59	05/05/12 04:21
Potassium (K)	2.4	0.50 mg/L	04/25/12 16:59	05/05/12 04:21
Calcium (Ca)	44	0.50 mg/L	04/25/12 16:59	05/05/12 04:21
Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:21
Iron (Fe)	0.48	0.30 mg/L	04/25/12 16:59	05/05/12 04:21
Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/07/12 16:49
Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:21
Client ID: **MW-22-5**				
Lab ID : BMI12042502-04A Sodium (Na)	65	0.50 mg/L	04/25/12 16:59	05/05/12 04:27
Date Sampled 04/24/12 08:40 Magnesium (Mg)	0.94	0.50 mg/L	04/25/12 16:59	05/05/12 04:27
Potassium (K)	0.78	0.50 mg/L	04/25/12 16:59	05/05/12 04:27
Calcium (Ca)	3.0	0.50 mg/L	04/25/12 16:59	05/05/12 04:27
Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:27
Iron (Fe)	ND	0.30 mg/L	04/25/12 16:59	05/05/12 04:27
Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 04:27
Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:27

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Client ID: **MW-22-4**					
Lab ID : BMI12042502-05A	Sodium (Na)	30	0.50 mg/L	04/25/12 16:59	05/05/12 04:33
Date Sampled 04/24/12 09:10	Magnesium (Mg)	12	0.50 mg/L	04/25/12 16:59	05/05/12 04:33
	Potassium (K)	1.7	0.50 mg/L	04/25/12 16:59	05/05/12 04:33
	Calcium (Ca)	39	0.50 mg/L	04/25/12 16:59	05/05/12 04:33
	Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:33
	Iron (Fe)	0.41	0.30 mg/L	04/25/12 16:59	05/05/12 04:33
	Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 04:33
	Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:33
Client ID: **MW-22-3**					
Lab ID : BMI12042502-06A	Sodium (Na)	41	0.50 mg/L	04/25/12 16:59	05/05/12 04:39
Date Sampled 04/24/12 09:44	Magnesium (Mg)	20	0.50 mg/L	04/25/12 16:59	05/05/12 04:39
	Potassium (K)	2.2	0.50 mg/L	04/25/12 16:59	05/05/12 04:39
	Calcium (Ca)	60	0.50 mg/L	04/25/12 16:59	05/05/12 04:39
	Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:39
	Iron (Fe)	0.68	0.30 mg/L	04/25/12 16:59	05/05/12 04:39
	Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/07/12 16:55
	Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:39
Client ID: **MW-22-2**					
Lab ID : BMI12042502-07A	Sodium (Na)	37	0.50 mg/L	04/25/12 16:59	05/05/12 04:44
Date Sampled 04/24/12 10:16	Magnesium (Mg)	29	0.50 mg/L	04/25/12 16:59	05/05/12 04:44
	Potassium (K)	2.4	0.50 mg/L	04/25/12 16:59	05/05/12 04:44
	Calcium (Ca)	75	0.50 mg/L	04/25/12 16:59	05/05/12 04:44
	Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:44
	Iron (Fe)	0.88	0.30 mg/L	04/25/12 16:59	05/05/12 04:44
	Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 04:44
	Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:44
Client ID: **MW-22-1**					
Lab ID : BMI12042502-08A	Sodium (Na)	34	0.50 mg/L	04/25/12 16:59	05/05/12 04:50
Date Sampled 04/24/12 10:50	Magnesium (Mg)	45	0.50 mg/L	04/25/12 16:59	05/05/12 04:50
	Potassium (K)	2.7	0.50 mg/L	04/25/12 16:59	05/05/12 04:50
	Calcium (Ca)	110	0.50 mg/L	04/25/12 16:59	05/05/12 04:50
	Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:50
	Iron (Fe)	1.3	0.30 mg/L	04/25/12 16:59	05/05/12 04:50
	Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 04:50
	Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:50
Client ID: **DUPE-1-2Q12**					
Lab ID : BMI12042502-09A	Sodium (Na)	34	0.50 mg/L	04/25/12 16:59	05/05/12 04:56
Date Sampled 04/24/12 00:00	Magnesium (Mg)	45	0.50 mg/L	04/25/12 16:59	05/05/12 04:56
	Potassium (K)	2.7	0.50 mg/L	04/25/12 16:59	05/05/12 04:56
	Calcium (Ca)	110	0.50 mg/L	04/25/12 16:59	05/05/12 04:56
	Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:56
	Iron (Fe)	1.3	0.30 mg/L	04/25/12 16:59	05/05/12 04:56
	Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 04:56
	Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 04:56
Client ID: **EB-2-4/24/12**					
Lab ID : BMI12042502-10A	Sodium (Na)	ND	0.50 mg/L	04/25/12 16:59	05/05/12 05:02
Date Sampled 04/24/12 10:34	Magnesium (Mg)	ND	0.50 mg/L	04/25/12 16:59	05/05/12 05:02
	Potassium (K)	ND	0.50 mg/L	04/25/12 16:59	05/05/12 05:02
	Calcium (Ca)	ND	0.50 mg/L	04/25/12 16:59	05/05/12 05:02
	Chromium (Cr)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 05:02
	Iron (Fe)	ND	0.30 mg/L	04/25/12 16:59	05/05/12 05:02
	Arsenic (As)	ND	0.0020 mg/L	04/25/12 16:59	05/05/12 05:02
	Lead (Pb)	ND	0.0050 mg/L	04/25/12 16:59	05/05/12 05:02

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ND = Not Detected

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Date Received : 04/25/12

Job: 100006114/JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-6**					
Lab ID : BMI12042502-01A	pH	6.8	1.7 pH Units	04/25/12 15:46	04/25/12 15:46
Date Sampled 04/24/12 08:58	pH - Temperature	20	1.0 °C	04/25/12 15:46	04/25/12 15:46
Client ID: **MW-13**					
Lab ID : BMI12042502-02A	pH	7.0	1.7 pH Units	04/25/12 15:48	04/25/12 15:48
Date Sampled 04/24/12 11:00	pH - Temperature	19	1.0 °C	04/25/12 15:48	04/25/12 15:48
Client ID: **MW-8**					
Lab ID : BMI12042502-03A	pH	7.2	1.7 pH Units	04/25/12 15:50	04/25/12 15:50
Date Sampled 04/24/12 12:57	pH - Temperature	19	1.0 °C	04/25/12 15:50	04/25/12 15:50
Client ID: **MW-22-5**					
Lab ID : BMI12042502-04A	pH	9.5	1.7 pH Units	04/25/12 15:52	04/25/12 15:52
Date Sampled 04/24/12 08:40	pH - Temperature	19	1.0 °C	04/25/12 15:52	04/25/12 15:52
Client ID: **MW-22-4**					
Lab ID : BMI12042502-05A	pH	7.9	1.7 pH Units	04/25/12 15:53	04/25/12 15:53
Date Sampled 04/24/12 09:10	pH - Temperature	19	1.0 °C	04/25/12 15:53	04/25/12 15:53
Client ID: **MW-22-3**					
Lab ID : BMI12042502-06A	pH	7.9	1.7 pH Units	04/25/12 15:55	04/25/12 15:55
Date Sampled 04/24/12 09:44	pH - Temperature	19	1.0 °C	04/25/12 15:55	04/25/12 15:55
Client ID: **MW-22-2**					
Lab ID : BMI12042502-07A	pH	7.9	1.7 pH Units	04/25/12 15:57	04/25/12 15:57
Date Sampled 04/24/12 10:16	pH - Temperature	19	1.0 °C	04/25/12 15:57	04/25/12 15:57
Client ID: **MW-22-1**					
Lab ID : BMI12042502-08A	pH	7.7	1.7 pH Units	04/25/12 16:00	04/25/12 16:00
Date Sampled 04/24/12 10:50	pH - Temperature	19	1.0 °C	04/25/12 16:00	04/25/12 16:00
Client ID: **DUPE-1-2Q12**					
Lab ID : BMI12042502-09A	pH	7.6	1.7 pH Units	04/25/12 16:02	04/25/12 16:02
Date Sampled 04/24/12 00:00	pH - Temperature	19	1.0 °C	04/25/12 16:02	04/25/12 16:02
Client ID: **EB-2-4/24/12**					
Lab ID : BMI12042502-10A	pH	7.0	1.7 pH Units	04/25/12 16:12	04/25/12 16:12
Date Sampled 04/24/12 10:34	pH - Temperature	19	1.0 °C	04/25/12 16:12	04/25/12 16:12

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.

The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/7/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/25/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-6**					
Lab ID : BMI12042502-01A	Solids, Total Dissolved (TDS)	770	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 08:58					
Client ID: **MW-13**					
Lab ID : BMI12042502-02A	Solids, Total Dissolved (TDS)	390	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 11:00					
Client ID: **MW-8**					
Lab ID : BMI12042502-03A	Solids, Total Dissolved (TDS)	240	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 12:57					
Client ID: **MW-22-5**					
Lab ID : BMI12042502-04A	Solids, Total Dissolved (TDS)	180	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 08:40					
Client ID: **MW-22-4**					
Lab ID : BMI12042502-05A	Solids, Total Dissolved (TDS)	240	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 09:10					
Client ID: **MW-22-3**					
Lab ID : BMI12042502-06A	Solids, Total Dissolved (TDS)	410	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 09:44					
Client ID: **MW-22-2**					
Lab ID : BMI12042502-07A	Solids, Total Dissolved (TDS)	480	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 10:16					
Client ID: **MW-22-1**					
Lab ID : BMI12042502-08A	Solids, Total Dissolved (TDS)	650	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 10:50					
Client ID: **DUPE-1-2Q12**					
Lab ID : BMI12042502-09A	Solids, Total Dissolved (TDS)	650	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 00:00					
Client ID: **EB-2-4/24/12**					
Lab ID : BMI12042502-10A	Solids, Total Dissolved (TDS)	ND	10 mg/L	04/26/12	04/26/12
Date Sampled 04/24/12 10:34					

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/25/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-6**					
Lab ID : BMI12042502-01A	Acrylonitrile	ND	10 µg/L	05/01/12 12:25	05/01/12 12:25
Date Sampled 04/24/12 08:58	Allyl chloride	ND	2.0 µg/L	05/01/12 12:25	05/01/12 12:25
	Carbon disulfide	ND	2.0 µg/L	05/01/12 12:25	05/01/12 12:25
	Chloroacetonitrile	ND	10 µg/L	05/01/12 12:25	05/01/12 12:25
	1-Chlorobutane	ND	2.0 µg/L	05/01/12 12:25	05/01/12 12:25
	1,1-Dichloropropanone	ND	10 µg/L	05/01/12 12:25	05/01/12 12:25
	Diethyl ether	ND	2.0 µg/L	05/01/12 12:25	05/01/12 12:25
	Ethyl methacrylate	ND	10 µg/L	05/01/12 12:25	05/01/12 12:25
	Hexachloroethane	ND	10 µg/L	05/01/12 12:25	05/01/12 12:25
	Methacrylonitrile	ND	10 µg/L	05/01/12 12:25	05/01/12 12:25
	Methyl acrylate	ND	10 µg/L	05/01/12 12:25	05/01/12 12:25
	Methyl iodide	ND	2.0 µg/L	05/01/12 12:25	05/01/12 12:25
	Methyl methacrylate	ND	10 µg/L	05/01/12 12:25	05/01/12 12:25
	Nitrobenzene	ND	10 µg/L	05/01/12 12:25	05/01/12 12:25
	2-Nitropropane	ND	2.0 µg/L	05/01/12 12:25	05/01/12 12:25
	Pentachloroethane	ND	2.0 µg/L	05/01/12 12:25	05/01/12 12:25
	Propionitrile	ND	50 µg/L	05/01/12 12:25	05/01/12 12:25
	Tetrahydrofuran	ND	10 µg/L	05/01/12 12:25	05/01/12 12:25
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/01/12 12:25	05/01/12 12:25
Client ID: **MW-13**					
Lab ID : BMI12042502-02A	Acrylonitrile	ND	10 µg/L	05/01/12 12:47	05/01/12 12:47
Date Sampled 04/24/12 11:00	Allyl chloride	ND	2.0 µg/L	05/01/12 12:47	05/01/12 12:47
	Carbon disulfide	ND	2.0 µg/L	05/01/12 12:47	05/01/12 12:47
	Chloroacetonitrile	ND	10 µg/L	05/01/12 12:47	05/01/12 12:47
	1-Chlorobutane	ND	2.0 µg/L	05/01/12 12:47	05/01/12 12:47
	1,1-Dichloropropanone	ND	10 µg/L	05/01/12 12:47	05/01/12 12:47
	Diethyl ether	ND	2.0 µg/L	05/01/12 12:47	05/01/12 12:47
	Ethyl methacrylate	ND	10 µg/L	05/01/12 12:47	05/01/12 12:47
	Hexachloroethane	ND	10 µg/L	05/01/12 12:47	05/01/12 12:47
	Methacrylonitrile	ND	10 µg/L	05/01/12 12:47	05/01/12 12:47
	Methyl acrylate	ND	10 µg/L	05/01/12 12:47	05/01/12 12:47
	Methyl iodide	ND	2.0 µg/L	05/01/12 12:47	05/01/12 12:47
	Methyl methacrylate	ND	10 µg/L	05/01/12 12:47	05/01/12 12:47
	Nitrobenzene	ND	10 µg/L	05/01/12 12:47	05/01/12 12:47
	2-Nitropropane	ND	2.0 µg/L	05/01/12 12:47	05/01/12 12:47
	Pentachloroethane	ND	2.0 µg/L	05/01/12 12:47	05/01/12 12:47
	Propionitrile	ND	50 µg/L	05/01/12 12:47	05/01/12 12:47
	Tetrahydrofuran	ND	10 µg/L	05/01/12 12:47	05/01/12 12:47
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/01/12 12:47	05/01/12 12:47

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Client ID: **MW-8**					
Lab ID : BMI12042502-03A	Acrylonitrile	ND	10 µg/L	05/01/12 13:09	05/01/12 13:09
Date Sampled 04/24/12 12:57	Allyl chloride	ND	2.0 µg/L	05/01/12 13:09	05/01/12 13:09
	Carbon disulfide	ND	2.0 µg/L	05/01/12 13:09	05/01/12 13:09
	Chloroacetonitrile	ND	10 µg/L	05/01/12 13:09	05/01/12 13:09
	1-Chlorobutane	ND	2.0 µg/L	05/01/12 13:09	05/01/12 13:09
	1,1-Dichloropropanone	ND	10 µg/L	05/01/12 13:09	05/01/12 13:09
	Diethyl ether	ND	2.0 µg/L	05/01/12 13:09	05/01/12 13:09
	Ethyl methacrylate	ND	10 µg/L	05/01/12 13:09	05/01/12 13:09
	Hexachloroethane	ND	10 µg/L	05/01/12 13:09	05/01/12 13:09
	Methacrylonitrile	ND	10 µg/L	05/01/12 13:09	05/01/12 13:09
	Methyl acrylate	ND	10 µg/L	05/01/12 13:09	05/01/12 13:09
	Methyl iodide	ND	2.0 µg/L	05/01/12 13:09	05/01/12 13:09
	Methyl methacrylate	ND	10 µg/L	05/01/12 13:09	05/01/12 13:09
	Nitrobenzene	ND	10 µg/L	05/01/12 13:09	05/01/12 13:09
	2-Nitropropane	ND	2.0 µg/L	05/01/12 13:09	05/01/12 13:09
	Pentachloroethane	ND	2.0 µg/L	05/01/12 13:09	05/01/12 13:09
	Propionitrile	ND	50 µg/L	05/01/12 13:09	05/01/12 13:09
	Tetrahydrofuran	ND	10 µg/L	05/01/12 13:09	05/01/12 13:09
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/01/12 13:09	05/01/12 13:09
Client ID: **MW-22-5**					
Lab ID : BMI12042502-04A	Acrylonitrile	ND	10 µg/L	05/01/12 13:31	05/01/12 13:31
Date Sampled 04/24/12 08:40	Allyl chloride	ND	2.0 µg/L	05/01/12 13:31	05/01/12 13:31
	Carbon disulfide	ND	2.0 µg/L	05/01/12 13:31	05/01/12 13:31
	Chloroacetonitrile	ND	10 µg/L	05/01/12 13:31	05/01/12 13:31
	1-Chlorobutane	ND	2.0 µg/L	05/01/12 13:31	05/01/12 13:31
	1,1-Dichloropropanone	ND	10 µg/L	05/01/12 13:31	05/01/12 13:31
	Diethyl ether	ND	2.0 µg/L	05/01/12 13:31	05/01/12 13:31
	Ethyl methacrylate	ND	10 µg/L	05/01/12 13:31	05/01/12 13:31
	Hexachloroethane	ND	10 µg/L	05/01/12 13:31	05/01/12 13:31
	Methacrylonitrile	ND	10 µg/L	05/01/12 13:31	05/01/12 13:31
	Methyl acrylate	ND	10 µg/L	05/01/12 13:31	05/01/12 13:31
	Methyl iodide	ND	2.0 µg/L	05/01/12 13:31	05/01/12 13:31
	Methyl methacrylate	ND	10 µg/L	05/01/12 13:31	05/01/12 13:31
	Nitrobenzene	ND	10 µg/L	05/01/12 13:31	05/01/12 13:31
	2-Nitropropane	ND	2.0 µg/L	05/01/12 13:31	05/01/12 13:31
	Pentachloroethane	ND	2.0 µg/L	05/01/12 13:31	05/01/12 13:31
	Propionitrile	ND	50 µg/L	05/01/12 13:31	05/01/12 13:31
	Tetrahydrofuran	ND	10 µg/L	05/01/12 13:31	05/01/12 13:31
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/01/12 13:31	05/01/12 13:31
Client ID: **MW-22-4**					
Lab ID : BMI12042502-05A	Acrylonitrile	ND	10 µg/L	05/01/12 13:52	05/01/12 13:52
Date Sampled 04/24/12 09:10	Allyl chloride	ND	2.0 µg/L	05/01/12 13:52	05/01/12 13:52
	Carbon disulfide	ND	2.0 µg/L	05/01/12 13:52	05/01/12 13:52
	Chloroacetonitrile	ND	10 µg/L	05/01/12 13:52	05/01/12 13:52
	1-Chlorobutane	ND	2.0 µg/L	05/01/12 13:52	05/01/12 13:52
	1,1-Dichloropropanone	ND	10 µg/L	05/01/12 13:52	05/01/12 13:52
	Diethyl ether	ND	2.0 µg/L	05/01/12 13:52	05/01/12 13:52
	Ethyl methacrylate	ND	10 µg/L	05/01/12 13:52	05/01/12 13:52
	Hexachloroethane	ND	10 µg/L	05/01/12 13:52	05/01/12 13:52
	Methacrylonitrile	ND	10 µg/L	05/01/12 13:52	05/01/12 13:52
	Methyl acrylate	ND	10 µg/L	05/01/12 13:52	05/01/12 13:52
	Methyl iodide	ND	2.0 µg/L	05/01/12 13:52	05/01/12 13:52
	Methyl methacrylate	ND	10 µg/L	05/01/12 13:52	05/01/12 13:52
	Nitrobenzene	ND	10 µg/L	05/01/12 13:52	05/01/12 13:52
	2-Nitropropane	ND	2.0 µg/L	05/01/12 13:52	05/01/12 13:52
	Pentachloroethane	ND	2.0 µg/L	05/01/12 13:52	05/01/12 13:52
	Propionitrile	ND	50 µg/L	05/01/12 13:52	05/01/12 13:52
	Tetrahydrofuran	ND	10 µg/L	05/01/12 13:52	05/01/12 13:52
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/01/12 13:52	05/01/12 13:52

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Client ID: **MW-22-3**					
Lab ID : BMI12042502-06A	Acrylonitrile	ND	10 µg/L	05/01/12 14:14	05/01/12 14:14
Date Sampled 04/24/12 09:44	Allyl chloride	ND	2.0 µg/L	05/01/12 14:14	05/01/12 14:14
	Carbon disulfide	ND	2.0 µg/L	05/01/12 14:14	05/01/12 14:14
	Chloroacetonitrile	ND	10 µg/L	05/01/12 14:14	05/01/12 14:14
	1-Chlorobutane	ND	2.0 µg/L	05/01/12 14:14	05/01/12 14:14
	1,1-Dichloropropanone	ND	10 µg/L	05/01/12 14:14	05/01/12 14:14
	Diethyl ether	ND	2.0 µg/L	05/01/12 14:14	05/01/12 14:14
	Ethyl methacrylate	ND	10 µg/L	05/01/12 14:14	05/01/12 14:14
	Hexachloroethane	ND	10 µg/L	05/01/12 14:14	05/01/12 14:14
	Methacrylonitrile	ND	10 µg/L	05/01/12 14:14	05/01/12 14:14
	Methyl acrylate	ND	10 µg/L	05/01/12 14:14	05/01/12 14:14
	Methyl iodide	ND	2.0 µg/L	05/01/12 14:14	05/01/12 14:14
	Methyl methacrylate	ND	10 µg/L	05/01/12 14:14	05/01/12 14:14
	Nitrobenzene	ND	10 µg/L	05/01/12 14:14	05/01/12 14:14
	2-Nitropropane	ND	2.0 µg/L	05/01/12 14:14	05/01/12 14:14
	Pentachloroethane	ND	2.0 µg/L	05/01/12 14:14	05/01/12 14:14
	Propionitrile	ND	50 µg/L	05/01/12 14:14	05/01/12 14:14
	Tetrahydrofuran	ND	10 µg/L	05/01/12 14:14	05/01/12 14:14
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/01/12 14:14	05/01/12 14:14
Client ID: **MW-22-2**					
Lab ID : BMI12042502-07A	Acrylonitrile	ND	10 µg/L	05/01/12 14:36	05/01/12 14:36
Date Sampled 04/24/12 10:16	Allyl chloride	ND	2.0 µg/L	05/01/12 14:36	05/01/12 14:36
	Carbon disulfide	ND	2.0 µg/L	05/01/12 14:36	05/01/12 14:36
	Chloroacetonitrile	ND	10 µg/L	05/01/12 14:36	05/01/12 14:36
	1-Chlorobutane	ND	2.0 µg/L	05/01/12 14:36	05/01/12 14:36
	1,1-Dichloropropanone	ND	10 µg/L	05/01/12 14:36	05/01/12 14:36
	Diethyl ether	ND	2.0 µg/L	05/01/12 14:36	05/01/12 14:36
	Ethyl methacrylate	ND	10 µg/L	05/01/12 14:36	05/01/12 14:36
	Hexachloroethane	ND	10 µg/L	05/01/12 14:36	05/01/12 14:36
	Methacrylonitrile	ND	10 µg/L	05/01/12 14:36	05/01/12 14:36
	Methyl acrylate	ND	10 µg/L	05/01/12 14:36	05/01/12 14:36
	Methyl iodide	ND	2.0 µg/L	05/01/12 14:36	05/01/12 14:36
	Methyl methacrylate	ND	10 µg/L	05/01/12 14:36	05/01/12 14:36
	Nitrobenzene	ND	10 µg/L	05/01/12 14:36	05/01/12 14:36
	2-Nitropropane	ND	2.0 µg/L	05/01/12 14:36	05/01/12 14:36
	Pentachloroethane	ND	2.0 µg/L	05/01/12 14:36	05/01/12 14:36
	Propionitrile	ND	50 µg/L	05/01/12 14:36	05/01/12 14:36
	Tetrahydrofuran	ND	10 µg/L	05/01/12 14:36	05/01/12 14:36
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/01/12 14:36	05/01/12 14:36
Client ID: **MW-22-1**					
Lab ID : BMI12042502-08A	Acrylonitrile	ND	10 µg/L	05/01/12 14:58	05/01/12 14:58
Date Sampled 04/24/12 10:50	Allyl chloride	ND	2.0 µg/L	05/01/12 14:58	05/01/12 14:58
	Carbon disulfide	ND	2.0 µg/L	05/01/12 14:58	05/01/12 14:58
	Chloroacetonitrile	ND	10 µg/L	05/01/12 14:58	05/01/12 14:58
	1-Chlorobutane	ND	2.0 µg/L	05/01/12 14:58	05/01/12 14:58
	1,1-Dichloropropanone	ND	10 µg/L	05/01/12 14:58	05/01/12 14:58
	Diethyl ether	ND	2.0 µg/L	05/01/12 14:58	05/01/12 14:58
	Ethyl methacrylate	ND	10 µg/L	05/01/12 14:58	05/01/12 14:58
	Hexachloroethane	ND	10 µg/L	05/01/12 14:58	05/01/12 14:58
	Methacrylonitrile	ND	10 µg/L	05/01/12 14:58	05/01/12 14:58
	Methyl acrylate	ND	10 µg/L	05/01/12 14:58	05/01/12 14:58
	Methyl iodide	ND	2.0 µg/L	05/01/12 14:58	05/01/12 14:58
	Methyl methacrylate	ND	10 µg/L	05/01/12 14:58	05/01/12 14:58
	Nitrobenzene	ND	10 µg/L	05/01/12 14:58	05/01/12 14:58
	2-Nitropropane	ND	2.0 µg/L	05/01/12 14:58	05/01/12 14:58
	Pentachloroethane	ND	2.0 µg/L	05/01/12 14:58	05/01/12 14:58
	Propionitrile	ND	50 µg/L	05/01/12 14:58	05/01/12 14:58
	Tetrahydrofuran	ND	10 µg/L	05/01/12 14:58	05/01/12 14:58
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/01/12 14:58	05/01/12 14:58

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Client ID: **DUPE-1-2Q12**					
Lab ID : BMI12042502-09A	Acrylonitrile	ND	10 µg/L	05/01/12 15:19	05/01/12 15:19
Date Sampled 04/24/12 00:00	Allyl chloride	ND	2.0 µg/L	05/01/12 15:19	05/01/12 15:19
	Carbon disulfide	ND	2.0 µg/L	05/01/12 15:19	05/01/12 15:19
	Chloroacetonitrile	ND	10 µg/L	05/01/12 15:19	05/01/12 15:19
	1-Chlorobutane	ND	2.0 µg/L	05/01/12 15:19	05/01/12 15:19
	1,1-Dichloropropanone	ND	10 µg/L	05/01/12 15:19	05/01/12 15:19
	Diethyl ether	ND	2.0 µg/L	05/01/12 15:19	05/01/12 15:19
	Ethyl methacrylate	ND	10 µg/L	05/01/12 15:19	05/01/12 15:19
	Hexachloroethane	ND	10 µg/L	05/01/12 15:19	05/01/12 15:19
	Methacrylonitrile	ND	10 µg/L	05/01/12 15:19	05/01/12 15:19
	Methyl acrylate	ND	10 µg/L	05/01/12 15:19	05/01/12 15:19
	Methyl iodide	ND	2.0 µg/L	05/01/12 15:19	05/01/12 15:19
	Methyl methacrylate	ND	10 µg/L	05/01/12 15:19	05/01/12 15:19
	Nitrobenzene	ND	10 µg/L	05/01/12 15:19	05/01/12 15:19
	2-Nitropropane	ND	2.0 µg/L	05/01/12 15:19	05/01/12 15:19
	Pentachloroethane	ND	2.0 µg/L	05/01/12 15:19	05/01/12 15:19
	Propionitrile	ND	50 µg/L	05/01/12 15:19	05/01/12 15:19
	Tetrahydrofuran	ND	10 µg/L	05/01/12 15:19	05/01/12 15:19
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/01/12 15:19	05/01/12 15:19
Client ID: **EB-2-4/24/12**					
Lab ID : BMI12042502-10A	Acrylonitrile	ND	10 µg/L	05/01/12 15:41	05/01/12 15:41
Date Sampled 04/24/12 10:34	Allyl chloride	ND	2.0 µg/L	05/01/12 15:41	05/01/12 15:41
	Carbon disulfide	ND	2.0 µg/L	05/01/12 15:41	05/01/12 15:41
	Chloroacetonitrile	ND	10 µg/L	05/01/12 15:41	05/01/12 15:41
	1-Chlorobutane	ND	2.0 µg/L	05/01/12 15:41	05/01/12 15:41
	1,1-Dichloropropanone	ND	10 µg/L	05/01/12 15:41	05/01/12 15:41
	Diethyl ether	ND	2.0 µg/L	05/01/12 15:41	05/01/12 15:41
	Ethyl methacrylate	ND	10 µg/L	05/01/12 15:41	05/01/12 15:41
	Hexachloroethane	ND	10 µg/L	05/01/12 15:41	05/01/12 15:41
	Methacrylonitrile	ND	10 µg/L	05/01/12 15:41	05/01/12 15:41
	Methyl acrylate	ND	10 µg/L	05/01/12 15:41	05/01/12 15:41
	Methyl iodide	ND	2.0 µg/L	05/01/12 15:41	05/01/12 15:41
	Methyl methacrylate	ND	10 µg/L	05/01/12 15:41	05/01/12 15:41
	Nitrobenzene	ND	10 µg/L	05/01/12 15:41	05/01/12 15:41
	2-Nitropropane	ND	2.0 µg/L	05/01/12 15:41	05/01/12 15:41
	Pentachloroethane	ND	2.0 µg/L	05/01/12 15:41	05/01/12 15:41
	Propionitrile	ND	50 µg/L	05/01/12 15:41	05/01/12 15:41
	Tetrahydrofuran	ND	10 µg/L	05/01/12 15:41	05/01/12 15:41
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/01/12 15:41	05/01/12 15:41
Client ID: **TB-2-4/24/12**					
Lab ID : BMI12042502-11A	Acrylonitrile	ND	10 µg/L	05/01/12 16:03	05/01/12 16:03
Date Sampled 04/24/12 07:00	Allyl chloride	ND	2.0 µg/L	05/01/12 16:03	05/01/12 16:03
	Carbon disulfide	ND	2.0 µg/L	05/01/12 16:03	05/01/12 16:03
	Chloroacetonitrile	ND	10 µg/L	05/01/12 16:03	05/01/12 16:03
	1-Chlorobutane	ND	2.0 µg/L	05/01/12 16:03	05/01/12 16:03
	1,1-Dichloropropanone	ND	10 µg/L	05/01/12 16:03	05/01/12 16:03
	Diethyl ether	ND	2.0 µg/L	05/01/12 16:03	05/01/12 16:03
	Ethyl methacrylate	ND	10 µg/L	05/01/12 16:03	05/01/12 16:03
	Hexachloroethane	ND	10 µg/L	05/01/12 16:03	05/01/12 16:03
	Methacrylonitrile	ND	10 µg/L	05/01/12 16:03	05/01/12 16:03
	Methyl acrylate	ND	10 µg/L	05/01/12 16:03	05/01/12 16:03
	Methyl iodide	ND	2.0 µg/L	05/01/12 16:03	05/01/12 16:03
	Methyl methacrylate	ND	10 µg/L	05/01/12 16:03	05/01/12 16:03
	Nitrobenzene	ND	10 µg/L	05/01/12 16:03	05/01/12 16:03
	2-Nitropropane	ND	2.0 µg/L	05/01/12 16:03	05/01/12 16:03
	Pentachloroethane	ND	2.0 µg/L	05/01/12 16:03	05/01/12 16:03
	Propionitrile	ND	50 µg/L	05/01/12 16:03	05/01/12 16:03
	Tetrahydrofuran	ND	10 µg/L	05/01/12 16:03	05/01/12 16:03
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/01/12 16:03	05/01/12 16:03

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

This replaces the report originally signed 5/7/12, due to a change in the Client ID for sample -11A, due to lab error.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

6/11/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042502-01A
Client I.D. Number: MW-6

Sampled: 04/24/12 08:58
Received: 04/25/12
Extracted: 05/01/12 12:25
Analyzed: 05/01/12 12:25

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	1.0	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	0.54	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	3.1	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/7/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042502-02A
Client I.D. Number: MW-13

Sampled: 04/24/12 11:00
Received: 04/25/12
Extracted: 05/01/12 12:47
Analyzed: 05/01/12 12:47

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	7.6	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	0.87	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	0.58	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/7/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042502-03A
Client I.D. Number: MW-8

Sampled: 04/24/12 12:57
Received: 04/25/12
Extracted: 05/01/12 13:09
Analyzed: 05/01/12 13:09

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	103	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/7/12
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042502-04A
Client I.D. Number: MW-22-5

Sampled: 04/24/12 08:40
Received: 04/25/12
Extracted: 05/01/12 13:31
Analyzed: 05/01/12 13:31

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/7/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042502-05A
Client I.D. Number: MW-22-4

Sampled: 04/24/12 09:10
Received: 04/25/12
Extracted: 05/01/12 13:52
Analyzed: 05/01/12 13:52

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	101	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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5/7/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042502-06A
Client I.D. Number: MW-22-3

Sampled: 04/24/12 09:44
Received: 04/25/12
Extracted: 05/01/12 14:14
Analyzed: 05/01/12 14:14

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	102	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/7/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042502-07A
Client I.D. Number: MW-22-2

Sampled: 04/24/12 10:16
Received: 04/25/12
Extracted: 05/01/12 14:36
Analyzed: 05/01/12 14:36

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37 Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	103	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042502-08A
Client I.D. Number: MW-22-1

Sampled: 04/24/12 10:50
Received: 04/25/12
Extracted: 05/01/12 14:58
Analyzed: 05/01/12 14:58

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	0.69	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	102	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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5/7/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042502-09A
Client I.D. Number: DUPE-1-2Q12

Sampled: 04/24/12 00:00
Received: 04/25/12
Extracted: 05/01/12 15:19
Analyzed: 05/01/12 15:19

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	0.58	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	88	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/7/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042502-10A
Client I.D. Number: EB-2-4/24/12

Sampled: 04/24/12 10:34
Received: 04/25/12
Extracted: 05/01/12 15:41
Analyzed: 05/01/12 15:41

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	88	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/7/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042502-11A
Client I.D. Number: TB-2-4/24/12

Sampled: 04/24/12 07:00
Received: 04/25/12
Extracted: 05/01/12 16:03
Analyzed: 05/01/12 16:03

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	105	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

This replaces the report originally signed 5/7/12, due to a change in the Client ID, due to lab error.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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6/11/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *07-May-12*

QC Summary Report

Work Order: 12042502

Method Blank

Type: **MBLK** Test Code: **EPA Method 300.0**

File ID: **29** Batch ID: **28587K** Analysis Date: **04/25/2012 10:56**

Sample ID: **MB-28587** Units : **mg/L** Run ID: **IC_1_120425B** Prep Date: **04/25/2012 09:01**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 300.0**

File ID: **38** Batch ID: **28587K** Analysis Date: **04/25/2012 13:42**

Sample ID: **LFB-28587** Units : **mg/L** Run ID: **IC_1_120425B** Prep Date: **04/25/2012 09:01**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	50.6	0.5	50		101	90	110			
Nitrite (NO2) - N	5.17	0.25	5		103	90	110			
Nitrate (NO3) - N	5.47	0.25	5		109	90	110			
Phosphate, ortho - P	5.01	0.5	5		100	90	110			
Sulfate (SO4)	103	0.5	100		103	90	110			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 300.0**

File ID: **36** Batch ID: **28587K** Analysis Date: **04/25/2012 13:05**

Sample ID: **12042403-04ALFM** Units : **mg/L** Run ID: **IC_1_120425B** Prep Date: **04/25/2012 09:01**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	267	1.3	250	11.13	102	90	110			
Nitrite (NO2) - N	26.5	0.63	25	0	106	90	110			
Nitrate (NO3) - N	27.8	0.63	25	0	111	90	110			M1
Phosphate, ortho - P	27	1.3	25	0	108	90	110			
Sulfate (SO4)	552	1.3	500	31.01	104	90	110			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 300.0**

File ID: **37** Batch ID: **28587K** Analysis Date: **04/25/2012 13:24**

Sample ID: **12042403-04ALFMD** Units : **mg/L** Run ID: **IC_1_120425B** Prep Date: **04/25/2012 09:01**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	269	1.3	250	11.13	103	90	110	267.1	0.6(15)	
Nitrite (NO2) - N	25.9	0.63	25	0	104	90	110	26.53	2.5(15)	
Nitrate (NO3) - N	27.9	0.63	25	0	112	90	110	27.84	0.2(15)	M1
Phosphate, ortho - P	27.2	1.3	25	0	109	90	110	26.95	1.1(15)	
Sulfate (SO4)	557	1.3	500	31.01	105	90	110	552.1	0.9(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *07-May-12*

QC Summary Report

Work Order: 12042502

Method Blank

Type: **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **28606K** Analysis Date: **04/26/2012 16:34**

Sample ID: **MB-28606** Units : **µg/L** Run ID: **IC_3_120426A** Prep Date: **04/26/2012 15:29**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **28606K** Analysis Date: **04/26/2012 16:52**

Sample ID: **LFB-28606** Units : **µg/L** Run ID: **IC_3_120426A** Prep Date: **04/26/2012 15:29**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	23.2	2	25		93	85	115			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 314.0**

File ID: **19** Batch ID: **28606K** Analysis Date: **04/26/2012 18:06**

Sample ID: **12042502-01ALFM** Units : **µg/L** Run ID: **IC_3_120426A** Prep Date: **04/26/2012 15:29**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	27.8	2	25	3.428	97	85	115			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 314.0**

File ID: **20** Batch ID: **28606K** Analysis Date: **04/26/2012 18:24**

Sample ID: **12042502-01ALFMD** Units : **µg/L** Run ID: **IC_3_120426A** Prep Date: **04/26/2012 15:29**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	29.4	2	25	3.428	104	85	115	27.77	5.9(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *30-Apr-12*

QC Summary Report

Work Order: 12042502

Laboratory Control Spike Type **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0426ALA** Analysis Date: **04/26/2012 13:09**

Sample ID: **LCS-W0426ALA** Units : **mg/L** Run ID: **WETLAB_120426E** Prep Date: **04/26/2012 13:09**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	233.1	10	250		93	80	120			
Alkalinity, Carbonate (As CaCO3)	233.1	10	250		93	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	233	10	250		93	80	120			

Comments:

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Date: *08-May-12*

QC Summary Report

Work Order: 12042502

Method Blank

Type: **MBLK** Test Code: **EPA Method 200.8**

File ID: **050412.B\134_M.D** Batch ID: **28597K** Analysis Date: **05/05/2012 01:51**

Sample ID: **MB-28597** Units : **mg/L** Run ID: **ICP/MS_120505A** Prep Date: **04/25/2012 16:59**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 200.8**

File ID: **050412.B\135_M.D** Batch ID: **28597K** Analysis Date: **05/05/2012 01:57**

Sample ID: **LCS-28597** Units : **mg/L** Run ID: **ICP/MS_120505A** Prep Date: **04/25/2012 16:59**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	5.04	0.5	5		101	80	120			
Magnesium (Mg)	4.87	0.5	5		97	80	120			
Potassium (K)	5.01	0.5	5		100	80	120			
Calcium (Ca)	5.06	0.5	5		101	80	120			
Chromium (Cr)	0.0499	0.005	0.05		99.8	80	120			
Iron (Fe)	5.05	0.3	5		101	80	120			
Arsenic (As)	0.0494	0.002	0.05		99	80	120			
Lead (Pb)	0.051	0.005	0.05		102	80	120			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method 200.8**

File ID: **050412.B\140_M.D** Batch ID: **28597K** Analysis Date: **05/05/2012 02:25**

Sample ID: **12042403-04AMS** Units : **mg/L** Run ID: **ICP/MS_120505A** Prep Date: **04/25/2012 16:59**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	24.9	0.5	5	19.7	103	80	120			
Magnesium (Mg)	19.6	0.5	5	14.59	101	80	120			
Potassium (K)	7.58	0.5	5	2.481	102	80	120			
Calcium (Ca)	50.1	0.5	5	44.92	104	80	120			
Chromium (Cr)	0.0563	0.005	0.05	0	113	80	120			
Iron (Fe)	5.66	0.3	5	0.5917	101	80	120			
Arsenic (As)	0.0529	0.002	0.05	0	106	80	120			
Lead (Pb)	0.0494	0.005	0.05	0	99	80	120			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method 200.8**

File ID: **050412.B\141_M.D** Batch ID: **28597K** Analysis Date: **05/05/2012 02:31**

Sample ID: **12042403-04AMSD** Units : **mg/L** Run ID: **ICP/MS_120505A** Prep Date: **04/25/2012 16:59**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	24.1	0.5	5	19.7	88	80	120	24.86	3.1(20)	
Magnesium (Mg)	19.1	0.5	5	14.59	90	80	120	19.62	2.6(20)	
Potassium (K)	7.13	0.5	5	2.481	93	80	120	7.579	6.1(20)	
Calcium (Ca)	48.5	0.5	5	44.92	72	80	120	50.1	3.2(20)	M3
Chromium (Cr)	0.0501	0.005	0.05	0	100	80	120	0.05628	11.5(20)	
Iron (Fe)	5.25	0.3	5	0.5917	93	80	120	5.66	7.5(20)	
Arsenic (As)	0.0484	0.002	0.05	0	97	80	120	0.05289	9.0(20)	
Lead (Pb)	0.0457	0.005	0.05	0	91	80	120	0.04944	7.9(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M3 = The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to the spike level. The method control sample recovery was acceptable.

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Date: *26-Apr-12*

QC Summary Report

Work Order: 12042502

Laboratory Control Spike Type **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0425PH** Analysis Date: **04/25/2012 11:13**

Sample ID: **LCS-W0425PH** Units : **pH Units** Run ID: **WETLAB_120425B** Prep Date: **04/25/2012 11:13**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5.03	1.7	5		101	90	110			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *02-May-12*

QC Summary Report

Work Order: 12042502

Method Blank

Type **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0425DS** Analysis Date: **04/26/2012 00:00**

Sample ID: **MBLK-W0425DS** Units : **mg/L** Run ID: **WETLAB_120425H** Prep Date: **04/26/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0425DS** Analysis Date: **04/26/2012 00:00**

Sample ID: **LCS-W0425DS** Units : **mg/L** Run ID: **WETLAB_120425H** Prep Date: **04/26/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	99	10	100		99	70	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *08-May-12*

QC Summary Report

Work Order: 12042502

Method Blank Type: **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12050105.D** Batch ID: **MS15W0501M** Analysis Date: **05/01/2012 11:20**

Sample ID: **MBLK MS15W0501M** Units : **µg/L** Run ID: **MSD_15_120501A** Prep Date: **05/01/2012 11:20**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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Date: *08-May-12*

QC Summary Report

Work Order: 12042502

Surr: 1,2-Dichloroethane-d4	10.2	10	102	70	130
Surr: Toluene-d8	10.3	10	103	70	130
Surr: 4-Bromofluorobenzene	9.05	10	91	70	130

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Date: 08-May-12

QC Summary Report

Work Order: 12042502

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method SW8260B**

File ID: **12050103.D** Batch ID: **MS15W0501M** Analysis Date: **05/01/2012 10:35**

Sample ID: **LCS MS15W0501M** Units : **µg/L** Run ID: **MSD_15_120501A** Prep Date: **05/01/2012 10:35**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	12.7	1	10		127	70	130			
Chloromethane	10.6	2	10		106	70	130			
Vinyl chloride	11.9	1	10		119	70	130			
Chloroethane	10.2	1	10		102	70	130			
Bromomethane	11.1	2	10		111	70	130			
Trichlorofluoromethane	12	1	10		120	70	130			
Acetone	302	10	200		151	36	171			
1,1-Dichloroethene	11.1	1	10		111	70	130			
Dichloromethane	9.36	2	10		94	70	130			
Freon-113	11.8	1	10		118	70	137			
trans-1,2-Dichloroethene	10.7	1	10		107	70	130			
Methyl tert-butyl ether (MTBE)	8.85	0.5	10		89	70	130			
1,1-Dichloroethane	10.5	1	10		105	70	130			
2-Butanone (MEK)	261	10	200		130	70	130			
cis-1,2-Dichloroethene	10.7	1	10		107	70	130			
Bromochloromethane	10.8	1	10		108	70	130			
Chloroform	9.77	1	10		98	70	130			
2,2-Dichloropropane	10.1	1	10		101	70	130			
1,2-Dichloroethane	10.4	1	10		104	70	130			
1,1,1-Trichloroethane	10.9	1	10		109	70	130			
1,1-Dichloropropene	11.7	1	10		117	70	130			
Carbon tetrachloride	9.91	1	10		99	70	130			
Benzene	10.6	0.5	10		106	70	130			
Dibromomethane	10.3	1	10		103	70	130			
1,2-Dichloropropane	9.64	1	10		96	70	130			
Trichloroethene	10.8	1	10		108	70	130			
Bromodichloromethane	9.56	1	10		96	70	130			
4-Methyl-2-pentanone (MIBK)	24.2	2.5	25		97	20	182			
cis-1,3-Dichloropropene	9.57	1	10		96	70	130			
trans-1,3-Dichloropropene	9.32	1	10		93	70	130			
1,1,2-Trichloroethane	10.6	1	10		106	70	130			
Toluene	10.1	0.5	10		101	70	130			
1,3-Dichloropropane	9.96	1	10		99.6	70	130			
2-Hexanone	120	5	100		120	20	182			
Dibromochloromethane	8.97	1	10		90	70	130			
1,2-Dibromoethane (EDB)	19.4	2	20		97	70	130			
Tetrachloroethene	10.7	1	10		107	70	130			
1,1,1,2-Tetrachloroethane	11	1	10		110	70	130			
Chlorobenzene	10.7	1	10		107	70	130			
Ethylbenzene	10.4	0.5	10		104	70	130			
m,p-Xylene	10.1	0.5	10		101	70	130			
Bromoform	8.78	1	10		88	70	130			
Styrene	9.18	1	10		92	70	130			
o-Xylene	10	0.5	10		100	70	130			
1,1,2,2-Tetrachloroethane	10.1	1	10		101	70	130			
1,2,3-Trichloropropane	20.7	2	20		104	70	130			
Isopropylbenzene	10.4	1	10		104	70	130			
Bromobenzene	10.7	1	10		107	70	130			
n-Propylbenzene	10.9	1	10		109	70	130			
4-Chlorotoluene	10.6	1	10		106	70	130			
2-Chlorotoluene	10.5	1	10		105	70	130			
1,3,5-Trimethylbenzene	10.9	1	10		109	70	130			
tert-Butylbenzene	10.6	1	10		106	70	130			
1,2,4-Trimethylbenzene	10.7	1	10		107	70	130			
sec-Butylbenzene	10.9	1	10		109	70	130			
1,3-Dichlorobenzene	10	1	10		100	70	130			
1,4-Dichlorobenzene	10.5	1	10		105	70	130			
4-Isopropyltoluene	11	1	10		110	70	130			
1,2-Dichlorobenzene	10.1	1	10		101	70	130			
n-Butylbenzene	10.9	1	10		109	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	49.1	3	50		98	67	130			
1,2,4-Trichlorobenzene	9.43	2	10		94	70	130			
Naphthalene	7.91	2	10		79	70	130			
Hexachlorobutadiene	21	2	20		105	70	130			
1,2,3-Trichlorobenzene	7.77	2	10		78	70	130			

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Date: *08-May-12*

QC Summary Report

Work Order: 12042502

Surr: 1,2-Dichloroethane-d4	10.8	10	108	70	130
Surr: Toluene-d8	9.74	10	97	70	130
Surr: 4-Bromofluorobenzene	9.22	10	92	70	130

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Date: 08-May-12

QC Summary Report

Work Order: 12042502

Sample Matrix Spike Type: **MS** Test Code: **EPA Method SW8260B**

File ID: **12050212.D** Batch ID: **MS15W0501M** Analysis Date: **05/02/2012 14:19**

Sample ID: **12042703-01AMS** Units : **µg/L** Run ID: **MSD_15_120501A** Prep Date: **05/02/2012 14:19**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	495	30	600	0	82	21	138			
Chloromethane	416	120	600	0	69	23	144			
Vinyl chloride	563	30	600	0	94	49	136			
Chloroethane	488	30	600	0	81	21	159			
Bromomethane	451	120	600	0	75	10	174			
Trichlorofluoromethane	563	30	600	0	94	32	154			
Acetone	6530	600	12000	0	54	10	171			
1,1-Dichloroethene	548	30	600	0	91	64	130			
Dichloromethane	501	120	600	0	84	69	130			
Freon-113	593	30	600	0	99	55	141			
trans-1,2-Dichloroethene	548	30	600	0	91	63	130			
Methyl tert-butyl ether (MTBE)	500	15	600	0	83	47	150			
1,1-Dichloroethane	543	30	600	0	91	66	130			
2-Butanone (MEK)	8280	600	12000	0	69	23	182			
cis-1,2-Dichloroethene	580	30	600	0	97	70	130			
Bromochloromethane	576	30	600	0	96	70	132			
Chloroform	490	30	600	0	82	70	130			
2,2-Dichloropropane	539	30	600	0	90	38	154			
1,2-Dichloroethane	553	30	600	0	92	65	134			
1,1,1-Trichloroethane	566	30	600	0	94	65	136			
1,1-Dichloropropene	596	30	600	0	99	68	132			
Carbon tetrachloride	522	30	600	0	87	58	148			
Benzene	542	15	600	0	90	59	138			
Dibromomethane	557	30	600	0	93	70	130			
1,2-Dichloropropane	514	30	600	0	86	70	131			
Trichloroethene	2040	30	600	1829	35	65	144			M2
Bromodichloromethane	504	30	600	0	84	50	157			
4-Methyl-2-pentanone (MIBK)	1260	150	1500	0	84	20	182			
cis-1,3-Dichloropropene	517	30	600	0	86	63	131			
trans-1,3-Dichloropropene	509	30	600	0	85	65	136			
1,1,2-Trichloroethane	561	30	600	0	93	70	131			
Toluene	523	15	600	0	87	68	130			
1,3-Dichloropropane	544	30	600	0	91	70	130			
2-Hexanone	3910	300	6000	0	65	20	182			
Dibromochloromethane	495	30	600	0	83	42	155			
1,2-Dibromoethane (EDB)	1070	60	1200	0	89	70	130			
Tetrachloroethene	557	30	600	0	93	65	130			
1,1,1,2-Tetrachloroethane	582	30	600	0	97	70	130			
Chlorobenzene	553	30	600	0	92	70	130			
Ethylbenzene	535	15	600	0	89	68	130			
m,p-Xylene	519	15	600	0	86	68	131			
Bromoform	483	30	600	0	80	65	143			
Styrene	473	30	600	0	79	59	153			
o-Xylene	519	15	600	0	87	70	130			
1,1,2,2-Tetrachloroethane	552	30	600	0	92	67	130			
1,2,3-Trichloropropane	1140	120	1200	0	95	70	130			
Isopropylbenzene	527	30	600	0	88	55	138			
Bromobenzene	547	30	600	0	91	70	130			
n-Propylbenzene	553	30	600	0	92	67	133			
4-Chlorotoluene	544	30	600	0	91	70	130			
2-Chlorotoluene	534	30	600	0	89	70	130			
1,3,5-Trimethylbenzene	553	30	600	0	92	67	134			
tert-Butylbenzene	542	30	600	0	90	55	147			
1,2,4-Trimethylbenzene	546	30	600	0	91	65	135			
sec-Butylbenzene	553	30	600	0	92	68	135			
1,3-Dichlorobenzene	510	30	600	0	85	70	130			
1,4-Dichlorobenzene	540	30	600	0	90	70	130			
4-Isopropyltoluene	561	30	600	0	94	68	132			
1,2-Dichlorobenzene	522	30	600	0	87	70	130			
n-Butylbenzene	558	30	600	0	93	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	2820	180	3000	0	94	64	130			
1,2,4-Trichlorobenzene	524	120	600	0	87	62	133			
Naphthalene	464	120	600	0	77	32	166			
Hexachlorobutadiene	1110	120	1200	0	92	63	130			
1,2,3-Trichlorobenzene	455	120	600	0	76	55	138			

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *08-May-12*

QC Summary Report

Work Order: 12042502

Surr: 1,2-Dichloroethane-d4	622	600	104	70	130
Surr: Toluene-d8	591	600	98	70	130
Surr: 4-Bromofluorobenzene	560	600	93	70	130

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: 08-May-12

QC Summary Report

Work Order: 12042502

Sample Matrix Spike Duplicate Type: **MSD** Test Code: **EPA Method SW8260B**

File ID: **12050213.D** Batch ID: **MS15W0501M** Analysis Date: **05/02/2012 14:41**

Sample ID: **12042703-01AMSD** Units : **µg/L** Run ID: **MSD_15_120501A** Prep Date: **05/02/2012 14:41**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	573	30	600	0	95	21	138	494.7	14.7(33)	
Chloromethane	490	120	600	0	82	23	144	415.7	16.4(27)	
Vinyl chloride	633	30	600	0	106	49	136	563.4	11.7(21)	
Chloroethane	555	30	600	0	92	21	159	487.7	12.9(40)	
Bromomethane	495	120	600	0	83	10	174	451.4	9.3(40)	
Trichlorofluoromethane	644	30	600	0	107	32	154	562.9	13.5(37)	
Acetone	7380	600	12000	0	62	10	171	6534	12.2(23)	
1,1-Dichloroethene	633	30	600	0	106	64	130	547.8	14.5(21)	
Dichloromethane	562	120	600	0	94	69	130	501.3	11.4(20)	
Freon-113	677	30	600	0	113	55	141	592.7	13.2(40)	
trans-1,2-Dichloroethene	630	30	600	0	105	63	130	548.4	13.8(20)	
Methyl tert-butyl ether (MTBE)	588	15	600	0	98	47	150	500.2	16.1(40)	
1,1-Dichloroethane	621	30	600	0	103	66	130	543.1	13.3(20)	
2-Butanone (MEK)	9350	600	12000	0	78	23	182	8278	12.2(22)	
cis-1,2-Dichloroethene	661	30	600	0	110	70	130	580	13.0(20)	
Bromochloromethane	663	30	600	0	110	70	132	575.5	14.1(20)	
Chloroform	561	30	600	0	93	70	130	490.2	13.4(20)	
2,2-Dichloropropane	624	30	600	0	104	38	154	538.7	14.6(22)	
1,2-Dichloroethane	632	30	600	0	105	65	134	553.3	13.3(20)	
1,1,1-Trichloroethane	652	30	600	0	109	65	136	566.1	14.1(20)	
1,1-Dichloropropene	680	30	600	0	113	68	132	596.5	13.1(20)	
Carbon tetrachloride	594	30	600	0	99	58	148	522.5	12.9(20)	
Benzene	616	15	600	0	103	59	138	542.1	12.8(21)	
Dibromomethane	635	30	600	0	106	70	130	557.4	13.0(20)	
1,2-Dichloropropane	584	30	600	0	97	70	131	513.8	12.8(20)	
Trichloroethene	2070	30	600	1829	40	65	144	2040	1.5(20)	M2
Bromodichloromethane	577	30	600	0	96	50	157	503.9	13.5(20)	
4-Methyl-2-pentanone (MIBK)	1450	150	1500	0	96	20	182	1256	14.1(20)	
cis-1,3-Dichloropropene	592	30	600	0	99	63	131	517.1	13.6(20)	
trans-1,3-Dichloropropene	590	30	600	0	98	65	136	509.2	14.7(20)	
1,1,2-Trichloroethane	635	30	600	0	106	70	131	560.9	12.4(20)	
Toluene	597	15	600	0	99	68	130	522.7	13.2(20)	
1,3-Dichloropropane	631	30	600	0	105	70	130	544.1	14.8(20)	
2-Hexanone	4520	300	6000	0	75	20	182	3910	14.4(20)	
Dibromochloromethane	575	30	600	0	96	42	155	495.3	14.9(20)	
1,2-Dibromoethane (EDB)	1240	60	1200	0	103	70	130	1070	14.6(20)	
Tetrachloroethene	642	30	600	0	107	65	130	557	14.2(20)	
1,1,1,2-Tetrachloroethane	671	30	600	0	112	70	130	581.8	14.3(20)	
Chlorobenzene	627	30	600	0	105	70	130	553.4	12.5(20)	
Ethylbenzene	609	15	600	0	102	68	130	534.8	13.0(20)	
m,p-Xylene	597	15	600	0	99	68	131	518.9	14.0(20)	
Bromoform	562	30	600	0	94	65	143	482.7	15.2(20)	
Styrene	544	30	600	0	91	59	153	473.1	14.0(37)	
o-Xylene	593	15	600	0	99	70	130	519.1	13.3(20)	
1,1,2,2-Tetrachloroethane	634	30	600	0	106	67	130	552.2	13.8(20)	
1,2,3-Trichloropropane	1320	120	1200	0	110	70	130	1144	14.1(20)	
Isopropylbenzene	600	30	600	0	100	55	138	527.4	13.0(20)	
Bromobenzene	623	30	600	0	104	70	130	547.3	12.9(20)	
n-Propylbenzene	625	30	600	0	104	67	133	553.2	12.2(30)	
4-Chlorotoluene	616	30	600	0	103	70	130	543.8	12.5(20)	
2-Chlorotoluene	609	30	600	0	101	70	130	534.4	13.0(20)	
1,3,5-Trimethylbenzene	625	30	600	0	104	67	134	552.9	12.2(21)	
tert-Butylbenzene	610	30	600	0	102	55	147	542.5	11.8(20)	
1,2,4-Trimethylbenzene	619	30	600	0	103	65	135	546	12.6(25)	
sec-Butylbenzene	625	30	600	0	104	68	135	553	12.3(20)	
1,3-Dichlorobenzene	588	30	600	0	98	70	130	510.4	14.1(20)	
1,4-Dichlorobenzene	613	30	600	0	102	70	130	540.4	12.5(20)	
4-Isopropyltoluene	637	30	600	0	106	68	132	561.4	12.5(20)	
1,2-Dichlorobenzene	592	30	600	0	99	70	130	522.3	12.6(20)	
n-Butylbenzene	631	30	600	0	105	62	134	558.5	12.2(21)	
1,2-Dibromo-3-chloropropane (DBCP)	3230	180	3000	0	108	64	130	2822	13.5(20)	
1,2,4-Trichlorobenzene	610	120	600	0	102	62	133	523.7	15.3(29)	
Naphthalene	552	120	600	0	92	32	166	464.2	17.3(40)	
Hexachlorobutadiene	1290	120	1200	0	107	63	130	1105	15.2(21)	
1,2,3-Trichlorobenzene	530	120	600	0	88	55	138	454.6	15.2(36)	

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *08-May-12*

QC Summary Report

Work Order: 12042502

Surr: 1,2-Dichloroethane-d4	622	600	104	70	130
Surr: Toluene-d8	600	600	100	70	130
Surr: 4-Bromofluorobenzene	559	600	93	70	130

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M2 = Matrix spike recovery was low, the method control sample recovery was acceptable.

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA AMENDED

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12042502

Report Due By : 5:00 PM On : 08-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **No**

Sampled by : David Loera, Chase Brogdon

PO : 286215

Client's COC # : 58156, 53768 Job : 100006114 / JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
0 °C	25-Apr-12	11-Jun-12

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12042502-01A	MW-6	AQ	04/24/12 08:58	5	0	9	Cl, NO3, NO2,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-02A	MW-13	AQ	04/24/12 11:00	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-03A	MW-8	AQ	04/24/12 12:57	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-04A	MW-22-5	AQ	04/24/12 08:40	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-05A	MW-22-4	AQ	04/24/12 09:10	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	Level IV QC
BMI12042502-06A	MW-22-3	AQ	04/24/12 09:44	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-07A	MW-22-2	AQ	04/24/12 10:16	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-08A	MW-22-1	AQ	04/24/12 10:50	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	

Comments: Security seals intact. Frozen Ice. Temp. Blank #8801 received @0°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -05A. : Amended 6/11/12 @ 12:20 to correct sample ID for sample -11A, due to login error. SC

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Coffee	Sara Coffee	Alpha Analytical, Inc.	6/11/12 12:24

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

AMENDED

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12042502

Report Due By : 5:00 PM On : 08-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **No**

Sampled by : David Loera, Chase Brogdon

PO : 286215

Client's COC # : 58156, 53768 Job : 100006114 / JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
0 °C	25-Apr-12	**11-Jun-12**

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12042502-09A	DUPE-1-2Q12	AQ	04/24/12 00:00	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-10A	EB-2-4/24/12	AQ	04/24/12 10:34	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-11A	TB-2-4/24/12	AQ	04/24/12 07:00	1	0	9							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 1/9/12

Comments: Security seals intact. Frozen Ice. Temp. Blank #8801 received @0°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -05A. : Amended 6/11/12 @ 12:20 to correct sample ID for sample -11A, due to login error. SC

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Coffee	Sara Coffee	**Alpha Analytical, Inc.**	6/11/12 12:24

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12042502

Report Due By : 5:00 PM On : 08-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : David Loera, Chase Brogdon

PO : 286215

Client's COC # : 58156, 53768 Job : 100006114/JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
0 °C	25-Apr-12	25-Apr-12

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12042502-01A	MW-6	AQ	04/24/12 08:58	5	0	9	Cl, NO3, NO2,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-02A	MW-13	AQ	04/24/12 11:00	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-03A	MW-8	AQ	04/24/12 12:57	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-04A	MW-22-5	AQ	04/24/12 08:40	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-05A	MW-22-4	AQ	04/24/12 09:10	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	Level IV QC
BMI12042502-06A	MW-22-3	AQ	04/24/12 09:44	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-07A	MW-22-2	AQ	04/24/12 10:16	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-08A	MW-22-1	AQ	04/24/12 10:50	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	

Comments: Security seals intact. Frozen Ice. Temp. Blank #8801 received @0°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -05A. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Coffee	Sara Coffee	Alpha Analytical, Inc.	4/25/12 10:05

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12042502

Report Due By : 5:00 PM On : 08-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : David Loera, Chase Brogdon

PO : 286215

Client's COC # : 58156, 53768 Job : 100006114/JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
0 °C	25-Apr-12	25-Apr-12

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12042502-09A	DUPE-1-2Q12	AQ	04/24/12 00:00	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-10A	EB-2-4/24/12	AQ	04/24/12 10:34	5	0	9	Cl, NO3, NO2,P,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042502-11A	TB-4/24/12	AQ	04/24/12 07:00	1	0	9							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 1/9/12

Comments: Security seals intact. Frozen Ice. Temp. Blank #8801 received @0°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -05A. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Lottee	Sara Lottee	Alpha Analytical, Inc.	4/25/12 10:05

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

58156

Billing Information:
Company Name Battelle
Attn: ~~Beth~~ ~~Heath~~ David Conner
Address 505 King Ave
City, State, Zip Columbus, OH. 43201
Phone Number 619-726-7311 Fax 614-458-6641

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State? AZ ___ CA X NV ___ WA ___ DOD Site ___
ID ___ OR ___ OTHER ___ Page # 1 of 1

Consultant / Client Name: Same as Above
Address:
City, State, Zip:
Job # 100006114
Job Name:
Report Attention / Project Manager
Name: David Conner
Email: connerd@battelle.org
Phone: 619-726-7311 Mobile: 614-458-6641

Data Validation Level: III or IV
EDD / EDF? YES ___ NO ___
Global ID # ___

Time Sampled	Date Sampled	Matrix* See Key Below	P.O. # 2562-15 / Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	# Containers**	VOC's	Anions*	Cations**	Perchlorate	pH, TDS	Alkalinity	Bicarbonate/Carbonate	REMARKS
0858	4-24-12	AQ	BMI2042502-01A	MW-6	10		2P 3V	X	X	X	X	X	X	X	NO orthophosphate
1100	4/24/12	AQ	-02A	MW-13	10		2P 3V	X	X	X	X	X	X	X	
1257	4/24/12	AQ	-03A	MW-8	10		2P 3V	X	X	X	X	X	X	X	

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: * Chloride, Nitrate, Nitrite, Orthophosphate, Sulfate ** Total Cr, Pb, Ca, Mg, As, Fe, Na, K

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: David Leora

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date	Time
David L / Battelle	/ INSIGHT	4/24/12	1300
/ IGECI	/ Alpha Analytical	4/24/12	1300
/ Alpha Analytical	Neralo Pee / alpha	4/25/12	9:55

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

53768

Billing Information:

Company Name: BATTELLE
Attn: GERALD TOMPKINS
Address: 505 KING AVE
City, State, Zip: COLUMBUS, OH 43201
Phone Number: _____ Fax: _____

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ____ CA X NV ____ WA ____ DOD Site ____
ID ____ OR ____ OTHER ____ Page # 1 of 1

Consultant / Client Name: BATTELLE / DAVID CONNER
Address: 3990 OLD TOWN AVE, C-205
City, State, Zip: SAN DIEGO, CA 92110
P.O. # 286479

Job #: 100006114/PO#286479
Job Name: SPL GW MON. 2012
Report Attention / Project Manager
Name: DAVID CONNER
Email: connerd@battelle.org
Phone: _____ Mobile: (619) 726-7311

Data Validation Level: (III) or IV
EDD / EDF? YES ____ NO ____
Global ID # ____

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	# Containers**	Analyses Required: (524.2) VOCs	(200.8) *	(314.0) Perchlorate	(SM2320B, SM2540C, 150.2) *	(300.0) *	REMARKS
0810	4/24/12	AQ	-04A	MW-22-5			3v, 2p	X	X	X	X	X	
0910			-05A	MW-22-4				X	X	X	X	X	2C IV
0944			-06A	MW-22-3				X	X	X	X	X	
1016			-07A	MW-22-2				X	X	X	X	X	
1050	4-24-12	AQ	-08A	MW-22-1			3v, 2p	X	X	X	X	X	
↑	4/24/12	AQ	-09A	DUPE - 1 - 2012			3v, 2p	X	X	X	X	X	DUPLICATE
1034	4/24/12	AQ	-10A	EB - 2 - 4/24/12			3v, 2p	X	X	X	X	X	EQUIP BLANK
0700	4/24/12	AQ	-11A	TB - 2 - 4/24/12			1V	X					TRIP BLANK

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: *(200.8) - TOTAL Cr, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320B, SM2540C, 150.2) - CO_3, HCO_3, TDS, PH, ALK. *(300.0) - CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: CHASES GORDON.

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:
INSIGHT	/ Alpha Analytical	4/24/12	1300
/ Alpha Analytical	Genelopez / alpha	4/25/12	9:55

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *08-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Work Order: BMI12042605 **Cooler Temp:** 2 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12042605-01A	MW-9	Aqueous
12042605-02A	MW-1	Aqueous
12042605-03A	MW-24-5	Aqueous
12042605-04A	MW-24-4	Aqueous
12042605-05A	MW-24-3	Aqueous
12042605-06A	MW-24-2	Aqueous
12042605-07A	MW-24-1	Aqueous
12042605-08A	DUPE-2-2Q12	Aqueous
12042605-09A	EB-3-4/25/12	Aqueous
12042605-10A	TB-3-4/25/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
12042605-06A	EPA Method 314.0	Perchlorate

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/26/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-9**					
Lab ID : BMI12042605-01A	Chloride	7.4	0.50 mg/L	04/26/12 12:19	04/26/12 17:58
Date Sampled 04/25/12 09:53	Nitrite (NO2) - N	ND	0.25 mg/L	04/26/12 12:19	04/26/12 17:58
	Nitrate (NO3) - N	0.85	0.25 mg/L	04/26/12 12:19	04/26/12 17:58
	Sulfate (SO4)	21	0.50 mg/L	04/26/12 12:19	04/26/12 17:58
Client ID: **MW-1**					
Lab ID : BMI12042605-02A	Chloride	18	0.50 mg/L	04/26/12 12:19	04/26/12 18:17
Date Sampled 04/25/12 12:50	Nitrite (NO2) - N	ND	0.25 mg/L	04/26/12 12:19	04/26/12 18:17
	Nitrate (NO3) - N	0.29	0.25 mg/L	04/26/12 12:19	04/26/12 18:17
	Sulfate (SO4)	43	0.50 mg/L	04/26/12 12:19	04/26/12 18:17
Client ID: **MW-24-5**					
Lab ID : BMI12042605-03A	Chloride	9.5	0.50 mg/L	04/26/12 12:19	04/26/12 18:35
Date Sampled 04/25/12 08:40	Nitrite (NO2) - N	ND	0.25 mg/L	04/26/12 12:19	04/26/12 18:35
	Nitrate (NO3) - N	1.2	0.25 mg/L	04/26/12 12:19	04/26/12 18:35
	Phosphate, ortho - P	ND	0.50 mg/L	04/26/12 12:19	04/26/12 18:35
	Sulfate (SO4)	22	0.50 mg/L	04/26/12 12:19	04/26/12 18:35
Client ID: **MW-24-4**					
Lab ID : BMI12042605-04A	Chloride	21	0.50 mg/L	04/26/12 12:19	04/26/12 18:54
Date Sampled 04/25/12 09:20	Nitrite (NO2) - N	ND	0.25 mg/L	04/26/12 12:19	04/26/12 18:54
	Nitrate (NO3) - N	ND	0.25 mg/L	04/26/12 12:19	04/26/12 18:54
	Phosphate, ortho - P	ND	0.50 mg/L	04/26/12 12:19	04/26/12 18:54
	Sulfate (SO4)	2.8	0.50 mg/L	04/26/12 12:19	04/26/12 18:54
Client ID: **MW-24-3**					
Lab ID : BMI12042605-05A	Chloride	24	0.50 mg/L	04/26/12 12:19	04/26/12 19:12
Date Sampled 04/25/12 09:56	Nitrite (NO2) - N	ND	0.25 mg/L	04/26/12 12:19	04/26/12 19:12
	Nitrate (NO3) - N	ND	0.25 mg/L	04/26/12 12:19	04/26/12 19:12
	Phosphate, ortho - P	ND	0.50 mg/L	04/26/12 12:19	04/26/12 19:12
	Sulfate (SO4)	16	0.50 mg/L	04/26/12 12:19	04/26/12 19:12
Client ID: **MW-24-2**					
Lab ID : BMI12042605-06A	Chloride	47	0.50 mg/L	04/26/12 12:19	04/26/12 19:31
Date Sampled 04/25/12 11:00	Nitrite (NO2) - N	ND	0.25 mg/L	04/26/12 12:19	04/26/12 19:31
	Nitrate (NO3) - N	1.9	0.25 mg/L	04/26/12 12:19	04/26/12 19:31
	Phosphate, ortho - P	ND	0.50 mg/L	04/26/12 12:19	04/26/12 19:31
	Sulfate (SO4)	27	0.50 mg/L	04/26/12 12:19	04/26/12 19:31
Client ID: **MW-24-1**					
Lab ID : BMI12042605-07A	Chloride	60	0.50 mg/L	04/26/12 12:19	04/26/12 19:49
Date Sampled 04/25/12 12:32	Nitrite (NO2) - N	ND	0.25 mg/L	04/26/12 12:19	04/26/12 19:49
	Nitrate (NO3) - N	1.4	0.25 mg/L	04/26/12 12:19	04/26/12 19:49
	Phosphate, ortho - P	ND	0.50 mg/L	04/26/12 12:19	04/26/12 19:49
	Sulfate (SO4)	47	0.50 mg/L	04/26/12 12:19	04/26/12 19:49

Alpha Analytical, Inc.

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Client ID: **DUPE-2-2Q12**					
Lab ID : BMI12042605-08A	Chloride	24	0.50 mg/L	04/26/12 12:19	04/26/12 20:08
Date Sampled 04/25/12 00:00	Nitrite (NO2) - N	ND	0.25 mg/L	04/26/12 12:19	04/26/12 20:08
	Nitrate (NO3) - N	ND	0.25 mg/L	04/26/12 12:19	04/26/12 20:08
	Phosphate, ortho - P	ND	0.50 mg/L	04/26/12 12:19	04/26/12 20:08
	Sulfate (SO4)	16	0.50 mg/L	04/26/12 12:19	04/26/12 20:08
Client ID: **EB-3-4/25/12**					
Lab ID : BMI12042605-09A	Chloride	ND	0.50 mg/L	04/26/12 12:19	04/26/12 21:22
Date Sampled 04/25/12 12:20	Nitrite (NO2) - N	ND	0.25 mg/L	04/26/12 12:19	04/26/12 21:22
	Nitrate (NO3) - N	ND	0.25 mg/L	04/26/12 12:19	04/26/12 21:22
	Phosphate, ortho - P	ND	0.50 mg/L	04/26/12 12:19	04/26/12 21:22
	Sulfate (SO4)	ND	0.50 mg/L	04/26/12 12:19	04/26/12 21:22

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/8/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/26/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-9**				
Lab ID : BMI12042605-01A Perchlorate	ND	1.00 µg/L	04/26/12 15:29	04/26/12 21:47
Date Sampled 04/25/12 09:53				
Client ID: **MW-1**				
Lab ID : BMI12042605-02A Perchlorate	ND	1.00 µg/L	04/26/12 15:29	04/26/12 22:05
Date Sampled 04/25/12 12:50				
Client ID: **MW-24-5**				
Lab ID : BMI12042605-03A Perchlorate	ND	1.00 µg/L	04/26/12 15:29	04/26/12 22:24
Date Sampled 04/25/12 08:40				
Client ID: **MW-24-4**				
Lab ID : BMI12042605-04A Perchlorate	ND	1.00 µg/L	04/26/12 15:29	04/26/12 22:42
Date Sampled 04/25/12 09:20				
Client ID: **MW-24-3**				
Lab ID : BMI12042605-05A Perchlorate	ND	1.00 µg/L	04/26/12 15:29	04/26/12 23:01
Date Sampled 04/25/12 09:56				
Client ID: **MW-24-2**				
Lab ID : BMI12042605-06A Perchlorate	20.1	1.00 µg/L	04/26/12 15:29	04/26/12 23:19
Date Sampled 04/25/12 11:00				
Client ID: **MW-24-1**				
Lab ID : BMI12042605-07A Perchlorate	3.15	1.00 µg/L	04/26/12 15:29	04/26/12 23:37
Date Sampled 04/25/12 12:32				
Client ID: **DUPE-2-2Q12**				
Lab ID : BMI12042605-08A Perchlorate	ND	1.00 µg/L	04/26/12 15:29	04/26/12 23:56
Date Sampled 04/25/12 00:00				
Client ID: **EB-3-4/25/12**				
Lab ID : BMI12042605-09A Perchlorate	ND	1.00 µg/L	04/26/12 15:29	04/27/12 00:14
Date Sampled 04/25/12 12:20				

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ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/8/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/26/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: MW-9				
Lab ID : BMI12042605-01A Alkalinity, Bicarbonate (As CaCO3)	170	10 mg/L	04/26/12 14:42	04/26/12 14:42
Date Sampled 04/25/12 09:53 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12 14:42	04/26/12 14:42
Alkalinity, Total (As CaCO3 at pH 4.5)	170	10 mg/L	04/26/12 14:42	04/26/12 14:42
Client ID: MW-1				
Lab ID : BMI12042605-02A Alkalinity, Bicarbonate (As CaCO3)	230	10 mg/L	04/26/12 14:53	04/26/12 14:53
Date Sampled 04/25/12 12:50 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12 14:53	04/26/12 14:53
Alkalinity, Total (As CaCO3 at pH 4.5)	230	10 mg/L	04/26/12 14:53	04/26/12 14:53
Client ID: MW-24-5				
Lab ID : BMI12042605-03A Alkalinity, Bicarbonate (As CaCO3)	180	10 mg/L	04/26/12 14:59	04/26/12 14:59
Date Sampled 04/25/12 08:40 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12 14:59	04/26/12 14:59
Alkalinity, Total (As CaCO3 at pH 4.5)	180	10 mg/L	04/26/12 14:59	04/26/12 14:59
Client ID: MW-24-4				
Lab ID : BMI12042605-04A Alkalinity, Bicarbonate (As CaCO3)	120	10 mg/L	04/26/12 15:03	04/26/12 15:03
Date Sampled 04/25/12 09:20 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12 15:03	04/26/12 15:03
Alkalinity, Total (As CaCO3 at pH 4.5)	120	10 mg/L	04/26/12 15:03	04/26/12 15:03
Client ID: MW-24-3				
Lab ID : BMI12042605-05A Alkalinity, Bicarbonate (As CaCO3)	170	10 mg/L	04/26/12 15:08	04/26/12 15:08
Date Sampled 04/25/12 09:56 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12 15:08	04/26/12 15:08
Alkalinity, Total (As CaCO3 at pH 4.5)	170	10 mg/L	04/26/12 15:08	04/26/12 15:08
Client ID: MW-24-2				
Lab ID : BMI12042605-06A Alkalinity, Bicarbonate (As CaCO3)	180	10 mg/L	04/26/12 15:14	04/26/12 15:14
Date Sampled 04/25/12 11:00 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12 15:14	04/26/12 15:14
Alkalinity, Total (As CaCO3 at pH 4.5)	180	10 mg/L	04/26/12 15:14	04/26/12 15:14
Client ID: MW-24-1				
Lab ID : BMI12042605-07A Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	04/26/12 15:21	04/26/12 15:21
Date Sampled 04/25/12 12:32 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12 15:21	04/26/12 15:21
Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	04/26/12 15:21	04/26/12 15:21
Client ID: DUPE-2-2Q12				
Lab ID : BMI12042605-08A Alkalinity, Bicarbonate (As CaCO3)	170	10 mg/L	04/26/12 15:26	04/26/12 15:26
Date Sampled 04/25/12 00:00 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12 15:26	04/26/12 15:26
Alkalinity, Total (As CaCO3 at pH 4.5)	170	10 mg/L	04/26/12 15:26	04/26/12 15:26
Client ID: EB-3-4/25/12				
Lab ID : BMI12042605-09A Alkalinity, Bicarbonate (As CaCO3)	10	10 mg/L	04/26/12 15:31	04/26/12 15:31
Date Sampled 04/25/12 12:20 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/26/12 15:31	04/26/12 15:31
Alkalinity, Total (As CaCO3 at pH 4.5)	10	10 mg/L	04/26/12 15:31	04/26/12 15:31

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

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5/8/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/26/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-9**					
Lab ID : BMI12042605-01A	Sodium (Na)	17	0.50 mg/L	04/30/12 09:04	05/05/12 09:25
Date Sampled 04/25/12 09:53	Magnesium (Mg)	12	0.50 mg/L	04/30/12 09:04	05/05/12 09:25
	Potassium (K)	2.5	0.50 mg/L	04/30/12 09:04	05/05/12 09:25
	Calcium (Ca)	37	0.50 mg/L	04/30/12 09:04	05/05/12 09:25
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 09:25
	Iron (Fe)	0.48	0.30 mg/L	04/30/12 09:04	05/05/12 09:25
	Arsenic (As)	ND	0.0020 mg/L	04/30/12 09:04	05/05/12 09:25
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 09:25
Client ID: **MW-1**					
Lab ID : BMI12042605-02A	Sodium (Na)	30	0.50 mg/L	04/30/12 09:04	05/05/12 09:48
Date Sampled 04/25/12 12:50	Magnesium (Mg)	19	0.50 mg/L	04/30/12 09:04	05/05/12 09:48
	Potassium (K)	3.2	0.50 mg/L	04/30/12 09:04	05/05/12 09:48
	Calcium (Ca)	59	0.50 mg/L	04/30/12 09:04	05/05/12 09:48
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 09:48
	Iron (Fe)	0.66	0.30 mg/L	04/30/12 09:04	05/05/12 09:48
	Arsenic (As)	ND	0.0020 mg/L	04/30/12 09:04	05/05/12 09:48
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 09:48
Client ID: **MW-24-5**					
Lab ID : BMI12042605-03A	Sodium (Na)	38	0.50 mg/L	04/30/12 09:04	05/05/12 09:54
Date Sampled 04/25/12 08:40	Magnesium (Mg)	9.0	0.50 mg/L	04/30/12 09:04	05/05/12 09:54
	Potassium (K)	1.8	0.50 mg/L	04/30/12 09:04	05/05/12 09:54
	Calcium (Ca)	34	0.50 mg/L	04/30/12 09:04	05/05/12 09:54
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 09:54
	Iron (Fe)	0.39	0.30 mg/L	04/30/12 09:04	05/05/12 09:54
	Arsenic (As)	0.0028	0.0020 mg/L	04/30/12 09:04	05/05/12 09:54
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 09:54
Client ID: **MW-24-4**					
Lab ID : BMI12042605-04A	Sodium (Na)	36	0.50 mg/L	04/30/12 09:04	05/05/12 10:00
Date Sampled 04/25/12 09:20	Magnesium (Mg)	6.8	0.50 mg/L	04/30/12 09:04	05/05/12 10:00
	Potassium (K)	1.8	0.50 mg/L	04/30/12 09:04	05/05/12 10:00
	Calcium (Ca)	5.4	0.50 mg/L	04/30/12 09:04	05/05/12 10:00
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 10:00
	Iron (Fe)	ND	0.30 mg/L	04/30/12 09:04	05/05/12 10:00
	Arsenic (As)	ND	0.0020 mg/L	04/30/12 09:04	05/05/12 10:00
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 10:00

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Client ID: **MW-24-3**					
Lab ID : BMI12042605-05A	Sodium (Na)	41	0.50 mg/L	04/30/12 09:04	05/05/12 10:06
Date Sampled 04/25/12 09:56	Magnesium (Mg)	11	0.50 mg/L	04/30/12 09:04	05/05/12 10:06
	Potassium (K)	2.0	0.50 mg/L	04/30/12 09:04	05/05/12 10:06
	Calcium (Ca)	25	0.50 mg/L	04/30/12 09:04	05/05/12 10:06
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 10:06
	Iron (Fe)	ND	0.30 mg/L	04/30/12 09:04	05/05/12 10:06
	Arsenic (As)	0.0052	0.0020 mg/L	04/30/12 09:04	05/07/12 17:01
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 10:06
Client ID: **MW-24-2**					
Lab ID : BMI12042605-06A	Sodium (Na)	41	0.50 mg/L	04/30/12 09:04	05/05/12 10:12
Date Sampled 04/25/12 11:00	Magnesium (Mg)	14	0.50 mg/L	04/30/12 09:04	05/05/12 10:12
	Potassium (K)	2.8	0.50 mg/L	04/30/12 09:04	05/05/12 10:12
	Calcium (Ca)	41	0.50 mg/L	04/30/12 09:04	05/05/12 10:12
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 10:12
	Iron (Fe)	0.42	0.30 mg/L	04/30/12 09:04	05/05/12 10:12
	Arsenic (As)	0.0030	0.0020 mg/L	04/30/12 09:04	05/05/12 10:12
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 10:12
Client ID: **MW-24-1**					
Lab ID : BMI12042605-07A	Sodium (Na)	31	0.50 mg/L	04/30/12 09:04	05/05/12 14:10
Date Sampled 04/25/12 12:32	Magnesium (Mg)	18	0.50 mg/L	04/30/12 09:04	05/05/12 14:10
	Potassium (K)	3.4	0.50 mg/L	04/30/12 09:04	05/05/12 14:10
	Calcium (Ca)	59	0.50 mg/L	04/30/12 09:04	05/05/12 14:10
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 14:10
	Iron (Fe)	0.83	0.30 mg/L	04/30/12 09:04	05/05/12 14:10
	Arsenic (As)	ND	0.0020 mg/L	04/30/12 09:04	05/05/12 14:10
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 14:10
Client ID: **DUPE-2-2Q12**					
Lab ID : BMI12042605-08A	Sodium (Na)	40	0.50 mg/L	04/30/12 09:04	05/05/12 10:23
Date Sampled 04/25/12 00:00	Magnesium (Mg)	11	0.50 mg/L	04/30/12 09:04	05/05/12 10:23
	Potassium (K)	1.9	0.50 mg/L	04/30/12 09:04	05/05/12 10:23
	Calcium (Ca)	25	0.50 mg/L	04/30/12 09:04	05/05/12 10:23
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 10:23
	Iron (Fe)	ND	0.30 mg/L	04/30/12 09:04	05/05/12 10:23
	Arsenic (As)	0.0049	0.0020 mg/L	04/30/12 09:04	05/07/12 14:15
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 10:23
Client ID: **EB-3-4/25/12**					
Lab ID : BMI12042605-09A	Sodium (Na)	ND	0.50 mg/L	04/30/12 09:04	05/05/12 10:29
Date Sampled 04/25/12 12:20	Magnesium (Mg)	ND	0.50 mg/L	04/30/12 09:04	05/05/12 10:29
	Potassium (K)	ND	0.50 mg/L	04/30/12 09:04	05/05/12 10:29
	Calcium (Ca)	ND	0.50 mg/L	04/30/12 09:04	05/05/12 10:29
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 10:29
	Iron (Fe)	ND	0.30 mg/L	04/30/12 09:04	05/05/12 10:29
	Arsenic (As)	ND	0.0020 mg/L	04/30/12 09:04	05/05/12 10:29
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 10:29

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/26/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-9**					
Lab ID : BMI12042605-01A	pH	7.2	1.7 pH Units	04/26/12 15:59	04/26/12 15:59
Date Sampled 04/25/12 09:53	pH - Temperature	23	1.0 °C	04/26/12 15:59	04/26/12 15:59
Client ID: **MW-1**					
Lab ID : BMI12042605-02A	pH	7.5	1.7 pH Units	04/26/12 16:04	04/26/12 16:04
Date Sampled 04/25/12 12:50	pH - Temperature	23	1.0 °C	04/26/12 16:04	04/26/12 16:04
Client ID: **MW-24-5**					
Lab ID : BMI12042605-03A	pH	8.1	1.7 pH Units	04/26/12 16:06	04/26/12 16:06
Date Sampled 04/25/12 08:40	pH - Temperature	23	1.0 °C	04/26/12 16:06	04/26/12 16:06
Client ID: **MW-24-4**					
Lab ID : BMI12042605-04A	pH	9.3	1.7 pH Units	04/26/12 16:08	04/26/12 16:08
Date Sampled 04/25/12 09:20	pH - Temperature	23	1.0 °C	04/26/12 16:08	04/26/12 16:08
Client ID: **MW-24-3**					
Lab ID : BMI12042605-05A	pH	8.4	1.7 pH Units	04/26/12 16:10	04/26/12 16:10
Date Sampled 04/25/12 09:56	pH - Temperature	23	1.0 °C	04/26/12 16:10	04/26/12 16:10
Client ID: **MW-24-2**					
Lab ID : BMI12042605-06A	pH	7.9	1.7 pH Units	04/26/12 16:12	04/26/12 16:12
Date Sampled 04/25/12 11:00	pH - Temperature	23	1.0 °C	04/26/12 16:12	04/26/12 16:12
Client ID: **MW-24-1**					
Lab ID : BMI12042605-07A	pH	7.2	1.7 pH Units	04/26/12 16:14	04/26/12 16:14
Date Sampled 04/25/12 12:32	pH - Temperature	23	1.0 °C	04/26/12 16:14	04/26/12 16:14
Client ID: **DUPE-2-2Q12**					
Lab ID : BMI12042605-08A	pH	8.3	1.7 pH Units	04/26/12 16:19	04/26/12 16:19
Date Sampled 04/25/12 00:00	pH - Temperature	23	1.0 °C	04/26/12 16:19	04/26/12 16:19
Client ID: **EB-3-4/25/12**					
Lab ID : BMI12042605-09A	pH	7.0	1.7 pH Units	04/26/12 16:28	04/26/12 16:28
Date Sampled 04/25/12 12:20	pH - Temperature	23	1.0 °C	04/26/12 16:28	04/26/12 16:28

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The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.

The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/26/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-9**					
Lab ID : BMI12042605-01A	Solids, Total Dissolved (TDS)	200	10 mg/L	04/27/12	04/27/12
Date Sampled 04/25/12 09:53					
Client ID: **MW-1**					
Lab ID : BMI12042605-02A	Solids, Total Dissolved (TDS)	310	10 mg/L	04/27/12	04/27/12
Date Sampled 04/25/12 12:50					
Client ID: **MW-24-5**					
Lab ID : BMI12042605-03A	Solids, Total Dissolved (TDS)	220	10 mg/L	04/27/12	04/27/12
Date Sampled 04/25/12 08:40					
Client ID: **MW-24-4**					
Lab ID : BMI12042605-04A	Solids, Total Dissolved (TDS)	120	10 mg/L	04/27/12	04/27/12
Date Sampled 04/25/12 09:20					
Client ID: **MW-24-3**					
Lab ID : BMI12042605-05A	Solids, Total Dissolved (TDS)	210	10 mg/L	04/27/12	04/27/12
Date Sampled 04/25/12 09:56					
Client ID: **MW-24-2**					
Lab ID : BMI12042605-06A	Solids, Total Dissolved (TDS)	280	10 mg/L	04/27/12	04/27/12
Date Sampled 04/25/12 11:00					
Client ID: **MW-24-1**					
Lab ID : BMI12042605-07A	Solids, Total Dissolved (TDS)	330	10 mg/L	04/27/12	04/27/12
Date Sampled 04/25/12 12:32					
Client ID: **DUPE-2-2Q12**					
Lab ID : BMI12042605-08A	Solids, Total Dissolved (TDS)	230	10 mg/L	04/27/12	04/27/12
Date Sampled 04/25/12 00:00					
Client ID: **EB-3-4/25/12**					
Lab ID : BMI12042605-09A	Solids, Total Dissolved (TDS)	ND	10 mg/L	04/27/12	04/27/12
Date Sampled 04/25/12 12:20					

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ANALYTICAL REPORT

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Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/26/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-9**					
Lab ID : BMI12042605-01A	Acrylonitrile	ND	10 µg/L	05/02/12 13:57	05/02/12 13:57
Date Sampled 04/25/12 09:53	Allyl chloride	ND	2.0 µg/L	05/02/12 13:57	05/02/12 13:57
	Carbon disulfide	ND	2.0 µg/L	05/02/12 13:57	05/02/12 13:57
	Chloroacetonitrile	ND	10 µg/L	05/02/12 13:57	05/02/12 13:57
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 13:57	05/02/12 13:57
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 13:57	05/02/12 13:57
	Diethyl ether	ND	2.0 µg/L	05/02/12 13:57	05/02/12 13:57
	Ethyl methacrylate	ND	10 µg/L	05/02/12 13:57	05/02/12 13:57
	Hexachloroethane	ND	10 µg/L	05/02/12 13:57	05/02/12 13:57
	Methacrylonitrile	ND	10 µg/L	05/02/12 13:57	05/02/12 13:57
	Methyl acrylate	ND	10 µg/L	05/02/12 13:57	05/02/12 13:57
	Methyl iodide	ND	2.0 µg/L	05/02/12 13:57	05/02/12 13:57
	Methyl methacrylate	ND	10 µg/L	05/02/12 13:57	05/02/12 13:57
	Nitrobenzene	ND	10 µg/L	05/02/12 13:57	05/02/12 13:57
	2-Nitropropane	ND	2.0 µg/L	05/02/12 13:57	05/02/12 13:57
	Pentachloroethane	ND	2.0 µg/L	05/02/12 13:57	05/02/12 13:57
	Propionitrile	ND	50 µg/L	05/02/12 13:57	05/02/12 13:57
	Tetrahydrofuran	ND	10 µg/L	05/02/12 13:57	05/02/12 13:57
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 13:57	05/02/12 13:57
Client ID: **MW-1**					
Lab ID : BMI12042605-02A	Acrylonitrile	ND	10 µg/L	05/02/12 15:24	05/02/12 15:24
Date Sampled 04/25/12 12:50	Allyl chloride	ND	2.0 µg/L	05/02/12 15:24	05/02/12 15:24
	Carbon disulfide	ND	2.0 µg/L	05/02/12 15:24	05/02/12 15:24
	Chloroacetonitrile	ND	10 µg/L	05/02/12 15:24	05/02/12 15:24
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 15:24	05/02/12 15:24
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 15:24	05/02/12 15:24
	Diethyl ether	ND	2.0 µg/L	05/02/12 15:24	05/02/12 15:24
	Ethyl methacrylate	ND	10 µg/L	05/02/12 15:24	05/02/12 15:24
	Hexachloroethane	ND	10 µg/L	05/02/12 15:24	05/02/12 15:24
	Methacrylonitrile	ND	10 µg/L	05/02/12 15:24	05/02/12 15:24
	Methyl acrylate	ND	10 µg/L	05/02/12 15:24	05/02/12 15:24
	Methyl iodide	ND	2.0 µg/L	05/02/12 15:24	05/02/12 15:24
	Methyl methacrylate	ND	10 µg/L	05/02/12 15:24	05/02/12 15:24
	Nitrobenzene	ND	10 µg/L	05/02/12 15:24	05/02/12 15:24
	2-Nitropropane	ND	2.0 µg/L	05/02/12 15:24	05/02/12 15:24
	Pentachloroethane	ND	2.0 µg/L	05/02/12 15:24	05/02/12 15:24
	Propionitrile	ND	50 µg/L	05/02/12 15:24	05/02/12 15:24
	Tetrahydrofuran	ND	10 µg/L	05/02/12 15:24	05/02/12 15:24
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 15:24	05/02/12 15:24

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Client ID: **MW-24-5**					
Lab ID : BMI12042605-03A	Acrylonitrile	ND	10 µg/L	05/02/12 15:46	05/02/12 15:46
Date Sampled 04/25/12 08:40	Allyl chloride	ND	2.0 µg/L	05/02/12 15:46	05/02/12 15:46
	Carbon disulfide	ND	2.0 µg/L	05/02/12 15:46	05/02/12 15:46
	Chloroacetonitrile	ND	10 µg/L	05/02/12 15:46	05/02/12 15:46
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 15:46	05/02/12 15:46
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 15:46	05/02/12 15:46
	Diethyl ether	ND	2.0 µg/L	05/02/12 15:46	05/02/12 15:46
	Ethyl methacrylate	ND	10 µg/L	05/02/12 15:46	05/02/12 15:46
	Hexachloroethane	ND	10 µg/L	05/02/12 15:46	05/02/12 15:46
	Methacrylonitrile	ND	10 µg/L	05/02/12 15:46	05/02/12 15:46
	Methyl acrylate	ND	10 µg/L	05/02/12 15:46	05/02/12 15:46
	Methyl iodide	ND	2.0 µg/L	05/02/12 15:46	05/02/12 15:46
	Methyl methacrylate	ND	10 µg/L	05/02/12 15:46	05/02/12 15:46
	Nitrobenzene	ND	10 µg/L	05/02/12 15:46	05/02/12 15:46
	2-Nitropropane	ND	2.0 µg/L	05/02/12 15:46	05/02/12 15:46
	Pentachloroethane	ND	2.0 µg/L	05/02/12 15:46	05/02/12 15:46
	Propionitrile	ND	50 µg/L	05/02/12 15:46	05/02/12 15:46
	Tetrahydrofuran	ND	10 µg/L	05/02/12 15:46	05/02/12 15:46
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 15:46	05/02/12 15:46
Client ID: **MW-24-4**					
Lab ID : BMI12042605-04A	Acrylonitrile	ND	10 µg/L	05/02/12 16:08	05/02/12 16:08
Date Sampled 04/25/12 09:20	Allyl chloride	ND	2.0 µg/L	05/02/12 16:08	05/02/12 16:08
	Carbon disulfide	ND	2.0 µg/L	05/02/12 16:08	05/02/12 16:08
	Chloroacetonitrile	ND	10 µg/L	05/02/12 16:08	05/02/12 16:08
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 16:08	05/02/12 16:08
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 16:08	05/02/12 16:08
	Diethyl ether	ND	2.0 µg/L	05/02/12 16:08	05/02/12 16:08
	Ethyl methacrylate	ND	10 µg/L	05/02/12 16:08	05/02/12 16:08
	Hexachloroethane	ND	10 µg/L	05/02/12 16:08	05/02/12 16:08
	Methacrylonitrile	ND	10 µg/L	05/02/12 16:08	05/02/12 16:08
	Methyl acrylate	ND	10 µg/L	05/02/12 16:08	05/02/12 16:08
	Methyl iodide	ND	2.0 µg/L	05/02/12 16:08	05/02/12 16:08
	Methyl methacrylate	ND	10 µg/L	05/02/12 16:08	05/02/12 16:08
	Nitrobenzene	ND	10 µg/L	05/02/12 16:08	05/02/12 16:08
	2-Nitropropane	ND	2.0 µg/L	05/02/12 16:08	05/02/12 16:08
	Pentachloroethane	ND	2.0 µg/L	05/02/12 16:08	05/02/12 16:08
	Propionitrile	ND	50 µg/L	05/02/12 16:08	05/02/12 16:08
	Tetrahydrofuran	ND	10 µg/L	05/02/12 16:08	05/02/12 16:08
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 16:08	05/02/12 16:08
Client ID: **MW-24-3**					
Lab ID : BMI12042605-05A	Acrylonitrile	ND	10 µg/L	05/02/12 16:29	05/02/12 16:29
Date Sampled 04/25/12 09:56	Allyl chloride	ND	2.0 µg/L	05/02/12 16:29	05/02/12 16:29
	Carbon disulfide	ND	2.0 µg/L	05/02/12 16:29	05/02/12 16:29
	Chloroacetonitrile	ND	10 µg/L	05/02/12 16:29	05/02/12 16:29
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 16:29	05/02/12 16:29
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 16:29	05/02/12 16:29
	Diethyl ether	ND	2.0 µg/L	05/02/12 16:29	05/02/12 16:29
	Ethyl methacrylate	ND	10 µg/L	05/02/12 16:29	05/02/12 16:29
	Hexachloroethane	ND	10 µg/L	05/02/12 16:29	05/02/12 16:29
	Methacrylonitrile	ND	10 µg/L	05/02/12 16:29	05/02/12 16:29
	Methyl acrylate	ND	10 µg/L	05/02/12 16:29	05/02/12 16:29
	Methyl iodide	ND	2.0 µg/L	05/02/12 16:29	05/02/12 16:29
	Methyl methacrylate	ND	10 µg/L	05/02/12 16:29	05/02/12 16:29
	Nitrobenzene	ND	10 µg/L	05/02/12 16:29	05/02/12 16:29
	2-Nitropropane	ND	2.0 µg/L	05/02/12 16:29	05/02/12 16:29
	Pentachloroethane	ND	2.0 µg/L	05/02/12 16:29	05/02/12 16:29
	Propionitrile	ND	50 µg/L	05/02/12 16:29	05/02/12 16:29
	Tetrahydrofuran	ND	10 µg/L	05/02/12 16:29	05/02/12 16:29
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 16:29	05/02/12 16:29

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Client ID: **MW-24-2**					
Lab ID : BM112042605-06A	Acrylonitrile	ND	10 µg/L	05/02/12 16:51	05/02/12 16:51
Date Sampled 04/25/12 11:00	Allyl chloride	ND	2.0 µg/L	05/02/12 16:51	05/02/12 16:51
	Carbon disulfide	ND	2.0 µg/L	05/02/12 16:51	05/02/12 16:51
	Chloroacetonitrile	ND	10 µg/L	05/02/12 16:51	05/02/12 16:51
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 16:51	05/02/12 16:51
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 16:51	05/02/12 16:51
	Diethyl ether	ND	2.0 µg/L	05/02/12 16:51	05/02/12 16:51
	Ethyl methacrylate	ND	10 µg/L	05/02/12 16:51	05/02/12 16:51
	Hexachloroethane	ND	10 µg/L	05/02/12 16:51	05/02/12 16:51
	Methacrylonitrile	ND	10 µg/L	05/02/12 16:51	05/02/12 16:51
	Methyl acrylate	ND	10 µg/L	05/02/12 16:51	05/02/12 16:51
	Methyl iodide	ND	2.0 µg/L	05/02/12 16:51	05/02/12 16:51
	Methyl methacrylate	ND	10 µg/L	05/02/12 16:51	05/02/12 16:51
	Nitrobenzene	ND	10 µg/L	05/02/12 16:51	05/02/12 16:51
	2-Nitropropane	ND	2.0 µg/L	05/02/12 16:51	05/02/12 16:51
	Pentachloroethane	ND	2.0 µg/L	05/02/12 16:51	05/02/12 16:51
	Propionitrile	ND	50 µg/L	05/02/12 16:51	05/02/12 16:51
	Tetrahydrofuran	ND	10 µg/L	05/02/12 16:51	05/02/12 16:51
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 16:51	05/02/12 16:51
Client ID: **MW-24-1**					
Lab ID : BM112042605-07A	Acrylonitrile	ND	10 µg/L	05/02/12 17:13	05/02/12 17:13
Date Sampled 04/25/12 12:32	Allyl chloride	ND	2.0 µg/L	05/02/12 17:13	05/02/12 17:13
	Carbon disulfide	ND	2.0 µg/L	05/02/12 17:13	05/02/12 17:13
	Chloroacetonitrile	ND	10 µg/L	05/02/12 17:13	05/02/12 17:13
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 17:13	05/02/12 17:13
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 17:13	05/02/12 17:13
	Diethyl ether	ND	2.0 µg/L	05/02/12 17:13	05/02/12 17:13
	Ethyl methacrylate	ND	10 µg/L	05/02/12 17:13	05/02/12 17:13
	Hexachloroethane	ND	10 µg/L	05/02/12 17:13	05/02/12 17:13
	Methacrylonitrile	ND	10 µg/L	05/02/12 17:13	05/02/12 17:13
	Methyl acrylate	ND	10 µg/L	05/02/12 17:13	05/02/12 17:13
	Methyl iodide	ND	2.0 µg/L	05/02/12 17:13	05/02/12 17:13
	Methyl methacrylate	ND	10 µg/L	05/02/12 17:13	05/02/12 17:13
	Nitrobenzene	ND	10 µg/L	05/02/12 17:13	05/02/12 17:13
	2-Nitropropane	ND	2.0 µg/L	05/02/12 17:13	05/02/12 17:13
	Pentachloroethane	ND	2.0 µg/L	05/02/12 17:13	05/02/12 17:13
	Propionitrile	ND	50 µg/L	05/02/12 17:13	05/02/12 17:13
	Tetrahydrofuran	ND	10 µg/L	05/02/12 17:13	05/02/12 17:13
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 17:13	05/02/12 17:13
Client ID: **DUPE-2-2Q12**					
Lab ID : BM112042605-08A	Acrylonitrile	ND	10 µg/L	05/02/12 17:35	05/02/12 17:35
Date Sampled 04/25/12 00:00	Allyl chloride	ND	2.0 µg/L	05/02/12 17:35	05/02/12 17:35
	Carbon disulfide	ND	2.0 µg/L	05/02/12 17:35	05/02/12 17:35
	Chloroacetonitrile	ND	10 µg/L	05/02/12 17:35	05/02/12 17:35
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 17:35	05/02/12 17:35
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 17:35	05/02/12 17:35
	Diethyl ether	ND	2.0 µg/L	05/02/12 17:35	05/02/12 17:35
	Ethyl methacrylate	ND	10 µg/L	05/02/12 17:35	05/02/12 17:35
	Hexachloroethane	ND	10 µg/L	05/02/12 17:35	05/02/12 17:35
	Methacrylonitrile	ND	10 µg/L	05/02/12 17:35	05/02/12 17:35
	Methyl acrylate	ND	10 µg/L	05/02/12 17:35	05/02/12 17:35
	Methyl iodide	ND	2.0 µg/L	05/02/12 17:35	05/02/12 17:35
	Methyl methacrylate	ND	10 µg/L	05/02/12 17:35	05/02/12 17:35
	Nitrobenzene	ND	10 µg/L	05/02/12 17:35	05/02/12 17:35
	2-Nitropropane	ND	2.0 µg/L	05/02/12 17:35	05/02/12 17:35
	Pentachloroethane	ND	2.0 µg/L	05/02/12 17:35	05/02/12 17:35
	Propionitrile	ND	50 µg/L	05/02/12 17:35	05/02/12 17:35
	Tetrahydrofuran	ND	10 µg/L	05/02/12 17:35	05/02/12 17:35
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 17:35	05/02/12 17:35

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Client ID: **EB-3-4/25/12**					
Lab ID : BMI12042605-09A	Acrylonitrile	ND	10 µg/L	05/02/12 17:56	05/02/12 17:56
Date Sampled 04/25/12 12:20	Allyl chloride	ND	2.0 µg/L	05/02/12 17:56	05/02/12 17:56
	Carbon disulfide	ND	2.0 µg/L	05/02/12 17:56	05/02/12 17:56
	Chloroacetonitrile	ND	10 µg/L	05/02/12 17:56	05/02/12 17:56
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 17:56	05/02/12 17:56
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 17:56	05/02/12 17:56
	Diethyl ether	ND	2.0 µg/L	05/02/12 17:56	05/02/12 17:56
	Ethyl methacrylate	ND	10 µg/L	05/02/12 17:56	05/02/12 17:56
	Hexachloroethane	ND	10 µg/L	05/02/12 17:56	05/02/12 17:56
	Methacrylonitrile	ND	10 µg/L	05/02/12 17:56	05/02/12 17:56
	Methyl acrylate	ND	10 µg/L	05/02/12 17:56	05/02/12 17:56
	Methyl iodide	ND	2.0 µg/L	05/02/12 17:56	05/02/12 17:56
	Methyl methacrylate	ND	10 µg/L	05/02/12 17:56	05/02/12 17:56
	Nitrobenzene	ND	10 µg/L	05/02/12 17:56	05/02/12 17:56
	2-Nitropropane	ND	2.0 µg/L	05/02/12 17:56	05/02/12 17:56
	Pentachloroethane	ND	2.0 µg/L	05/02/12 17:56	05/02/12 17:56
	Propionitrile	ND	50 µg/L	05/02/12 17:56	05/02/12 17:56
	Tetrahydrofuran	ND	10 µg/L	05/02/12 17:56	05/02/12 17:56
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 17:56	05/02/12 17:56
Client ID: **TB-3-4/25/12**					
Lab ID : BMI12042605-10A	Acrylonitrile	ND	10 µg/L	05/02/12 18:18	05/02/12 18:18
Date Sampled 04/25/12 07:00	Allyl chloride	ND	2.0 µg/L	05/02/12 18:18	05/02/12 18:18
	Carbon disulfide	ND	2.0 µg/L	05/02/12 18:18	05/02/12 18:18
	Chloroacetonitrile	ND	10 µg/L	05/02/12 18:18	05/02/12 18:18
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 18:18	05/02/12 18:18
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 18:18	05/02/12 18:18
	Diethyl ether	ND	2.0 µg/L	05/02/12 18:18	05/02/12 18:18
	Ethyl methacrylate	ND	10 µg/L	05/02/12 18:18	05/02/12 18:18
	Hexachloroethane	ND	10 µg/L	05/02/12 18:18	05/02/12 18:18
	Methacrylonitrile	ND	10 µg/L	05/02/12 18:18	05/02/12 18:18
	Methyl acrylate	ND	10 µg/L	05/02/12 18:18	05/02/12 18:18
	Methyl iodide	ND	2.0 µg/L	05/02/12 18:18	05/02/12 18:18
	Methyl methacrylate	ND	10 µg/L	05/02/12 18:18	05/02/12 18:18
	Nitrobenzene	ND	10 µg/L	05/02/12 18:18	05/02/12 18:18
	2-Nitropropane	ND	2.0 µg/L	05/02/12 18:18	05/02/12 18:18
	Pentachloroethane	ND	2.0 µg/L	05/02/12 18:18	05/02/12 18:18
	Propionitrile	ND	50 µg/L	05/02/12 18:18	05/02/12 18:18
	Tetrahydrofuran	ND	10 µg/L	05/02/12 18:18	05/02/12 18:18
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 18:18	05/02/12 18:18

Information regarding the estimate of the uncertainty of measurement is available upon client request.

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/8/12

Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042605-01A
Client I.D. Number: MW-9

Sampled: 04/25/12 09:53
Received: 04/26/12
Extracted: 05/02/12 13:57
Analyzed: 05/02/12 13:57

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	102	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/8/12
Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042605-02A
Client I.D. Number: MW-1

Sampled: 04/25/12 12:50
Received: 04/26/12
Extracted: 05/02/12 15:24
Analyzed: 05/02/12 15:24

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37 Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	102	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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5/8/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042605-03A
Client I.D. Number: MW-24-5

Sampled: 04/25/12 08:40
Received: 04/26/12
Extracted: 05/02/12 15:46
Analyzed: 05/02/12 15:46

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/8/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042605-04A
Client I.D. Number: MW-24-4

Sampled: 04/25/12 09:20
Received: 04/26/12
Extracted: 05/02/12 16:08
Analyzed: 05/02/12 16:08

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37 Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	100	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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5/8/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042605-05A
Client I.D. Number: MW-24-3

Sampled: 04/25/12 09:56
Received: 04/26/12
Extracted: 05/02/12 16:29
Analyzed: 05/02/12 16:29

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/8/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042605-06A
Client I.D. Number: MW-24-2

Sampled: 04/25/12 11:00
Received: 04/26/12
Extracted: 05/02/12 16:51
Analyzed: 05/02/12 16:51

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/8/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042605-07A
Client I.D. Number: MW-24-1

Sampled: 04/25/12 12:32
Received: 04/26/12
Extracted: 05/02/12 17:13
Analyzed: 05/02/12 17:13

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	0.67	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/8/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042605-08A
Client I.D. Number: DUPE-2-2Q12

Sampled: 04/25/12 00:00
Received: 04/26/12
Extracted: 05/02/12 17:35
Analyzed: 05/02/12 17:35

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/8/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042605-09A
Client I.D. Number: EB-3-4/25/12

Sampled: 04/25/12 12:20
Received: 04/26/12
Extracted: 05/02/12 17:56
Analyzed: 05/02/12 17:56

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	104	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042605-10A
Client I.D. Number: TB-3-4/25/12

Sampled: 04/25/12 07:00
Received: 04/26/12
Extracted: 05/02/12 18:18
Analyzed: 05/02/12 18:18

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/8/12
Report Date

Alpha Analytical, Inc.

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VOC Sample Preservation Report

Work Order: BMI12042605 **Job:** 100006114 / JPL Groundwater Monitoring

Alpha's Sample ID	Client's Sample ID	Matrix	pH
12042605-01A	MW-9	Aqueous	2
12042605-02A	MW-1	Aqueous	2
12042605-03A	MW-24-5	Aqueous	2
12042605-04A	MW-24-4	Aqueous	2
12042605-05A	MW-24-3	Aqueous	2
12042605-06A	MW-24-2	Aqueous	2
12042605-07A	MW-24-1	Aqueous	2
12042605-08A	DUPE-2-2Q12	Aqueous	2
12042605-09A	EB-3-4/25/12	Aqueous	2
12042605-10A	TB-3-4/25/12	Aqueous	2

5/8/12

Report Date

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Date: *08-May-12*

QC Summary Report

Work Order: 12042605

Method Blank

Type: **MBLK** Test Code: **EPA Method 300.0**

File ID: **25** Batch ID: **28601** Analysis Date: **04/26/2012 12:41**

Sample ID: **MB-28601** Units : **mg/L** Run ID: **IC_1_120426A** Prep Date: **04/26/2012 12:19**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 300.0**

File ID: **29** Batch ID: **28601** Analysis Date: **04/26/2012 16:26**

Sample ID: **LFB-28601** Units : **mg/L** Run ID: **IC_1_120426A** Prep Date: **04/26/2012 12:19**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	50.8	0.5	50		102	90	110			
Nitrite (NO2) - N	5.28	0.25	5		106	90	110			
Nitrate (NO3) - N	5.49	0.25	5		110	90	110			
Phosphate, ortho - P	5.35	0.5	5		107	90	110			
Sulfate (SO4)	104	0.5	100		104	90	110			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 300.0**

File ID: **31** Batch ID: **28601** Analysis Date: **04/26/2012 17:03**

Sample ID: **12042604-01ALFM** Units : **mg/L** Run ID: **IC_1_120426A** Prep Date: **04/26/2012 12:19**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	284	1.3	250	61.56	89	80	120			
Nitrite (NO2) - N	24.8	0.63	25	0	99	80	120			
Nitrate (NO3) - N	36.2	0.63	25	14.01	89	80	120			
Phosphate, ortho - P	24.7	1.3	25	0	99	80	120			
Sulfate (SO4)	554	1.3	500	88.69	93	80	120			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 300.0**

File ID: **32** Batch ID: **28601** Analysis Date: **04/26/2012 17:21**

Sample ID: **12042604-01ALFMD** Units : **mg/L** Run ID: **IC_1_120426A** Prep Date: **04/26/2012 12:19**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	287	1.3	250	61.56	90	80	120	283.6	1.2(15)	
Nitrite (NO2) - N	24.7	0.63	25	0	99	80	120	24.78	0.3(15)	
Nitrate (NO3) - N	36	0.63	25	14.01	88	80	120	36.17	0.5(15)	
Phosphate, ortho - P	25.1	1.3	25	0	101	80	120	24.66	2.0(15)	
Sulfate (SO4)	560	1.3	500	88.69	94	80	120	553.9	1.1(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *08-May-12*

QC Summary Report

Work Order: 12042605

Method Blank

Type: **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **28606K** Analysis Date: **04/26/2012 16:34**

Sample ID: **MB-28606** Units : **µg/L** Run ID: **IC_3_120426A** Prep Date: **04/26/2012 15:29**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **28606K** Analysis Date: **04/26/2012 16:52**

Sample ID: **LFB-28606** Units : **µg/L** Run ID: **IC_3_120426A** Prep Date: **04/26/2012 15:29**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	23.2	2	25		93	85	115			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 314.0**

File ID: **19** Batch ID: **28606K** Analysis Date: **04/26/2012 18:06**

Sample ID: **12042502-01ALFM** Units : **µg/L** Run ID: **IC_3_120426A** Prep Date: **04/26/2012 15:29**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	27.8	2	25	3.428	97	85	115			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 314.0**

File ID: **20** Batch ID: **28606K** Analysis Date: **04/26/2012 18:24**

Sample ID: **12042502-01ALFMD** Units : **µg/L** Run ID: **IC_3_120426A** Prep Date: **04/26/2012 15:29**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	29.4	2	25	3.428	104	85	115	27.77	5.9(15)	

Comments:

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Date: *08-May-12*

QC Summary Report

Work Order: 12042605

Laboratory Control Spike Type: **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0426ALA** Analysis Date: **04/26/2012 13:09**

Sample ID: **LCS-W0426ALA** Units : **mg/L** Run ID: **WETLAB_120426E** Prep Date: **04/26/2012 13:09**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	233.1	10	250		93	80	120			
Alkalinity, Carbonate (As CaCO3)	233.1	10	250		93	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	233	10	250		93	80	120			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *08-May-12*

QC Summary Report

Work Order: 12042605

Method Blank

Type: **MBLK** Test Code: **EPA Method 200.8**

File ID: **050412.B\206_M.D** Batch ID: **28615K** Analysis Date: **05/05/2012 08:56**

Sample ID: **MB-28615** Units : **mg/L** Run ID: **ICP/MS_120505B** Prep Date: **04/30/2012 09:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 200.8**

File ID: **050412.B\207_M.D** Batch ID: **28615K** Analysis Date: **05/05/2012 09:02**

Sample ID: **LCS-28615** Units : **mg/L** Run ID: **ICP/MS_120505B** Prep Date: **04/30/2012 09:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	5.1	0.5	5		102	80	120			
Magnesium (Mg)	4.8	0.5	5		96	80	120			
Potassium (K)	4.82	0.5	5		96	80	120			
Calcium (Ca)	5.03	0.5	5		101	80	120			
Chromium (Cr)	0.05	0.005	0.05		99.9	80	120			
Iron (Fe)	5.08	0.3	5		102	80	120			
Arsenic (As)	0.0466	0.002	0.05		93	80	120			
Lead (Pb)	0.0503	0.005	0.05		101	80	120			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method 200.8**

File ID: **050412.B\212_M.D** Batch ID: **28615K** Analysis Date: **05/05/2012 09:31**

Sample ID: **12042605-01AMS** Units : **mg/L** Run ID: **ICP/MS_120505B** Prep Date: **04/30/2012 09:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	21.7	0.5	5	17.19	90	80	120			
Magnesium (Mg)	16.5	0.5	5	11.54	99	80	120			
Potassium (K)	7.32	0.5	5	2.519	96	80	120			
Calcium (Ca)	41.2	0.5	5	37.11	81	80	120			
Chromium (Cr)	0.05	0.005	0.05	0	100	80	120			
Iron (Fe)	5.21	0.3	5	0.479	95	80	120			
Arsenic (As)	0.0514	0.002	0.05	0	103	80	120			
Lead (Pb)	0.0471	0.005	0.05	0	94	80	120			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method 200.8**

File ID: **050412.B\213_M.D** Batch ID: **28615K** Analysis Date: **05/05/2012 09:37**

Sample ID: **12042605-01AMSD** Units : **mg/L** Run ID: **ICP/MS_120505B** Prep Date: **04/30/2012 09:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	21.7	0.5	5	17.19	89	80	120	21.68	0.1(20)	
Magnesium (Mg)	16.2	0.5	5	11.54	93	80	120	16.5	2.0(20)	
Potassium (K)	7.17	0.5	5	2.519	93	80	120	7.318	2.0(20)	
Calcium (Ca)	41	0.5	5	37.11	77	80	120	41.16	0.5(20)	M3
Chromium (Cr)	0.0502	0.005	0.05	0	100	80	120	0.05001	0.4(20)	
Iron (Fe)	5.19	0.3	5	0.479	94	80	120	5.207	0.4(20)	
Arsenic (As)	0.0462	0.002	0.05	0	92	80	120	0.05136	10.6(20)	
Lead (Pb)	0.0464	0.005	0.05	0	93	80	120	0.04705	1.3(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M3 = The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to the spike level. The method control sample recovery was acceptable.

Alpha Analytical, Inc.

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Date: *03-May-12*

QC Summary Report

Work Order: 12042605

Laboratory Control Spike Type **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0426PH** Analysis Date: **04/26/2012 15:54**

Sample ID: **LCS-W0426PH** Units : **pH Units** Run ID: **WETLAB_120426D** Prep Date: **04/26/2012 15:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5.02	1.7	5		100	90	110			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *03-May-12*

QC Summary Report

Work Order: 12042605

Method Blank

Type: **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0425DS** Analysis Date: **04/26/2012 00:00**

Sample ID: **MBLK-W0425DS** Units : **mg/L** Run ID: **WETLAB_120425H** Prep Date: **04/26/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type: **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0425DS** Analysis Date: **04/26/2012 00:00**

Sample ID: **LCS-W0425DS** Units : **mg/L** Run ID: **WETLAB_120425H** Prep Date: **04/26/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	99	10	100		99	70	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *08-May-12*

QC Summary Report

Work Order: 12042605

Method Blank Type: **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12050206.D** Batch ID: **MS15W0502M** Analysis Date: **05/02/2012 12:09**

Sample ID: **MBLK MS15W0502M** Units : **µg/L** Run ID: **MSD_15_120502A** Prep Date: **05/02/2012 12:09**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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Date: *08-May-12*

QC Summary Report

Work Order: 12042605

Surr: 1,2-Dichloroethane-d4	10.2	10	102	70	130
Surr: Toluene-d8	10.5	10	105	70	130
Surr: 4-Bromofluorobenzene	8.98	10	90	70	130

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Date: 08-May-12

QC Summary Report

Work Order: 12042605

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method SW8260B**

File ID: **12050203.D** Batch ID: **MS15W0502M** Analysis Date: **05/02/2012 11:00**

Sample ID: **LCS MS15W0502M** Units : **µg/L** Run ID: **MSD_15_120502A** Prep Date: **05/02/2012 11:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	10.9	1	10		109	70	130			
Chloromethane	7.4	2	10		74	70	130			
Vinyl chloride	10.6	1	10		106	70	130			
Chloroethane	9.68	1	10		97	70	130			
Bromomethane	9	2	10		90	70	130			
Trichlorofluoromethane	10.8	1	10		108	70	130			
Acetone	301	10	200		151	36	171			
1,1-Dichloroethene	10.3	1	10		103	70	130			
Dichloromethane	8.73	2	10		87	70	130			
Freon-113	10.8	1	10		108	70	137			
trans-1,2-Dichloroethene	9.75	1	10		98	70	130			
Methyl tert-butyl ether (MTBE)	8.11	0.5	10		81	70	130			
1,1-Dichloroethane	9.44	1	10		94	70	130			
2-Butanone (MEK)	259	10	200		130	70	130			
cis-1,2-Dichloroethene	9.77	1	10		98	70	130			
Bromochloromethane	9.77	1	10		98	70	130			
Chloroform	8.79	1	10		88	70	130			
2,2-Dichloropropane	8.94	1	10		89	70	130			
1,2-Dichloroethane	9.47	1	10		95	70	130			
1,1,1-Trichloroethane	9.67	1	10		97	70	130			
1,1-Dichloropropene	10.5	1	10		105	70	130			
Carbon tetrachloride	8.85	1	10		89	70	130			
Benzene	9.76	0.5	10		98	70	130			
Dibromomethane	9.59	1	10		96	70	130			
1,2-Dichloropropane	8.94	1	10		89	70	130			
Trichloroethene	9.9	1	10		99	70	130			
Bromodichloromethane	8.71	1	10		87	70	130			
4-Methyl-2-pentanone (MIBK)	23.4	2.5	25		94	20	182			
cis-1,3-Dichloropropene	8.67	1	10		87	70	130			
trans-1,3-Dichloropropene	8.64	1	10		86	70	130			
1,1,2-Trichloroethane	9.84	1	10		98	70	130			
Toluene	9.67	0.5	10		97	70	130			
1,3-Dichloropropane	9.34	1	10		93	70	130			
2-Hexanone	119	5	100		119	20	182			
Dibromochloromethane	8.44	1	10		84	70	130			
1,2-Dibromoethane (EDB)	18.2	2	20		91	70	130			
Tetrachloroethene	9.88	1	10		99	70	130			
1,1,1,2-Tetrachloroethane	10.4	1	10		104	70	130			
Chlorobenzene	9.93	1	10		99	70	130			
Ethylbenzene	9.74	0.5	10		97	70	130			
m,p-Xylene	9.82	0.5	10		98	70	130			
Bromoform	8.54	1	10		85	70	130			
Styrene	8.55	1	10		86	70	130			
o-Xylene	9.49	0.5	10		95	70	130			
1,1,2,2-Tetrachloroethane	9.76	1	10		98	70	130			
1,2,3-Trichloropropane	20.2	2	20		101	70	130			
Isopropylbenzene	9.31	1	10		93	70	130			
Bromobenzene	9.68	1	10		97	70	130			
n-Propylbenzene	9.81	1	10		98	70	130			
4-Chlorotoluene	9.62	1	10		96	70	130			
2-Chlorotoluene	9.41	1	10		94	70	130			
1,3,5-Trimethylbenzene	9.79	1	10		98	70	130			
tert-Butylbenzene	9.5	1	10		95	70	130			
1,2,4-Trimethylbenzene	9.91	1	10		99	70	130			
sec-Butylbenzene	9.72	1	10		97	70	130			
1,3-Dichlorobenzene	9.11	1	10		91	70	130			
1,4-Dichlorobenzene	9.55	1	10		96	70	130			
4-Isopropyltoluene	9.89	1	10		99	70	130			
1,2-Dichlorobenzene	9.23	1	10		92	70	130			
n-Butylbenzene	9.83	1	10		98	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	47.4	3	50		95	67	130			
1,2,4-Trichlorobenzene	8.72	2	10		87	70	130			
Naphthalene	7.67	2	10		77	70	130			
Hexachlorobutadiene	19.3	2	20		97	70	130			
1,2,3-Trichlorobenzene	7.65	2	10		77	70	130			

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *08-May-12*

QC Summary Report

Work Order: 12042605

Surr: 1,2-Dichloroethane-d4	10	10	100	70	130	
Surr: Toluene-d8	9.83	10	98	70	130	
Surr: 4-Bromofluorobenzene	9.09	10	91	70	130	

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Date: 08-May-12

QC Summary Report

Work Order: 12042605

Sample Matrix Spike Type: **MS** Test Code: **EPA Method SW8260B**

File ID: **12050209.D** Batch ID: **MS15W0502M** Analysis Date: **05/02/2012 13:14**

Sample ID: **12042605-03AMS** Units : **µg/L** Run ID: **MSD_15_120502A** Prep Date: **05/02/2012 13:14**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	42.2	2.5	50	0	84	21	138			
Chloromethane	34.2	10	50	0	68	23	144			
Vinyl chloride	49.4	2.5	50	0	99	49	136			
Chloroethane	42.5	2.5	50	0	85	21	159			
Bromomethane	34	10	50	0	68	10	174			
Trichlorofluoromethane	50.4	2.5	50	0	101	32	154			
Acetone	595	50	1000	0	59	10	171			
1,1-Dichloroethene	47.2	2.5	50	0	94	64	130			
Dichloromethane	43.2	10	50	0	86	69	130			
Freon-113	50.8	2.5	50	0	102	55	141			
trans-1,2-Dichloroethene	47.5	2.5	50	0	95	63	130			
Methyl tert-butyl ether (MTBE)	44	1.3	50	0	88	47	150			
1,1-Dichloroethane	46.7	2.5	50	0	93	66	130			
2-Butanone (MEK)	731	50	1000	0	73	23	182			
cis-1,2-Dichloroethene	48.4	2.5	50	0	97	70	130			
Bromochloromethane	50	2.5	50	0	100	70	132			
Chloroform	43	2.5	50	0	86	70	130			
2,2-Dichloropropane	44.3	2.5	50	0	89	38	154			
1,2-Dichloroethane	47.9	2.5	50	0	96	65	134			
1,1,1-Trichloroethane	48.8	2.5	50	0	98	65	136			
1,1-Dichloropropene	51.1	2.5	50	0	102	68	132			
Carbon tetrachloride	44	2.5	50	0	88	58	148			
Benzene	47.1	1.3	50	0	94	59	138			
Dibromomethane	48.3	2.5	50	0	97	70	130			
1,2-Dichloropropane	44.5	2.5	50	0	89	70	131			
Trichloroethene	48.2	2.5	50	0	96	65	144			
Bromodichloromethane	43.4	2.5	50	0	87	50	157			
4-Methyl-2-pentanone (MIBK)	109	13	125	0	88	20	182			
cis-1,3-Dichloropropene	42	2.5	50	0	84	63	131			
trans-1,3-Dichloropropene	42.6	2.5	50	0	85	65	136			
1,1,2-Trichloroethane	49.1	2.5	50	0	98	70	131			
Toluene	45.2	1.3	50	0	90	68	130			
1,3-Dichloropropane	47.7	2.5	50	0	95	70	130			
2-Hexanone	346	25	500	0	69	20	182			
Dibromochloromethane	42.5	2.5	50	0	85	42	155			
1,2-Dibromoethane (EDB)	92.5	5	100	0	93	70	130			
Tetrachloroethene	48.1	2.5	50	0	96	65	130			
1,1,1,2-Tetrachloroethane	50.4	2.5	50	0	101	70	130			
Chlorobenzene	47.8	2.5	50	0	96	70	130			
Ethylbenzene	46.5	1.3	50	0	93	68	130			
m,p-Xylene	45.5	1.3	50	0	91	68	131			
Bromoform	41.4	2.5	50	0	83	65	143			
Styrene	41	2.5	50	0	82	59	153			
o-Xylene	45.2	1.3	50	0	90	70	130			
1,1,2,2-Tetrachloroethane	48.4	2.5	50	0	97	67	130			
1,2,3-Trichloropropane	100	10	100	0	100	70	130			
Isopropylbenzene	46.2	2.5	50	0	92	55	138			
Bromobenzene	47.5	2.5	50	0	95	70	130			
n-Propylbenzene	47.8	2.5	50	0	96	67	133			
4-Chlorotoluene	47.5	2.5	50	0	95	70	130			
2-Chlorotoluene	46.2	2.5	50	0	92	70	130			
1,3,5-Trimethylbenzene	48	2.5	50	0	96	67	134			
tert-Butylbenzene	46.9	2.5	50	0	94	55	147			
1,2,4-Trimethylbenzene	48	2.5	50	0	96	65	135			
sec-Butylbenzene	47.5	2.5	50	0	95	68	135			
1,3-Dichlorobenzene	44.1	2.5	50	0	88	70	130			
1,4-Dichlorobenzene	46.7	2.5	50	0	93	70	130			
4-Isopropyltoluene	48.4	2.5	50	0	97	68	132			
1,2-Dichlorobenzene	45.2	2.5	50	0	90	70	130			
n-Butylbenzene	47.7	2.5	50	0	95	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	242	15	250	0	97	64	130			
1,2,4-Trichlorobenzene	43.4	10	50	0	87	62	133			
Naphthalene	38.7	10	50	0	77	32	166			
Hexachlorobutadiene	91.7	10	100	0	92	63	130			
1,2,3-Trichlorobenzene	36.4	10	50	0	73	55	138			

Alpha Analytical, Inc.

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Date: *08-May-12*

QC Summary Report

Work Order: 12042605

Surr: 1,2-Dichloroethane-d4	55.5	50	111	70	130
Surr: Toluene-d8	49.2	50	98	70	130
Surr: 4-Bromofluorobenzene	47.2	50	94	70	130

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Date: *08-May-12*

QC Summary Report

Work Order: 12042605

Sample Matrix Spike Duplicate Type: **MSD** Test Code: **EPA Method SW8260B**

File ID: **12050210.D** Batch ID: **MS15W0502M** Analysis Date: **05/02/2012 13:36**

Sample ID: **12042605-03AMSD** Units : **µg/L** Run ID: **MSD_15_120502A** Prep Date: **05/02/2012 13:36**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	45.3	2.5	50	0	91	21	138	42.2	7.0(33)	
Chloromethane	37.4	10	50	0	75	23	144	34.17	9.1(27)	
Vinyl chloride	53.1	2.5	50	0	106	49	136	49.35	7.3(21)	
Chloroethane	44.8	2.5	50	0	90	21	159	42.45	5.5(40)	
Bromomethane	38.7	10	50	0	77	10	174	33.99	12.9(40)	
Trichlorofluoromethane	53.5	2.5	50	0	107	32	154	50.39	5.9(37)	
Acetone	643	50	1000	0	64	10	171	594.5	7.8(23)	
1,1-Dichloroethene	51.4	2.5	50	0	103	64	130	47.21	8.5(21)	
Dichloromethane	46.1	10	50	0	92	69	130	43.23	6.5(20)	
Freon-113	54.6	2.5	50	0	109	55	141	50.78	7.3(40)	
trans-1,2-Dichloroethene	50.8	2.5	50	0	102	63	130	47.49	6.7(20)	
Methyl tert-butyl ether (MTBE)	48.4	1.3	50	0	97	47	150	44.03	9.4(40)	
1,1-Dichloroethane	50.3	2.5	50	0	101	66	130	46.71	7.3(20)	
2-Butanone (MEK)	797	50	1000	0	80	23	182	731	8.7(22)	
cis-1,2-Dichloroethene	52.3	2.5	50	0	105	70	130	48.38	7.9(20)	
Bromochloromethane	53.7	2.5	50	0	107	70	132	50.01	7.2(20)	
Chloroform	45.7	2.5	50	0	91	70	130	43.02	6.0(20)	
2,2-Dichloropropane	48.2	2.5	50	0	96	38	154	44.25	8.6(22)	
1,2-Dichloroethane	51.6	2.5	50	0	103	65	134	47.87	7.5(20)	
1,1,1-Trichloroethane	52.5	2.5	50	0	105	65	136	48.82	7.3(20)	
1,1-Dichloropropene	55.2	2.5	50	0	110	68	132	51.13	7.7(20)	
Carbon tetrachloride	48.3	2.5	50	0	97	58	148	43.98	9.4(20)	
Benzene	50.3	1.3	50	0	101	59	138	47.07	6.7(21)	
Dibromomethane	52	2.5	50	0	104	70	130	48.32	7.4(20)	
1,2-Dichloropropane	48.2	2.5	50	0	96	70	131	44.45	8.0(20)	
Trichloroethene	51.9	2.5	50	0	104	65	144	48.21	7.3(20)	
Bromodichloromethane	47.4	2.5	50	0	95	50	157	43.42	8.7(20)	
4-Methyl-2-pentanone (MIBK)	121	13	125	0	97	20	182	109.5	10.4(20)	
cis-1,3-Dichloropropene	46.7	2.5	50	0	93	63	131	42.03	10.5(20)	
trans-1,3-Dichloropropene	47.5	2.5	50	0	95	65	136	42.59	11.0(20)	
1,1,2-Trichloroethane	53.6	2.5	50	0	107	70	131	49.12	8.7(20)	
Toluene	47.9	1.3	50	0	96	68	130	45.2	5.7(20)	
1,3-Dichloropropane	51.9	2.5	50	0	104	70	130	47.67	8.6(20)	
2-Hexanone	377	25	500	0	75	20	182	345.7	8.7(20)	
Dibromochloromethane	46.8	2.5	50	0	94	42	155	42.51	9.6(20)	
1,2-Dibromoethane (EDB)	101	5	100	0	101	70	130	92.53	9.1(20)	
Tetrachloroethene	51.6	2.5	50	0	103	65	130	48.07	7.2(20)	
1,1,1,2-Tetrachloroethane	54.9	2.5	50	0	110	70	130	50.36	8.6(20)	
Chlorobenzene	51.3	2.5	50	0	103	70	130	47.78	7.0(20)	
Ethylbenzene	49.8	1.3	50	0	99.6	68	130	46.46	6.9(20)	
m,p-Xylene	48.6	1.3	50	0	97	68	131	45.53	6.5(20)	
Bromoform	46	2.5	50	0	92	65	143	41.44	10.5(20)	
Styrene	44.5	2.5	50	0	89	59	153	40.95	8.4(37)	
o-Xylene	48.4	1.3	50	0	97	70	130	45.2	6.8(20)	
1,1,2,2-Tetrachloroethane	52.6	2.5	50	0	105	67	130	48.41	8.3(20)	
1,2,3-Trichloropropane	110	10	100	0	110	70	130	100.4	9.0(20)	
Isopropylbenzene	49.2	2.5	50	0	98	55	138	46.15	6.5(20)	
Bromobenzene	50.8	2.5	50	0	102	70	130	47.52	6.7(20)	
n-Propylbenzene	51.1	2.5	50	0	102	67	133	47.75	6.8(30)	
4-Chlorotoluene	50.8	2.5	50	0	102	70	130	47.5	6.8(20)	
2-Chlorotoluene	49.7	2.5	50	0	99	70	130	46.17	7.4(20)	
1,3,5-Trimethylbenzene	51.1	2.5	50	0	102	67	134	48.04	6.2(21)	
tert-Butylbenzene	50.4	2.5	50	0	101	55	147	46.86	7.2(20)	
1,2,4-Trimethylbenzene	50.9	2.5	50	0	102	65	135	48.02	5.8(25)	
sec-Butylbenzene	50.9	2.5	50	0	102	68	135	47.5	6.9(20)	
1,3-Dichlorobenzene	48	2.5	50	0	96	70	130	44.12	8.4(20)	
1,4-Dichlorobenzene	50.5	2.5	50	0	101	70	130	46.69	7.9(20)	
4-Isopropyltoluene	51.9	2.5	50	0	104	68	132	48.42	6.8(20)	
1,2-Dichlorobenzene	48.6	2.5	50	0	97	70	130	45.18	7.3(20)	
n-Butylbenzene	51.6	2.5	50	0	103	62	134	47.68	7.9(21)	
1,2-Dibromo-3-chloropropane (DBCP)	268	15	250	0	107	64	130	242.1	10.1(20)	
1,2,4-Trichlorobenzene	49.2	10	50	0	98	62	133	43.37	12.5(29)	
Naphthalene	44.8	10	50	0	90	32	166	38.74	14.6(40)	
Hexachlorobutadiene	103	10	100	0	103	63	130	91.66	11.7(21)	
1,2,3-Trichlorobenzene	42.7	10	50	0	85	55	138	36.44	15.9(36)	

Alpha Analytical, Inc.

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Date: *08-May-12*

QC Summary Report

Work Order: 12042605

Surr: 1,2-Dichloroethane-d4	52.1	50	104	70	130
Surr: Toluene-d8	48.7	50	97	70	130
Surr: 4-Bromofluorobenzene	46.5	50	93	70	130

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Billing Information :

CHAIN-OF-CUSTODY RECORD

AMENDED

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12042605

Report Due By : 5:00 PM On : 09-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **No**

Sampled by : David Loera, Chase Brogdon

PO : 287215

Client's COC # : 58153, 53775 Job : 100006114 / JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
2 °C	26-Apr-12	04-May-12

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12042605-01A	MW-9	AQ	04/25/12 09:53	5	0	9	Cl, NO3, NO2,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042605-02A	MW-1	AQ	04/25/12 12:50	5	0	9	Cl, NO3, NO2,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	Sampling date/time per sample bottle
BMI12042605-03A	MW-24-5	AQ	04/25/12 08:40	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	Level IV QC
BMI12042605-04A	MW-24-4	AQ	04/25/12 09:20	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042605-05A	MW-24-3	AQ	04/25/12 09:56	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042605-06A	MW-24-2	AQ	04/25/12 11:00	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042605-07A	MW-24-1	AQ	04/25/12 12:32	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042605-08A	DUPE-2-2Q12	AQ	04/25/12 00:00	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	

Comments: Security seals intact. Frozen Ice. Temp. Blank #7684 received @ 2°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -03A. : Amended 5/4/12 @ 13:40 to correct Sample ID for sample -09A, due to login error. SC

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Loffee	Sara Loffee	Alpha Analytical, Inc.	5/4/12 13:50

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :

CHAIN-OF-CUSTODY RECORD

AMENDED

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12042605

Report Due By : 5:00 PM On : 09-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **No**

Sampled by : David Loera, Chase Brogdon

PO : 287215

Client's COC # : 58153, 53775 Job : 100006114 / JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
2 °C	26-Apr-12	04-May-12

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12042605-09A	EB-3-4/25/12	AQ	04/25/12 12:20	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042605-10A	TB-3-4/25/12	AQ	04/25/12 07:00	1	0	9							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 1/9/12

Comments: Security seals intact. Frozen Ice. Temp. Blank #7684 received @ 2°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -03A. : Amended 5/4/12 @ 13:40 to correct Sample ID for sample -09A, due to login error. SC

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Coffee	Sara Coffee	Alpha Analytical, Inc.	5/4/12 13:40

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

CA

WorkOrder : BMIS12042605

Report Due By : 5:00 PM On : 09-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : David Loera, Chase Brogdon

PO : 287215

Client's COC # : 58153, 53775 Job : 100006114/ JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
2 °C	26-Apr-12	26-Apr-12

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12042605-01A	MW-9	AQ	04/25/12 09:53	5	0	9	Cl, NO3, NO2,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042605-02A	MW-1	AQ	04/25/12 12:50	5	0	9	Cl, NO3, NO2,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	Sampling date/time per sample bottle
BMI12042605-03A	MW-24-5	AQ	04/25/12 08:40	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	Level IV QC
BMI12042605-04A	MW-24-4	AQ	04/25/12 09:20	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042605-05A	MW-24-3	AQ	04/25/12 09:56	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042605-06A	MW-24-2	AQ	04/25/12 11:00	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042605-07A	MW-24-1	AQ	04/25/12 12:32	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042605-08A	DUPE-2-2Q12	AQ	04/25/12 00:00	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	

Comments: Security seals intact. Frozen Ice. Temp. Blank #7684 received @ 2°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -03A. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Loera	Sara Loera	Alpha Analytical, Inc.	4/26/12 11:25

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12042605

Report Due By : 5:00 PM On : 09-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : David Loera, Chase Brogdon

PO : 287215

Client's COC # : 58153, 53775 Job : 100006114/ JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
2 °C	26-Apr-12	26-Apr-12

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12042605-09A	EB-3-7/25/12	AQ	04/25/12 12:20	5	0	9	Cl, NO3, NO2,SO4,P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042605-10A	TB-3-4/25/12	AQ	04/25/12 07:00	1	0	9							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 1/9/12

Comments: Security seals intact. Frozen Ice. Temp. Blank #7684 received @ 2°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -03A. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Lafee	Sara Lafee	Alpha Analytical, Inc.	4/26/12 11:25

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

58153

Billing Information:
Company Name: Battelle
Attn: David Conner
Address: 505 King Ave
City, State, Zip: Columbus, OH 43201
Phone Number: 619.726.7311 Fax: 614.458-6641

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State? AZ ___ CA X NV ___ WA ___ DOD Site ___
ID ___ OR ___ OTHER ___ Page # 1 of 1

Consultant / Client Name: SAME as ABOVE
Address:
City, State, Zip:

Job # ~~E458654~~ 100006114 Job Name: PL-GW-2012

Report Attention / Project Manager
Name: David Conner
Email: connerd@battelle.org
Phone: 619.726.7311 Mobile:

P.O. # 287215

Data Validation Level: III or IV
EDD / EDF? YES ___ NO ___
Global ID # ___

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	# Containers**	VOCs	ANIONS*	CATIONS**	Perchlorate	pH, TDS	Alkalinity	Bicarbonate / Carbonate	REMARKS
0953	3/25/12	AQ	BMI1204260S-01A	MW-9	10		2P 3V	X	X	X	X	X	X	X	No Orthophosphate
			-02A	MW-1	10		2P 3V	X	X	X	X	X	X	X	No Orthophosphate

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: *Chloride, Nitrate, Nitrite, Orthophosphate, Sulfate **Total Cr, Pb, Ca, Mg, As, Fe, Na, K

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: David Loera

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:
David L / Battelle	/ ICCC	4/25/12	1340
/ ICCC	/ Alph. Anlyt	4/26/12	1380
/ Alph. Anlyt	Karalopez / alpha	4/26/12	11:03

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

53775

Billing Information:
Company Name: BATTELLE
Attn: GERALD TOMPKINS
Address: 505 KING AVE
City, State, Zip: COLUMBUS, OH 43201
Phone Number: _____ Fax: _____

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ___ CA X NV ___ WA ___ DOD Site ___
ID ___ OR ___ OTHER ___ Page # 1 of 1

Consultant / Client Name: BATTELLE / DAVID CONNEW
Address: 3990 OLD TOWN AVE., C-205
City, State, Zip: SAN DIEGO, CA 92110

Job #: 100006114 / PO# 286479
Job Name: SPL GW MON. 2012

Report Attention / Project Manager
Name: DAVID CONNEW
Email: CONNEWD@BATTELLE.ORG
Phone: _____ Mobile: (619) 726-7311

Data Validation Level: II / III or IV: II

EDD / EDF? YES ___ NO ___
Global ID # ___

Time Sampled	Date Sampled	Matrix* See Key Below	P.O. # / Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	# Containers**	(524.2) VOCs	(200.8) *	TRICHLOROMETHANE (314.0)	(SM2320B, SM2540C 150.2) *	(300.0) *			REMARKS
0840	4/25/12	AQ	-03A	MW-24-5			3v, 2p	X	X	X	X	X			2CIII
0920			-04A	MW-24-4				X	X	X	X	X			
0956			-05A	MW-24-3				X	X	X	X	X			
1100			-06A	MW-24-2				X	X	X	X	X			
1232	4/25/12	AQ	-07A	MW-24-1			3v, 2p	X	X	X	X	X			
*	4/25/12	AQ	-08A	DUPE-2-2012			3v, 2p	X	X	X	X	X			DUPLICATE
1220	4-25-12	AQ	-09A	EB-3-4/25/12			3v, 2p	X	X	X	X	X			EQUIP BLANK
0700	4-25-12	AQ	-10A	TB-3-4/25/12			1v	X							TRIP BLANK

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: *(200.8) = TOTAL Cr, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320B, SM2540C 150.2) = CO_3, HCO_3, TDS, PH, ALK. *(300.0) = CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: CHASE BROGDON

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:
/ INSIGHT	/ Alpha Analytical	4/25/12	1330
/ Alpha Analytical	Dana Lokke / Alpha	4/26/12	11:03

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *10-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Work Order: BMI12042702 **Cooler Temp:** 1 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12042702-01A	MW-5	Aqueous
12042702-02A	DUPE-7-2Q12	Aqueous
12042702-03A	MW-10	Aqueous
12042702-04A	MW-4-5	Aqueous
12042702-05A	MW-4-4	Aqueous
12042702-06A	MW-4-3	Aqueous
12042702-07A	MW-4-2	Aqueous
12042702-08A	MW-4-1	Aqueous
12042702-09A	EB-4-4/26/12	Aqueous
12042702-10A	TB-4-4/26/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/27/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-5**					
Lab ID : BMI12042702-01A	Chloride	11	0.50 mg/L	04/27/12 11:54	04/27/12 14:38
Date Sampled 04/26/12 09:36	Nitrite (NO2) - N	ND	0.25 mg/L	04/27/12 11:54	04/27/12 14:38
	Nitrate (NO3) - N	0.28	0.25 mg/L	04/27/12 11:54	04/27/12 14:38
	Sulfate (SO4)	28	0.50 mg/L	04/27/12 11:54	04/27/12 14:38
Client ID: **DUPE-7-2Q12**					
Lab ID : BMI12042702-02A	Chloride	11	0.50 mg/L	04/27/12 11:54	04/27/12 15:34
Date Sampled 04/26/12 09:36	Nitrite (NO2) - N	ND	0.25 mg/L	04/27/12 11:54	04/27/12 15:34
	Nitrate (NO3) - N	0.28	0.25 mg/L	04/27/12 11:54	04/27/12 15:34
	Sulfate (SO4)	28	0.50 mg/L	04/27/12 11:54	04/27/12 15:34
Client ID: **MW-10**					
Lab ID : BMI12042702-03A	Chloride	7.4	0.50 mg/L	04/27/12 11:54	04/27/12 15:52
Date Sampled 04/26/12 11:58	Nitrite (NO2) - N	ND	0.25 mg/L	04/27/12 11:54	04/27/12 15:52
	Nitrate (NO3) - N	1.5	0.25 mg/L	04/27/12 11:54	04/27/12 15:52
	Sulfate (SO4)	26	0.50 mg/L	04/27/12 11:54	04/27/12 15:52
Client ID: **MW-4-5**					
Lab ID : BMI12042702-04A	Chloride	25	0.50 mg/L	04/27/12 11:54	04/27/12 16:11
Date Sampled 04/26/12 08:30	Nitrite (NO2) - N	ND	0.25 mg/L	04/27/12 11:54	04/27/12 16:11
	Nitrate (NO3) - N	ND	0.25 mg/L	04/27/12 11:54	04/27/12 16:11
	Phosphate, ortho - P	ND	0.50 mg/L	04/27/12 11:54	04/27/12 16:11
	Sulfate (SO4)	ND	0.50 mg/L	04/27/12 11:54	04/27/12 16:11
Client ID: **MW-4-4**					
Lab ID : BMI12042702-05A	Chloride	23	0.50 mg/L	04/27/12 11:54	04/27/12 16:29
Date Sampled 04/26/12 09:00	Nitrite (NO2) - N	ND	0.25 mg/L	04/27/12 11:54	04/27/12 16:29
	Nitrate (NO3) - N	ND	0.25 mg/L	04/27/12 11:54	04/27/12 16:29
	Phosphate, ortho - P	ND	0.50 mg/L	04/27/12 11:54	04/27/12 16:29
	Sulfate (SO4)	1.9	0.50 mg/L	04/27/12 11:54	04/27/12 16:29
Client ID: **MW-4-3**					
Lab ID : BMI12042702-06A	Chloride	22	0.50 mg/L	04/27/12 11:54	04/27/12 16:48
Date Sampled 04/26/12 09:27	Nitrite (NO2) - N	ND	0.25 mg/L	04/27/12 11:54	04/27/12 16:48
	Nitrate (NO3) - N	0.39	0.25 mg/L	04/27/12 11:54	04/27/12 16:48
	Phosphate, ortho - P	ND	0.50 mg/L	04/27/12 11:54	04/27/12 16:48
	Sulfate (SO4)	13	0.50 mg/L	04/27/12 11:54	04/27/12 16:48
Client ID: **MW-4-2**					
Lab ID : BMI12042702-07A	Chloride	68	0.50 mg/L	04/27/12 11:54	04/27/12 17:06
Date Sampled 04/26/12 10:02	Nitrite (NO2) - N	ND	0.25 mg/L	04/27/12 11:54	04/27/12 17:06
	Nitrate (NO3) - N	6.1	0.25 mg/L	04/27/12 11:54	04/27/12 17:06
	Phosphate, ortho - P	ND	0.50 mg/L	04/27/12 11:54	04/27/12 17:06
	Sulfate (SO4)	100	0.50 mg/L	04/27/12 11:54	04/27/12 17:06

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Client ID: **MW-4-1**					
Lab ID : BMI12042702-08A	Chloride	9.7	0.50 mg/L	04/27/12 11:54	04/27/12 17:25
Date Sampled 04/26/12 12:07	Nitrite (NO2) - N	ND	0.25 mg/L	04/27/12 11:54	04/27/12 17:25
	Nitrate (NO3) - N	ND	0.25 mg/L	04/27/12 11:54	04/27/12 17:25
	Phosphate, ortho - P	ND	0.50 mg/L	04/27/12 11:54	04/27/12 17:25
	Sulfate (SO4)	23	0.50 mg/L	04/27/12 11:54	04/27/12 17:25
Client ID: **EB-4-4/26/12**					
Lab ID : BMI12042702-09A	Chloride	ND	0.50 mg/L	04/27/12 11:54	04/27/12 17:44
Date Sampled 04/26/12 11:51	Nitrite (NO2) - N	ND	0.25 mg/L	04/27/12 11:54	04/27/12 17:44
	Nitrate (NO3) - N	ND	0.25 mg/L	04/27/12 11:54	04/27/12 17:44
	Phosphate, ortho - P	ND	0.50 mg/L	04/27/12 11:54	04/27/12 17:44
	Sulfate (SO4)	ND	0.50 mg/L	04/27/12 11:54	04/27/12 17:44

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/10/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/27/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-5**				
Lab ID : BMI12042702-01A Perchlorate	ND	1.00 µg/L	05/02/12 16:09	05/02/12 17:57
Date Sampled 04/26/12 09:36				
Client ID: **DUPE-7-2Q12**				
Lab ID : BMI12042702-02A Perchlorate	ND	1.00 µg/L	05/02/12 16:09	05/02/12 18:52
Date Sampled 04/26/12 09:36				
Client ID: **MW-10**				
Lab ID : BMI12042702-03A Perchlorate	ND	1.00 µg/L	05/02/12 16:09	05/02/12 19:10
Date Sampled 04/26/12 11:58				
Client ID: **MW-4-5**				
Lab ID : BMI12042702-04A Perchlorate	ND	1.00 µg/L	05/02/12 16:09	05/02/12 19:29
Date Sampled 04/26/12 08:30				
Client ID: **MW-4-4**				
Lab ID : BMI12042702-05A Perchlorate	ND	1.00 µg/L	05/02/12 16:09	05/02/12 19:47
Date Sampled 04/26/12 09:00				
Client ID: **MW-4-3**				
Lab ID : BMI12042702-06A Perchlorate	ND	1.00 µg/L	05/02/12 16:09	05/02/12 20:06
Date Sampled 04/26/12 09:27				
Client ID: **MW-4-2**				
Lab ID : BMI12042702-07A Perchlorate	157	10.0 µg/L	05/02/12 16:09	05/03/12 09:43
Date Sampled 04/26/12 10:02				
Client ID: **MW-4-1**				
Lab ID : BMI12042702-08A Perchlorate	ND	1.00 µg/L	05/02/12 16:09	05/02/12 20:42
Date Sampled 04/26/12 12:07				
Client ID: **EB-4-4/26/12**				
Lab ID : BMI12042702-09A Perchlorate	ND	1.00 µg/L	05/02/12 16:09	05/02/12 21:01
Date Sampled 04/26/12 11:51				

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/10/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/27/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-5**				
Lab ID : BMI12042702-01A Alkalinity, Bicarbonate (As CaCO3)	200	10 mg/L	04/30/12 10:38	04/30/12 10:38
Date Sampled 04/26/12 09:36 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/30/12 10:38	04/30/12 10:38
Alkalinity, Total (As CaCO3 at pH 4.5)	200	10 mg/L	04/30/12 10:38	04/30/12 10:38
Client ID: **DUPE-7-2Q12**				
Lab ID : BMI12042702-02A Alkalinity, Bicarbonate (As CaCO3)	210	10 mg/L	04/30/12 10:49	04/30/12 10:49
Date Sampled 04/26/12 09:36 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/30/12 10:49	04/30/12 10:49
Alkalinity, Total (As CaCO3 at pH 4.5)	210	10 mg/L	04/30/12 10:49	04/30/12 10:49
Client ID: **MW-10**				
Lab ID : BMI12042702-03A Alkalinity, Bicarbonate (As CaCO3)	160	10 mg/L	04/30/12 10:59	04/30/12 10:59
Date Sampled 04/26/12 11:58 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/30/12 10:59	04/30/12 10:59
Alkalinity, Total (As CaCO3 at pH 4.5)	160	10 mg/L	04/30/12 10:59	04/30/12 10:59
Client ID: **MW-4-5**				
Lab ID : BMI12042702-04A Alkalinity, Bicarbonate (As CaCO3)	200	10 mg/L	04/30/12 11:05	04/30/12 11:05
Date Sampled 04/26/12 08:30 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/30/12 11:05	04/30/12 11:05
Alkalinity, Total (As CaCO3 at pH 4.5)	200	10 mg/L	04/30/12 11:05	04/30/12 11:05
Client ID: **MW-4-4**				
Lab ID : BMI12042702-05A Alkalinity, Bicarbonate (As CaCO3)	160	10 mg/L	04/30/12 11:11	04/30/12 11:11
Date Sampled 04/26/12 09:00 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/30/12 11:11	04/30/12 11:11
Alkalinity, Total (As CaCO3 at pH 4.5)	160	10 mg/L	04/30/12 11:11	04/30/12 11:11
Client ID: **MW-4-3**				
Lab ID : BMI12042702-06A Alkalinity, Bicarbonate (As CaCO3)	140	10 mg/L	04/30/12 11:17	04/30/12 11:17
Date Sampled 04/26/12 09:27 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/30/12 11:17	04/30/12 11:17
Alkalinity, Total (As CaCO3 at pH 4.5)	140	10 mg/L	04/30/12 11:17	04/30/12 11:17
Client ID: **MW-4-2**				
Lab ID : BMI12042702-07A Alkalinity, Bicarbonate (As CaCO3)	230	10 mg/L	04/30/12 11:23	04/30/12 11:23
Date Sampled 04/26/12 10:02 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/30/12 11:23	04/30/12 11:23
Alkalinity, Total (As CaCO3 at pH 4.5)	230	10 mg/L	04/30/12 11:23	04/30/12 11:23
Client ID: **MW-4-1**				
Lab ID : BMI12042702-08A Alkalinity, Bicarbonate (As CaCO3)	180	10 mg/L	04/30/12 11:28	04/30/12 11:28
Date Sampled 04/26/12 12:07 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/30/12 11:28	04/30/12 11:28
Alkalinity, Total (As CaCO3 at pH 4.5)	180	10 mg/L	04/30/12 11:28	04/30/12 11:28
Client ID: **EB-4-4/26/12**				
Lab ID : BMI12042702-09A Alkalinity, Bicarbonate (As CaCO3)	ND	10 mg/L	04/30/12 11:33	04/30/12 11:33
Date Sampled 04/26/12 11:51 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	04/30/12 11:33	04/30/12 11:33
Alkalinity, Total (As CaCO3 at pH 4.5)	ND	10 mg/L	04/30/12 11:33	04/30/12 11:33

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/27/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: MW-5				
Lab ID : BMI12042702-01A Sodium (Na)	15	0.50 mg/L	04/30/12 09:04	05/04/12 11:15
Date Sampled 04/26/12 09:36 Magnesium (Mg)	16	0.50 mg/L	04/30/12 09:04	05/04/12 11:15
Potassium (K)	3.0	0.50 mg/L	04/30/12 09:04	05/04/12 11:15
Calcium (Ca)	52	0.50 mg/L	04/30/12 09:04	05/04/12 11:15
Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/04/12 11:15
Iron (Fe)	0.58	0.30 mg/L	04/30/12 09:04	05/04/12 11:15
Arsenic (As)	ND	0.0020 mg/L	04/30/12 09:04	05/04/12 11:15
Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/04/12 11:15
Client ID: DUPE-7-2Q12				
Lab ID : BMI12042702-02A Sodium (Na)	15	0.50 mg/L	04/30/12 09:04	05/04/12 11:21
Date Sampled 04/26/12 09:36 Magnesium (Mg)	16	0.50 mg/L	04/30/12 09:04	05/04/12 11:21
Potassium (K)	3.0	0.50 mg/L	04/30/12 09:04	05/04/12 11:21
Calcium (Ca)	53	0.50 mg/L	04/30/12 09:04	05/04/12 11:21
Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/04/12 11:21
Iron (Fe)	0.54	0.30 mg/L	04/30/12 09:04	05/04/12 11:21
Arsenic (As)	ND	0.0020 mg/L	04/30/12 09:04	05/04/12 11:21
Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/04/12 11:21
Client ID: MW-10				
Lab ID : BMI12042702-03A Sodium (Na)	18	0.50 mg/L	04/30/12 09:04	05/04/12 11:27
Date Sampled 04/26/12 11:58 Magnesium (Mg)	13	0.50 mg/L	04/30/12 09:04	05/04/12 11:27
Potassium (K)	2.0	0.50 mg/L	04/30/12 09:04	05/04/12 11:27
Calcium (Ca)	37	0.50 mg/L	04/30/12 09:04	05/04/12 11:27
Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/04/12 11:27
Iron (Fe)	0.33	0.30 mg/L	04/30/12 09:04	05/04/12 11:27
Arsenic (As)	ND	0.0020 mg/L	04/30/12 09:04	05/04/12 11:27
Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/04/12 11:27
Client ID: MW-4-5				
Lab ID : BMI12042702-04A Sodium (Na)	34	0.50 mg/L	04/30/12 09:04	05/04/12 11:33
Date Sampled 04/26/12 08:30 Magnesium (Mg)	12	0.50 mg/L	04/30/12 09:04	05/04/12 11:33
Potassium (K)	1.9	0.50 mg/L	04/30/12 09:04	05/04/12 11:33
Calcium (Ca)	31	0.50 mg/L	04/30/12 09:04	05/04/12 11:33
Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/04/12 11:33
Iron (Fe)	2.8	0.30 mg/L	04/30/12 09:04	05/04/12 11:33
Arsenic (As)	ND	0.0020 mg/L	04/30/12 09:04	05/05/12 14:21
Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/04/12 11:33

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Client ID: **MW-4-4**					
Lab ID : BMI12042702-05A	Sodium (Na)	35	0.50 mg/L	04/30/12 09:04	05/04/12 11:38
Date Sampled 04/26/12 09:00	Magnesium (Mg)	12	0.50 mg/L	04/30/12 09:04	05/04/12 11:38
	Potassium (K)	1.9	0.50 mg/L	04/30/12 09:04	05/04/12 11:38
	Calcium (Ca)	24	0.50 mg/L	04/30/12 09:04	05/04/12 11:38
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/04/12 11:38
	Iron (Fe)	6.1	0.30 mg/L	04/30/12 09:04	05/04/12 11:38
	Arsenic (As)	0.0045	0.0020 mg/L	04/30/12 09:04	05/04/12 11:38
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/04/12 11:38
Client ID: **MW-4-3**					
Lab ID : BMI12042702-06A	Sodium (Na)	33	0.50 mg/L	04/30/12 09:04	05/05/12 11:44
Date Sampled 04/26/12 09:27	Magnesium (Mg)	11	0.50 mg/L	04/30/12 09:04	05/05/12 11:44
	Potassium (K)	1.8	0.50 mg/L	04/30/12 09:04	05/05/12 11:44
	Calcium (Ca)	21	0.50 mg/L	04/30/12 09:04	05/05/12 11:44
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 11:44
	Iron (Fe)	0.70	0.30 mg/L	04/30/12 09:04	05/05/12 11:44
	Arsenic (As)	ND	0.0020 mg/L	04/30/12 09:04	05/05/12 11:44
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 11:44
Client ID: **MW-4-2**					
Lab ID : BMI12042702-07A	Sodium (Na)	30	0.50 mg/L	04/30/12 09:04	05/05/12 11:50
Date Sampled 04/26/12 10:02	Magnesium (Mg)	30	0.50 mg/L	04/30/12 09:04	05/05/12 11:50
	Potassium (K)	2.6	0.50 mg/L	04/30/12 09:04	05/05/12 11:50
	Calcium (Ca)	88	0.50 mg/L	04/30/12 09:04	05/05/12 11:50
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 11:50
	Iron (Fe)	1.5	0.30 mg/L	04/30/12 09:04	05/05/12 11:50
	Arsenic (As)	ND	0.0020 mg/L	04/30/12 09:04	05/05/12 11:50
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 11:50
Client ID: **MW-4-1**					
Lab ID : BMI12042702-08A	Sodium (Na)	18	0.50 mg/L	04/30/12 09:04	05/05/12 11:56
Date Sampled 04/26/12 12:07	Magnesium (Mg)	14	0.50 mg/L	04/30/12 09:04	05/05/12 11:56
	Potassium (K)	2.4	0.50 mg/L	04/30/12 09:04	05/05/12 11:56
	Calcium (Ca)	41	0.50 mg/L	04/30/12 09:04	05/05/12 11:56
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 11:56
	Iron (Fe)	0.50	0.30 mg/L	04/30/12 09:04	05/05/12 11:56
	Arsenic (As)	ND	0.0020 mg/L	04/30/12 09:04	05/05/12 11:56
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 11:56
Client ID: **EB-4-4/26/12**					
Lab ID : BMI12042702-09A	Sodium (Na)	ND	0.50 mg/L	04/30/12 09:04	05/05/12 12:02
Date Sampled 04/26/12 11:51	Magnesium (Mg)	ND	0.50 mg/L	04/30/12 09:04	05/05/12 12:02
	Potassium (K)	ND	0.50 mg/L	04/30/12 09:04	05/05/12 12:02
	Calcium (Ca)	ND	0.50 mg/L	04/30/12 09:04	05/05/12 12:02
	Chromium (Cr)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 12:02
	Iron (Fe)	ND	0.30 mg/L	04/30/12 09:04	05/05/12 12:02
	Arsenic (As)	ND	0.0020 mg/L	04/30/12 09:04	05/08/12 10:36
	Lead (Pb)	ND	0.0050 mg/L	04/30/12 09:04	05/05/12 12:02

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/27/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-5**				
Lab ID : BMI12042702-01A pH	7.0	1.7 pH Units	04/27/12 15:31	04/27/12 15:31
Date Sampled 04/26/12 09:36 pH - Temperature	25	1.0 °C	04/27/12 15:31	04/27/12 15:31
Client ID: **DUPE-7-2Q12**				
Lab ID : BMI12042702-02A pH	6.9	1.7 pH Units	04/27/12 15:33	04/27/12 15:33
Date Sampled 04/26/12 09:36 pH - Temperature	25	1.0 °C	04/27/12 15:33	04/27/12 15:33
Client ID: **MW-10**				
Lab ID : BMI12042702-03A pH	7.0	1.7 pH Units	04/27/12 15:34	04/27/12 15:34
Date Sampled 04/26/12 11:58 pH - Temperature	24	1.0 °C	04/27/12 15:34	04/27/12 15:34
Client ID: **MW-4-5**				
Lab ID : BMI12042702-04A pH	7.7	1.7 pH Units	04/27/12 15:37	04/27/12 15:37
Date Sampled 04/26/12 08:30 pH - Temperature	24	1.0 °C	04/27/12 15:37	04/27/12 15:37
Client ID: **MW-4-4**				
Lab ID : BMI12042702-05A pH	7.5	1.7 pH Units	04/27/12 15:39	04/27/12 15:39
Date Sampled 04/26/12 09:00 pH - Temperature	24	1.0 °C	04/27/12 15:39	04/27/12 15:39
Client ID: **MW-4-3**				
Lab ID : BMI12042702-06A pH	8.1	1.7 pH Units	04/27/12 15:41	04/27/12 15:41
Date Sampled 04/26/12 09:27 pH - Temperature	24	1.0 °C	04/27/12 15:41	04/27/12 15:41
Client ID: **MW-4-2**				
Lab ID : BMI12042702-07A pH	7.1	1.7 pH Units	04/27/12 15:43	04/27/12 15:43
Date Sampled 04/26/12 10:02 pH - Temperature	24	1.0 °C	04/27/12 15:43	04/27/12 15:43
Client ID: **MW-4-1**				
Lab ID : BMI12042702-08A pH	7.2	1.7 pH Units	04/27/12 15:45	04/27/12 15:45
Date Sampled 04/26/12 12:07 pH - Temperature	24	1.0 °C	04/27/12 15:45	04/27/12 15:45
Client ID: **EB-4-4/26/12**				
Lab ID : BMI12042702-09A pH	6.7	1.7 pH Units	04/27/12 15:53	04/27/12 15:53
Date Sampled 04/26/12 11:51 pH - Temperature	24	1.0 °C	04/27/12 15:53	04/27/12 15:53

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The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.

The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

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ANALYTICAL REPORT

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655 West Broadway
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Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/27/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-5**					
Lab ID : BMI12042702-01A	Solids, Total Dissolved (TDS)	250	10 mg/L	04/30/12	04/30/12
Date Sampled 04/26/12 09:36					
Client ID: **DUPE-7-2Q12**					
Lab ID : BMI12042702-02A	Solids, Total Dissolved (TDS)	250	10 mg/L	04/30/12	04/30/12
Date Sampled 04/26/12 09:36					
Client ID: **MW-10**					
Lab ID : BMI12042702-03A	Solids, Total Dissolved (TDS)	220	10 mg/L	04/30/12	04/30/12
Date Sampled 04/26/12 11:58					
Client ID: **MW-4-5**					
Lab ID : BMI12042702-04A	Solids, Total Dissolved (TDS)	210	10 mg/L	04/30/12	04/30/12
Date Sampled 04/26/12 08:30					
Client ID: **MW-4-4**					
Lab ID : BMI12042702-05A	Solids, Total Dissolved (TDS)	190	10 mg/L	04/30/12	04/30/12
Date Sampled 04/26/12 09:00					
Client ID: **MW-4-3**					
Lab ID : BMI12042702-06A	Solids, Total Dissolved (TDS)	170	10 mg/L	04/30/12	04/30/12
Date Sampled 04/26/12 09:27					
Client ID: **MW-4-2**					
Lab ID : BMI12042702-07A	Solids, Total Dissolved (TDS)	490	10 mg/L	04/30/12	04/30/12
Date Sampled 04/26/12 10:02					
Client ID: **MW-4-1**					
Lab ID : BMI12042702-08A	Solids, Total Dissolved (TDS)	220	10 mg/L	04/30/12	04/30/12
Date Sampled 04/26/12 12:07					
Client ID: **EB-4-4/26/12**					
Lab ID : BMI12042702-09A	Solids, Total Dissolved (TDS)	ND	10 mg/L	04/30/12	04/30/12
Date Sampled 04/26/12 11:51					

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Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 04/27/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-5**					
Lab ID : BMI12042702-01A	Acrylonitrile	ND	10 µg/L	05/02/12 18:40	05/02/12 18:40
Date Sampled 04/26/12 09:36	Allyl chloride	ND	2.0 µg/L	05/02/12 18:40	05/02/12 18:40
	Carbon disulfide	ND	2.5 µg/L	05/02/12 18:40	05/02/12 18:40
	Chloroacetonitrile	ND	10 µg/L	05/02/12 18:40	05/02/12 18:40
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 18:40	05/02/12 18:40
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 18:40	05/02/12 18:40
	Diethyl ether	ND	2.0 µg/L	05/02/12 18:40	05/02/12 18:40
	Ethyl methacrylate	ND	10 µg/L	05/02/12 18:40	05/02/12 18:40
	Hexachloroethane	ND	10 µg/L	05/02/12 18:40	05/02/12 18:40
	Methacrylonitrile	ND	10 µg/L	05/02/12 18:40	05/02/12 18:40
	Methyl acrylate	ND	10 µg/L	05/02/12 18:40	05/02/12 18:40
	Methyl iodide	ND	2.0 µg/L	05/02/12 18:40	05/02/12 18:40
	Methyl methacrylate	ND	10 µg/L	05/02/12 18:40	05/02/12 18:40
	Nitrobenzene	ND	10 µg/L	05/02/12 18:40	05/02/12 18:40
	2-Nitropropane	ND	2.0 µg/L	05/02/12 18:40	05/02/12 18:40
	Pentachloroethane	ND	2.0 µg/L	05/02/12 18:40	05/02/12 18:40
	Propionitrile	ND	50 µg/L	05/02/12 18:40	05/02/12 18:40
	Tetrahydrofuran	ND	10 µg/L	05/02/12 18:40	05/02/12 18:40
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 18:40	05/02/12 18:40
Client ID: **DUPE-7-2Q12**					
Lab ID : BMI12042702-02A	Acrylonitrile	ND	10 µg/L	05/02/12 19:01	05/02/12 19:01
Date Sampled 04/26/12 09:36	Allyl chloride	ND	2.0 µg/L	05/02/12 19:01	05/02/12 19:01
	Carbon disulfide	ND	2.5 µg/L	05/02/12 19:01	05/02/12 19:01
	Chloroacetonitrile	ND	10 µg/L	05/02/12 19:01	05/02/12 19:01
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 19:01	05/02/12 19:01
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 19:01	05/02/12 19:01
	Diethyl ether	ND	2.0 µg/L	05/02/12 19:01	05/02/12 19:01
	Ethyl methacrylate	ND	10 µg/L	05/02/12 19:01	05/02/12 19:01
	Hexachloroethane	ND	10 µg/L	05/02/12 19:01	05/02/12 19:01
	Methacrylonitrile	ND	10 µg/L	05/02/12 19:01	05/02/12 19:01
	Methyl acrylate	ND	10 µg/L	05/02/12 19:01	05/02/12 19:01
	Methyl iodide	ND	2.0 µg/L	05/02/12 19:01	05/02/12 19:01
	Methyl methacrylate	ND	10 µg/L	05/02/12 19:01	05/02/12 19:01
	Nitrobenzene	ND	10 µg/L	05/02/12 19:01	05/02/12 19:01
	2-Nitropropane	ND	2.0 µg/L	05/02/12 19:01	05/02/12 19:01
	Pentachloroethane	ND	2.0 µg/L	05/02/12 19:01	05/02/12 19:01
	Propionitrile	ND	50 µg/L	05/02/12 19:01	05/02/12 19:01
	Tetrahydrofuran	ND	10 µg/L	05/02/12 19:01	05/02/12 19:01
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 19:01	05/02/12 19:01

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Client ID: **MW-10**					
Lab ID : BMI12042702-03A	Acrylonitrile	ND	10 µg/L	05/02/12 19:23	05/02/12 19:23
Date Sampled 04/26/12 11:58	Allyl chloride	ND	2.0 µg/L	05/02/12 19:23	05/02/12 19:23
	Carbon disulfide	ND	2.5 µg/L	05/02/12 19:23	05/02/12 19:23
	Chloroacetonitrile	ND	10 µg/L	05/02/12 19:23	05/02/12 19:23
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 19:23	05/02/12 19:23
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 19:23	05/02/12 19:23
	Diethyl ether	ND	2.0 µg/L	05/02/12 19:23	05/02/12 19:23
	Ethyl methacrylate	ND	10 µg/L	05/02/12 19:23	05/02/12 19:23
	Hexachloroethane	ND	10 µg/L	05/02/12 19:23	05/02/12 19:23
	Methacrylonitrile	ND	10 µg/L	05/02/12 19:23	05/02/12 19:23
	Methyl acrylate	ND	10 µg/L	05/02/12 19:23	05/02/12 19:23
	Methyl iodide	ND	2.0 µg/L	05/02/12 19:23	05/02/12 19:23
	Methyl methacrylate	ND	10 µg/L	05/02/12 19:23	05/02/12 19:23
	Nitrobenzene	ND	10 µg/L	05/02/12 19:23	05/02/12 19:23
	2-Nitropropane	ND	2.0 µg/L	05/02/12 19:23	05/02/12 19:23
	Pentachloroethane	ND	2.0 µg/L	05/02/12 19:23	05/02/12 19:23
	Propionitrile	ND	50 µg/L	05/02/12 19:23	05/02/12 19:23
	Tetrahydrofuran	ND	10 µg/L	05/02/12 19:23	05/02/12 19:23
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 19:23	05/02/12 19:23
Client ID: **MW-4-5**					
Lab ID : BMI12042702-04A	Acrylonitrile	ND	10 µg/L	05/02/12 19:45	05/02/12 19:45
Date Sampled 04/26/12 08:30	Allyl chloride	ND	2.0 µg/L	05/02/12 19:45	05/02/12 19:45
	Carbon disulfide	ND	2.5 µg/L	05/02/12 19:45	05/02/12 19:45
	Chloroacetonitrile	ND	10 µg/L	05/02/12 19:45	05/02/12 19:45
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 19:45	05/02/12 19:45
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 19:45	05/02/12 19:45
	Diethyl ether	ND	2.0 µg/L	05/02/12 19:45	05/02/12 19:45
	Ethyl methacrylate	ND	10 µg/L	05/02/12 19:45	05/02/12 19:45
	Hexachloroethane	ND	10 µg/L	05/02/12 19:45	05/02/12 19:45
	Methacrylonitrile	ND	10 µg/L	05/02/12 19:45	05/02/12 19:45
	Methyl acrylate	ND	10 µg/L	05/02/12 19:45	05/02/12 19:45
	Methyl iodide	ND	2.0 µg/L	05/02/12 19:45	05/02/12 19:45
	Methyl methacrylate	ND	10 µg/L	05/02/12 19:45	05/02/12 19:45
	Nitrobenzene	ND	10 µg/L	05/02/12 19:45	05/02/12 19:45
	2-Nitropropane	ND	2.0 µg/L	05/02/12 19:45	05/02/12 19:45
	Pentachloroethane	ND	2.0 µg/L	05/02/12 19:45	05/02/12 19:45
	Propionitrile	ND	50 µg/L	05/02/12 19:45	05/02/12 19:45
	Tetrahydrofuran	ND	10 µg/L	05/02/12 19:45	05/02/12 19:45
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 19:45	05/02/12 19:45

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Client ID: **MW-4-4**					
Lab ID : BMI12042702-05A	Acrylonitrile	ND	10 µg/L	05/02/12 20:06	05/02/12 20:06
Date Sampled 04/26/12 09:00	Allyl chloride	ND	2.0 µg/L	05/02/12 20:06	05/02/12 20:06
	Carbon disulfide	ND	2.5 µg/L	05/02/12 20:06	05/02/12 20:06
	Chloroacetonitrile	ND	10 µg/L	05/02/12 20:06	05/02/12 20:06
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 20:06	05/02/12 20:06
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 20:06	05/02/12 20:06
	Diethyl ether	ND	2.0 µg/L	05/02/12 20:06	05/02/12 20:06
	Ethyl methacrylate	ND	10 µg/L	05/02/12 20:06	05/02/12 20:06
	Hexachloroethane	ND	10 µg/L	05/02/12 20:06	05/02/12 20:06
	Methacrylonitrile	ND	10 µg/L	05/02/12 20:06	05/02/12 20:06
	Methyl acrylate	ND	10 µg/L	05/02/12 20:06	05/02/12 20:06
	Methyl iodide	ND	2.0 µg/L	05/02/12 20:06	05/02/12 20:06
	Methyl methacrylate	ND	10 µg/L	05/02/12 20:06	05/02/12 20:06
	Nitrobenzene	ND	10 µg/L	05/02/12 20:06	05/02/12 20:06
	2-Nitropropane	ND	2.0 µg/L	05/02/12 20:06	05/02/12 20:06
	Pentachloroethane	ND	2.0 µg/L	05/02/12 20:06	05/02/12 20:06
	Propionitrile	ND	50 µg/L	05/02/12 20:06	05/02/12 20:06
	Tetrahydrofuran	ND	10 µg/L	05/02/12 20:06	05/02/12 20:06
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 20:06	05/02/12 20:06
Client ID: **MW-4-3**					
Lab ID : BMI12042702-06A	Acrylonitrile	ND	10 µg/L	05/02/12 20:28	05/02/12 20:28
Date Sampled 04/26/12 09:27	Allyl chloride	ND	2.0 µg/L	05/02/12 20:28	05/02/12 20:28
	Carbon disulfide	ND	2.5 µg/L	05/02/12 20:28	05/02/12 20:28
	Chloroacetonitrile	ND	10 µg/L	05/02/12 20:28	05/02/12 20:28
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 20:28	05/02/12 20:28
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 20:28	05/02/12 20:28
	Diethyl ether	ND	2.0 µg/L	05/02/12 20:28	05/02/12 20:28
	Ethyl methacrylate	ND	10 µg/L	05/02/12 20:28	05/02/12 20:28
	Hexachloroethane	ND	10 µg/L	05/02/12 20:28	05/02/12 20:28
	Methacrylonitrile	ND	10 µg/L	05/02/12 20:28	05/02/12 20:28
	Methyl acrylate	ND	10 µg/L	05/02/12 20:28	05/02/12 20:28
	Methyl iodide	ND	2.0 µg/L	05/02/12 20:28	05/02/12 20:28
	Methyl methacrylate	ND	10 µg/L	05/02/12 20:28	05/02/12 20:28
	Nitrobenzene	ND	10 µg/L	05/02/12 20:28	05/02/12 20:28
	2-Nitropropane	ND	2.0 µg/L	05/02/12 20:28	05/02/12 20:28
	Pentachloroethane	ND	2.0 µg/L	05/02/12 20:28	05/02/12 20:28
	Propionitrile	ND	50 µg/L	05/02/12 20:28	05/02/12 20:28
	Tetrahydrofuran	ND	10 µg/L	05/02/12 20:28	05/02/12 20:28
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 20:28	05/02/12 20:28

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Client ID: **MW-4-2**					
Lab ID : BMI12042702-07A	Acrylonitrile	ND	10 µg/L	05/02/12 20:50	05/02/12 20:50
Date Sampled 04/26/12 10:02	Allyl chloride	ND	2.0 µg/L	05/02/12 20:50	05/02/12 20:50
	Carbon disulfide	ND	2.5 µg/L	05/02/12 20:50	05/02/12 20:50
	Chloroacetonitrile	ND	10 µg/L	05/02/12 20:50	05/02/12 20:50
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 20:50	05/02/12 20:50
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 20:50	05/02/12 20:50
	Diethyl ether	ND	2.0 µg/L	05/02/12 20:50	05/02/12 20:50
	Ethyl methacrylate	ND	10 µg/L	05/02/12 20:50	05/02/12 20:50
	Hexachloroethane	ND	10 µg/L	05/02/12 20:50	05/02/12 20:50
	Methacrylonitrile	ND	10 µg/L	05/02/12 20:50	05/02/12 20:50
	Methyl acrylate	ND	10 µg/L	05/02/12 20:50	05/02/12 20:50
	Methyl iodide	ND	2.0 µg/L	05/02/12 20:50	05/02/12 20:50
	Methyl methacrylate	ND	10 µg/L	05/02/12 20:50	05/02/12 20:50
	Nitrobenzene	ND	10 µg/L	05/02/12 20:50	05/02/12 20:50
	2-Nitropropane	ND	2.0 µg/L	05/02/12 20:50	05/02/12 20:50
	Pentachloroethane	ND	2.0 µg/L	05/02/12 20:50	05/02/12 20:50
	Propionitrile	ND	50 µg/L	05/02/12 20:50	05/02/12 20:50
	Tetrahydrofuran	ND	10 µg/L	05/02/12 20:50	05/02/12 20:50
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 20:50	05/02/12 20:50
Client ID: **MW-4-1**					
Lab ID : BMI12042702-08A	Acrylonitrile	ND	10 µg/L	05/02/12 21:12	05/02/12 21:12
Date Sampled 04/26/12 12:07	Allyl chloride	ND	2.0 µg/L	05/02/12 21:12	05/02/12 21:12
	Carbon disulfide	ND	2.5 µg/L	05/02/12 21:12	05/02/12 21:12
	Chloroacetonitrile	ND	10 µg/L	05/02/12 21:12	05/02/12 21:12
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 21:12	05/02/12 21:12
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 21:12	05/02/12 21:12
	Diethyl ether	ND	2.0 µg/L	05/02/12 21:12	05/02/12 21:12
	Ethyl methacrylate	ND	10 µg/L	05/02/12 21:12	05/02/12 21:12
	Hexachloroethane	ND	10 µg/L	05/02/12 21:12	05/02/12 21:12
	Methacrylonitrile	ND	10 µg/L	05/02/12 21:12	05/02/12 21:12
	Methyl acrylate	ND	10 µg/L	05/02/12 21:12	05/02/12 21:12
	Methyl iodide	ND	2.0 µg/L	05/02/12 21:12	05/02/12 21:12
	Methyl methacrylate	ND	10 µg/L	05/02/12 21:12	05/02/12 21:12
	Nitrobenzene	ND	10 µg/L	05/02/12 21:12	05/02/12 21:12
	2-Nitropropane	ND	2.0 µg/L	05/02/12 21:12	05/02/12 21:12
	Pentachloroethane	ND	2.0 µg/L	05/02/12 21:12	05/02/12 21:12
	Propionitrile	ND	50 µg/L	05/02/12 21:12	05/02/12 21:12
	Tetrahydrofuran	ND	10 µg/L	05/02/12 21:12	05/02/12 21:12
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 21:12	05/02/12 21:12

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Client ID: **EB-4-4/26/12**					
Lab ID : BMI12042702-09A	Acrylonitrile	ND	10 µg/L	05/02/12 21:33	05/02/12 21:33
Date Sampled 04/26/12 11:51	Allyl chloride	ND	2.0 µg/L	05/02/12 21:33	05/02/12 21:33
	Carbon disulfide	ND	2.5 µg/L	05/02/12 21:33	05/02/12 21:33
	Chloroacetonitrile	ND	10 µg/L	05/02/12 21:33	05/02/12 21:33
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 21:33	05/02/12 21:33
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 21:33	05/02/12 21:33
	Diethyl ether	ND	2.0 µg/L	05/02/12 21:33	05/02/12 21:33
	Ethyl methacrylate	ND	10 µg/L	05/02/12 21:33	05/02/12 21:33
	Hexachloroethane	ND	10 µg/L	05/02/12 21:33	05/02/12 21:33
	Methacrylonitrile	ND	10 µg/L	05/02/12 21:33	05/02/12 21:33
	Methyl acrylate	ND	10 µg/L	05/02/12 21:33	05/02/12 21:33
	Methyl iodide	ND	2.0 µg/L	05/02/12 21:33	05/02/12 21:33
	Methyl methacrylate	ND	10 µg/L	05/02/12 21:33	05/02/12 21:33
	Nitrobenzene	ND	10 µg/L	05/02/12 21:33	05/02/12 21:33
	2-Nitropropane	ND	2.0 µg/L	05/02/12 21:33	05/02/12 21:33
	Pentachloroethane	ND	2.0 µg/L	05/02/12 21:33	05/02/12 21:33
	Propionitrile	ND	50 µg/L	05/02/12 21:33	05/02/12 21:33
	Tetrahydrofuran	ND	10 µg/L	05/02/12 21:33	05/02/12 21:33
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 21:33	05/02/12 21:33
Client ID: **TB-4-4/26/12**					
Lab ID : BMI12042702-10A	Acrylonitrile	ND	10 µg/L	05/02/12 21:55	05/02/12 21:55
Date Sampled 04/26/12 07:00	Allyl chloride	ND	2.0 µg/L	05/02/12 21:55	05/02/12 21:55
	Carbon disulfide	ND	2.5 µg/L	05/02/12 21:55	05/02/12 21:55
	Chloroacetonitrile	ND	10 µg/L	05/02/12 21:55	05/02/12 21:55
	1-Chlorobutane	ND	2.0 µg/L	05/02/12 21:55	05/02/12 21:55
	1,1-Dichloropropanone	ND	10 µg/L	05/02/12 21:55	05/02/12 21:55
	Diethyl ether	ND	2.0 µg/L	05/02/12 21:55	05/02/12 21:55
	Ethyl methacrylate	ND	10 µg/L	05/02/12 21:55	05/02/12 21:55
	Hexachloroethane	ND	10 µg/L	05/02/12 21:55	05/02/12 21:55
	Methacrylonitrile	ND	10 µg/L	05/02/12 21:55	05/02/12 21:55
	Methyl acrylate	ND	10 µg/L	05/02/12 21:55	05/02/12 21:55
	Methyl iodide	ND	2.0 µg/L	05/02/12 21:55	05/02/12 21:55
	Methyl methacrylate	ND	10 µg/L	05/02/12 21:55	05/02/12 21:55
	Nitrobenzene	ND	10 µg/L	05/02/12 21:55	05/02/12 21:55
	2-Nitropropane	ND	2.0 µg/L	05/02/12 21:55	05/02/12 21:55
	Pentachloroethane	ND	2.0 µg/L	05/02/12 21:55	05/02/12 21:55
	Propionitrile	ND	50 µg/L	05/02/12 21:55	05/02/12 21:55
	Tetrahydrofuran	ND	10 µg/L	05/02/12 21:55	05/02/12 21:55
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/02/12 21:55	05/02/12 21:55

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/10/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042702-01A
Client I.D. Number: MW-5

Sampled: 04/26/12 09:36
Received: 04/27/12
Extracted: 05/02/12 18:40
Analyzed: 05/02/12 18:40

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
67	Surr: Toluene-d8	103	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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5/10/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042702-02A
Client I.D. Number: DUPE-7-2Q12

Sampled: 04/26/12 09:36
Received: 04/27/12
Extracted: 05/02/12 19:01
Analyzed: 05/02/12 19:01

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	102	(70-130)	%REC
67	Surr: Toluene-d8	103	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.
Information regarding the estimate of the uncertainty of measurement is available upon client request.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/10/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042702-03A
Client I.D. Number: MW-10

Sampled: 04/26/12 11:58
Received: 04/27/12
Extracted: 05/02/12 19:23
Analyzed: 05/02/12 19:23

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	102	(70-130)	%REC
67	Surr: Toluene-d8	102	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/10/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042702-04A
Client I.D. Number: MW-4-5

Sampled: 04/26/12 08:30
Received: 04/27/12
Extracted: 05/02/12 19:45
Analyzed: 05/02/12 19:45

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50 µg/L
2	Chloromethane	ND	2.0	µg/L	46	1,2,3-Trichloropropane	ND	2.0 µg/L
3	Vinyl chloride	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50 µg/L
4	Chloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50 µg/L
5	Bromomethane	ND	2.0	µg/L	49	n-Propylbenzene	ND	0.50 µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50 µg/L
7	Acetone	ND	10	µg/L	51	2-Chlorotoluene	ND	0.50 µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50 µg/L
9	Dichloromethane	ND	2.0	µg/L	53	tert-Butylbenzene	ND	0.50 µg/L
10	Freon-113	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50 µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50 µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50 µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50 µg/L
14	2-Butanone (MEK)	ND	10	µg/L	58	4-Isopropyltoluene	ND	0.50 µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50 µg/L
16	Bromochloromethane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50 µg/L
17	Chloroform	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0 µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0 µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	63	Naphthalene	ND	2.0 µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0 µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0 µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	102	(70-130) %REC
23	Benzene	ND	0.50	µg/L	67	Surr: Toluene-d8	103	(70-130) %REC
24	Dibromomethane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130) %REC
25	1,2-Dichloropropane	ND	0.50	µg/L				
26	Trichloroethene	ND	0.50	µg/L				
27	Bromodichloromethane	ND	0.50	µg/L				
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L				
29	cis-1,3-Dichloropropene	ND	0.50	µg/L				
30	trans-1,3-Dichloropropene	ND	0.50	µg/L				
31	1,1,2-Trichloroethane	ND	0.50	µg/L				
32	Toluene	ND	0.50	µg/L				
33	1,3-Dichloropropane	ND	0.50	µg/L				
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L				
37	Tetrachloroethene	ND	0.50	µg/L				
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L				
39	Chlorobenzene	ND	0.50	µg/L				
40	Ethylbenzene	ND	0.50	µg/L				
41	m,p-Xylene	ND	0.50	µg/L				
42	Bromoform	ND	0.50	µg/L				
43	Styrene	ND	0.50	µg/L				
44	o-Xylene	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.
Information regarding the estimate of the uncertainty of measurement is available upon client request.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042702-05A
Client I.D. Number: MW-4-4

Sampled: 04/26/12 09:00
Received: 04/27/12
Extracted: 05/02/12 20:06
Analyzed: 05/02/12 20:06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	102	(70-130)	%REC
67	Surr: Toluene-d8	103	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/10/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042702-06A
Client I.D. Number: MW-4-3

Sampled: 04/26/12 09:27
Received: 04/27/12
Extracted: 05/02/12 20:28
Analyzed: 05/02/12 20:28

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	102	(70-130)	%REC
67	Surr: Toluene-d8	102	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.
Information regarding the estimate of the uncertainty of measurement is available upon client request.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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5/10/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042702-07A
Client I.D. Number: MW-4-2

Sampled: 04/26/12 10:02
Received: 04/27/12
Extracted: 05/02/12 20:50
Analyzed: 05/02/12 20:50

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	102	(70-130)	%REC
67	Surr: Toluene-d8	102	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/10/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042702-08A
Client I.D. Number: MW-4-1

Sampled: 04/26/12 12:07
Received: 04/27/12
Extracted: 05/02/12 21:12
Analyzed: 05/02/12 21:12

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
67	Surr: Toluene-d8	103	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042702-09A
Client I.D. Number: EB-4-4/26/12

Sampled: 04/26/12 11:51
Received: 04/27/12
Extracted: 05/02/12 21:33
Analyzed: 05/02/12 21:33

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
67	Surr: Toluene-d8	102	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	87	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/10/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12042702-10A
Client I.D. Number: TB-4-4/26/12

Sampled: 04/26/12 07:00
Received: 04/27/12
Extracted: 05/02/12 21:55
Analyzed: 05/02/12 21:55

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	100	(70-130)	%REC
67	Surr: Toluene-d8	103	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/10/12
Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

VOC Sample Preservation Report

Work Order: BMI12042702 **Job:** 100006114 / JPL Groundwater Monitoring

Alpha's Sample ID	Client's Sample ID	Matrix	pH
12042702-01A	MW-5	Aqueous	2
12042702-02A	DUPE-7-2Q12	Aqueous	2
12042702-03A	MW-10	Aqueous	2
12042702-04A	MW-4-5	Aqueous	2
12042702-05A	MW-4-4	Aqueous	2
12042702-06A	MW-4-3	Aqueous	2
12042702-07A	MW-4-2	Aqueous	2
12042702-08A	MW-4-1	Aqueous	2
12042702-09A	EB-4-4/26/12	Aqueous	2
12042702-10A	TB-4-4/26/12	Aqueous	2

5/10/12

Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *07-May-12*

QC Summary Report

Work Order: 12042702

Method Blank

Type: **MBLK** Test Code: **EPA Method 300.0**

File ID: **25** Batch ID: **28612K** Analysis Date: **04/27/2012 12:52**

Sample ID: **MB-28612** Units : **mg/L** Run ID: **IC_1_120427B** Prep Date: **04/27/2012 11:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 300.0**

File ID: **28** Batch ID: **28612K** Analysis Date: **04/27/2012 13:55**

Sample ID: **LFB-28612** Units : **mg/L** Run ID: **IC_1_120427B** Prep Date: **04/27/2012 11:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	50.9	0.5	50		102	90	110			
Nitrite (NO2) - N	5.2	0.25	5		104	90	110			
Nitrate (NO3) - N	5.48	0.25	5		110	90	110			
Phosphate, ortho - P	4.81	0.5	5		96	90	110			
Sulfate (SO4)	102	0.5	100		102	90	110			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 300.0**

File ID: **31** Batch ID: **28612K** Analysis Date: **04/27/2012 14:57**

Sample ID: **12042702-01ALFM** Units : **mg/L** Run ID: **IC_1_120427B** Prep Date: **04/27/2012 11:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	266	1.3	250	10.99	102	90	110			
Nitrite (NO2) - N	26.2	0.63	25	0	105	90	110			
Nitrate (NO3) - N	27.8	0.63	25	0.2748	110	90	110			
Phosphate, ortho - P	26.2	1.3	25	0	105	90	110			
Sulfate (SO4)	534	1.3	500	27.52	101	90	110			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 300.0**

File ID: **32** Batch ID: **28612K** Analysis Date: **04/27/2012 15:15**

Sample ID: **12042702-01ALFMD** Units : **mg/L** Run ID: **IC_1_120427B** Prep Date: **04/27/2012 11:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	270	1.3	250	10.99	103	90	110	265.9	1.4(15)	
Nitrite (NO2) - N	26.6	0.63	25	0	106	90	110	26.24	1.4(15)	
Nitrate (NO3) - N	28.4	0.63	25	0.2748	113	90	110	27.78	2.3(15)	M1
Phosphate, ortho - P	27.3	1.3	25	0	109	90	110	26.21	3.9(15)	
Sulfate (SO4)	544	1.3	500	27.52	103	90	110	534.5	1.9(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

Alpha Analytical, Inc.

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Date: 07-May-12

QC Summary Report

Work Order: 12042702

Method Blank

Type: **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **28650K** Analysis Date: **05/02/2012 17:02**

Sample ID: **MB-28650** Units : **µg/L** Run ID: **IC_3_120502A** Prep Date: **05/02/2012 16:09**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **28650K** Analysis Date: **05/02/2012 17:20**

Sample ID: **LFB-28650** Units : **µg/L** Run ID: **IC_3_120502A** Prep Date: **05/02/2012 16:09**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	27.6	2	25		111	85	115			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 314.0**

File ID: **18** Batch ID: **28650K** Analysis Date: **05/02/2012 18:15**

Sample ID: **12042702-01ALFM** Units : **µg/L** Run ID: **IC_3_120502A** Prep Date: **05/02/2012 16:09**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	24	2	25	0	96	85	115			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 314.0**

File ID: **19** Batch ID: **28650K** Analysis Date: **05/02/2012 18:34**

Sample ID: **12042702-01ALFMD** Units : **µg/L** Run ID: **IC_3_120502A** Prep Date: **05/02/2012 16:09**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	26.5	2	25	0	106	85	115	24	9.8(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: 07-May-12

QC Summary Report

Work Order: 12042702

Laboratory Control Spike Type: **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0430AL** Analysis Date: **04/30/2012 09:33**

Sample ID: **LCS-W0430AL** Units : **mg/L** Run ID: **WETLAB_120430C** Prep Date: **04/30/2012 09:33**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	243.9	10	250		98	80	120			
Alkalinity, Carbonate (As CaCO3)	243.9	10	250		98	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	244	10	250		98	80	120			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *10-May-12*

QC Summary Report

Work Order: 12042702

Method Blank

Type: **MBLK** Test Code: **EPA Method 200.8**

File ID: **050412.B\206_M.D** Batch ID: **28615K** Analysis Date: **05/05/2012 08:56**

Sample ID: **MB-28615** Units : **mg/L** Run ID: **ICP/MS_120505B** Prep Date: **04/30/2012 09:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 200.8**

File ID: **050412.B\207_M.D** Batch ID: **28615K** Analysis Date: **05/05/2012 09:02**

Sample ID: **LCS-28615** Units : **mg/L** Run ID: **ICP/MS_120505B** Prep Date: **04/30/2012 09:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	5.1	0.5	5		102	80	120			
Magnesium (Mg)	4.8	0.5	5		96	80	120			
Potassium (K)	4.82	0.5	5		96	80	120			
Calcium (Ca)	5.03	0.5	5		101	80	120			
Chromium (Cr)	0.05	0.005	0.05		99.9	80	120			
Iron (Fe)	5.08	0.3	5		102	80	120			
Arsenic (As)	0.0466	0.002	0.05		93	80	120			
Lead (Pb)	0.0503	0.005	0.05		101	80	120			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method 200.8**

File ID: **050412.B\212_M.D** Batch ID: **28615K** Analysis Date: **05/05/2012 09:31**

Sample ID: **12042605-01AMS** Units : **mg/L** Run ID: **ICP/MS_120505B** Prep Date: **04/30/2012 09:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	21.7	0.5	5	17.19	90	80	120			
Magnesium (Mg)	16.5	0.5	5	11.54	99	80	120			
Potassium (K)	7.32	0.5	5	2.519	96	80	120			
Calcium (Ca)	41.2	0.5	5	37.11	81	80	120			
Chromium (Cr)	0.05	0.005	0.05	0	100	80	120			
Iron (Fe)	5.21	0.3	5	0.479	95	80	120			
Arsenic (As)	0.0514	0.002	0.05	0	103	80	120			
Lead (Pb)	0.0471	0.005	0.05	0	94	80	120			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method 200.8**

File ID: **050412.B\213_M.D** Batch ID: **28615K** Analysis Date: **05/05/2012 09:37**

Sample ID: **12042605-01AMSD** Units : **mg/L** Run ID: **ICP/MS_120505B** Prep Date: **04/30/2012 09:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	21.7	0.5	5	17.19	89	80	120	21.68	0.1(20)	
Magnesium (Mg)	16.2	0.5	5	11.54	93	80	120	16.5	2.0(20)	
Potassium (K)	7.17	0.5	5	2.519	93	80	120	7.318	2.0(20)	
Calcium (Ca)	41	0.5	5	37.11	77	80	120	41.16	0.5(20)	M3
Chromium (Cr)	0.0502	0.005	0.05	0	100	80	120	0.05001	0.4(20)	
Iron (Fe)	5.19	0.3	5	0.479	94	80	120	5.207	0.4(20)	
Arsenic (As)	0.0462	0.002	0.05	0	92	80	120	0.05136	10.6(20)	
Lead (Pb)	0.0464	0.005	0.05	0	93	80	120	0.04705	1.3(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M3 = The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to the spike level. The method control sample recovery was acceptable.

Alpha Analytical, Inc.

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Date: *10-May-12*

QC Summary Report

Work Order: 12042702

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0427PH** Analysis Date: **04/27/2012 11:53**

Sample ID: **LCS-W0427PH** Units : **pH Units** Run ID: **WETLAB_120427E** Prep Date: **04/27/2012 11:53**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5.02	1.7	5		100	90	110			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *08-May-12*

QC Summary Report

Work Order: 12042702

Method Blank

Type **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0427DS** Analysis Date: **04/30/2012 00:00**

Sample ID: **MBLK-W0427DS** Units : **mg/L** Run ID: **WETLAB_120427F** Prep Date: **04/30/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0427DS** Analysis Date: **04/30/2012 00:00**

Sample ID: **LCS-W0427DS** Units : **mg/L** Run ID: **WETLAB_120427F** Prep Date: **04/30/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	98	10	100		98	70	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: 09-May-12

QC Summary Report

Work Order: 12042702

Method Blank Type **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12050206.D** Batch ID: **MS15W0502M** Analysis Date: **05/02/2012 12:09**

Sample ID: **MBLK MS15W0502M** Units : **µg/L** Run ID: **MSD_15_120502A** Prep Date: **05/02/2012 12:09**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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Date: *09-May-12*

QC Summary Report

Work Order: 12042702

Surr: 1,2-Dichloroethane-d4	10.2	10	102	70	130
Surr: Toluene-d8	10.5	10	105	70	130
Surr: 4-Bromofluorobenzene	8.98	10	90	70	130

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Date: *09-May-12*

QC Summary Report

Work Order: 12042702

Laboratory Control Spike Type **LCS** Test Code: **EPA Method SW8260B**

File ID: **12050203.D** Batch ID: **MS15W0502M** Analysis Date: **05/02/2012 11:00**

Sample ID: **LCS MS15W0502M** Units : **µg/L** Run ID: **MSD_15_120502A** Prep Date: **05/02/2012 11:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	10.9	1	10		109	70	130			
Chloromethane	7.4	2	10		74	70	130			
Vinyl chloride	10.6	1	10		106	70	130			
Chloroethane	9.68	1	10		97	70	130			
Bromomethane	9	2	10		90	70	130			
Trichlorofluoromethane	10.8	1	10		108	70	130			
Acetone	301	10	200		151	36	171			
1,1-Dichloroethene	10.3	1	10		103	70	130			
Dichloromethane	8.73	2	10		87	70	130			
Freon-113	10.8	1	10		108	70	137			
trans-1,2-Dichloroethene	9.75	1	10		98	70	130			
Methyl tert-butyl ether (MTBE)	8.11	0.5	10		81	70	130			
1,1-Dichloroethane	9.44	1	10		94	70	130			
2-Butanone (MEK)	259	10	200		130	70	130			
cis-1,2-Dichloroethene	9.77	1	10		98	70	130			
Bromochloromethane	9.77	1	10		98	70	130			
Chloroform	8.79	1	10		88	70	130			
2,2-Dichloropropane	8.94	1	10		89	70	130			
1,2-Dichloroethane	9.47	1	10		95	70	130			
1,1,1-Trichloroethane	9.67	1	10		97	70	130			
1,1-Dichloropropene	10.5	1	10		105	70	130			
Carbon tetrachloride	8.85	1	10		89	70	130			
Benzene	9.76	0.5	10		98	70	130			
Dibromomethane	9.59	1	10		96	70	130			
1,2-Dichloropropane	8.94	1	10		89	70	130			
Trichloroethene	9.9	1	10		99	70	130			
Bromodichloromethane	8.71	1	10		87	70	130			
4-Methyl-2-pentanone (MIBK)	23.4	2.5	25		94	20	182			
cis-1,3-Dichloropropene	8.67	1	10		87	70	130			
trans-1,3-Dichloropropene	8.64	1	10		86	70	130			
1,1,2-Trichloroethane	9.84	1	10		98	70	130			
Toluene	9.67	0.5	10		97	70	130			
1,3-Dichloropropane	9.34	1	10		93	70	130			
2-Hexanone	119	5	100		119	20	182			
Dibromochloromethane	8.44	1	10		84	70	130			
1,2-Dibromoethane (EDB)	18.2	2	20		91	70	130			
Tetrachloroethene	9.88	1	10		99	70	130			
1,1,1,2-Tetrachloroethane	10.4	1	10		104	70	130			
Chlorobenzene	9.93	1	10		99	70	130			
Ethylbenzene	9.74	0.5	10		97	70	130			
m,p-Xylene	9.82	0.5	10		98	70	130			
Bromoform	8.54	1	10		85	70	130			
Styrene	8.55	1	10		86	70	130			
o-Xylene	9.49	0.5	10		95	70	130			
1,1,2,2-Tetrachloroethane	9.76	1	10		98	70	130			
1,2,3-Trichloropropane	20.2	2	20		101	70	130			
Isopropylbenzene	9.31	1	10		93	70	130			
Bromobenzene	9.68	1	10		97	70	130			
n-Propylbenzene	9.81	1	10		98	70	130			
4-Chlorotoluene	9.62	1	10		96	70	130			
2-Chlorotoluene	9.41	1	10		94	70	130			
1,3,5-Trimethylbenzene	9.79	1	10		98	70	130			
tert-Butylbenzene	9.5	1	10		95	70	130			
1,2,4-Trimethylbenzene	9.91	1	10		99	70	130			
sec-Butylbenzene	9.72	1	10		97	70	130			
1,3-Dichlorobenzene	9.11	1	10		91	70	130			
1,4-Dichlorobenzene	9.55	1	10		96	70	130			
4-Isopropyltoluene	9.89	1	10		99	70	130			
1,2-Dichlorobenzene	9.23	1	10		92	70	130			
n-Butylbenzene	9.83	1	10		98	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	47.4	3	50		95	67	130			
1,2,4-Trichlorobenzene	8.72	2	10		87	70	130			
Naphthalene	7.67	2	10		77	70	130			
Hexachlorobutadiene	19.3	2	20		97	70	130			
1,2,3-Trichlorobenzene	7.65	2	10		77	70	130			

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Date: *09-May-12*

QC Summary Report

Work Order: 12042702

Surr: 1,2-Dichloroethane-d4	10	10	100	70	130
Surr: Toluene-d8	9.83	10	98	70	130
Surr: 4-Bromofluorobenzene	9.09	10	91	70	130

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QC Summary Report

Work Order: 12042702

Sample Matrix Spike Type **MS** Test Code: **EPA Method SW8260B**

File ID: **12050209.D** Batch ID: **MS15W0502M** Analysis Date: **05/02/2012 13:14**

Sample ID: **12042605-03AMS** Units : **µg/L** Run ID: **MSD_15_120502A** Prep Date: **05/02/2012 13:14**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	42.2	2.5	50	0	84	21	138			
Chloromethane	34.2	10	50	0	68	23	144			
Vinyl chloride	49.4	2.5	50	0	99	49	136			
Chloroethane	42.5	2.5	50	0	85	21	159			
Bromomethane	34	10	50	0	68	10	174			
Trichlorofluoromethane	50.4	2.5	50	0	101	32	154			
Acetone	595	50	1000	0	59	10	171			
1,1-Dichloroethene	47.2	2.5	50	0	94	64	130			
Dichloromethane	43.2	10	50	0	86	69	130			
Freon-113	50.8	2.5	50	0	102	55	141			
trans-1,2-Dichloroethene	47.5	2.5	50	0	95	63	130			
Methyl tert-butyl ether (MTBE)	44	1.3	50	0	88	47	150			
1,1-Dichloroethane	46.7	2.5	50	0	93	66	130			
2-Butanone (MEK)	731	50	1000	0	73	23	182			
cis-1,2-Dichloroethene	48.4	2.5	50	0	97	70	130			
Bromochloromethane	50	2.5	50	0	100	70	132			
Chloroform	43	2.5	50	0	86	70	130			
2,2-Dichloropropane	44.3	2.5	50	0	89	38	154			
1,2-Dichloroethane	47.9	2.5	50	0	96	65	134			
1,1,1-Trichloroethane	48.8	2.5	50	0	98	65	136			
1,1-Dichloropropene	51.1	2.5	50	0	102	68	132			
Carbon tetrachloride	44	2.5	50	0	88	58	148			
Benzene	47.1	1.3	50	0	94	59	138			
Dibromomethane	48.3	2.5	50	0	97	70	130			
1,2-Dichloropropane	44.5	2.5	50	0	89	70	131			
Trichloroethene	48.2	2.5	50	0	96	65	144			
Bromodichloromethane	43.4	2.5	50	0	87	50	157			
4-Methyl-2-pentanone (MIBK)	109	13	125	0	88	20	182			
cis-1,3-Dichloropropene	42	2.5	50	0	84	63	131			
trans-1,3-Dichloropropene	42.6	2.5	50	0	85	65	136			
1,1,2-Trichloroethane	49.1	2.5	50	0	98	70	131			
Toluene	45.2	1.3	50	0	90	68	130			
1,3-Dichloropropane	47.7	2.5	50	0	95	70	130			
2-Hexanone	346	25	500	0	69	20	182			
Dibromochloromethane	42.5	2.5	50	0	85	42	155			
1,2-Dibromoethane (EDB)	92.5	5	100	0	93	70	130			
Tetrachloroethene	48.1	2.5	50	0	96	65	130			
1,1,1,2-Tetrachloroethane	50.4	2.5	50	0	101	70	130			
Chlorobenzene	47.8	2.5	50	0	96	70	130			
Ethylbenzene	46.5	1.3	50	0	93	68	130			
m,p-Xylene	45.5	1.3	50	0	91	68	131			
Bromoform	41.4	2.5	50	0	83	65	143			
Styrene	41	2.5	50	0	82	59	153			
o-Xylene	45.2	1.3	50	0	90	70	130			
1,1,2,2-Tetrachloroethane	48.4	2.5	50	0	97	67	130			
1,2,3-Trichloropropane	100	10	100	0	100	70	130			
Isopropylbenzene	46.2	2.5	50	0	92	55	138			
Bromobenzene	47.5	2.5	50	0	95	70	130			
n-Propylbenzene	47.8	2.5	50	0	96	67	133			
4-Chlorotoluene	47.5	2.5	50	0	95	70	130			
2-Chlorotoluene	46.2	2.5	50	0	92	70	130			
1,3,5-Trimethylbenzene	48	2.5	50	0	96	67	134			
tert-Butylbenzene	46.9	2.5	50	0	94	55	147			
1,2,4-Trimethylbenzene	48	2.5	50	0	96	65	135			
sec-Butylbenzene	47.5	2.5	50	0	95	68	135			
1,3-Dichlorobenzene	44.1	2.5	50	0	88	70	130			
1,4-Dichlorobenzene	46.7	2.5	50	0	93	70	130			
4-Isopropyltoluene	48.4	2.5	50	0	97	68	132			
1,2-Dichlorobenzene	45.2	2.5	50	0	90	70	130			
n-Butylbenzene	47.7	2.5	50	0	95	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	242	15	250	0	97	64	130			
1,2,4-Trichlorobenzene	43.4	10	50	0	87	62	133			
Naphthalene	38.7	10	50	0	77	32	166			
Hexachlorobutadiene	91.7	10	100	0	92	63	130			
1,2,3-Trichlorobenzene	36.4	10	50	0	73	55	138			

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Date: *09-May-12*

QC Summary Report

Work Order: 12042702

Surr: 1,2-Dichloroethane-d4	55.5	50	111	70	130
Surr: Toluene-d8	49.2	50	98	70	130
Surr: 4-Bromofluorobenzene	47.2	50	94	70	130

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Date: 09-May-12

QC Summary Report

Work Order: 12042702

Sample Matrix Spike Duplicate Type **MSD** Test Code: **EPA Method SW8260B**

File ID: **12050210.D** Batch ID: **MS15W0502M** Analysis Date: **05/02/2012 13:36**

Sample ID: **12042605-03AMSD** Units : **µg/L** Run ID: **MSD_15_120502A** Prep Date: **05/02/2012 13:36**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	45.3	2.5	50	0	91	21	138	42.2	7.0(33)	
Chloromethane	37.4	10	50	0	75	23	144	34.17	9.1(27)	
Vinyl chloride	53.1	2.5	50	0	106	49	136	49.35	7.3(21)	
Chloroethane	44.8	2.5	50	0	90	21	159	42.45	5.5(40)	
Bromomethane	38.7	10	50	0	77	10	174	33.99	12.9(40)	
Trichlorofluoromethane	53.5	2.5	50	0	107	32	154	50.39	5.9(37)	
Acetone	643	50	1000	0	64	10	171	594.5	7.8(23)	
1,1-Dichloroethene	51.4	2.5	50	0	103	64	130	47.21	8.5(21)	
Dichloromethane	46.1	10	50	0	92	69	130	43.23	6.5(20)	
Freon-113	54.6	2.5	50	0	109	55	141	50.78	7.3(40)	
trans-1,2-Dichloroethene	50.8	2.5	50	0	102	63	130	47.49	6.7(20)	
Methyl tert-butyl ether (MTBE)	48.4	1.3	50	0	97	47	150	44.03	9.4(40)	
1,1-Dichloroethane	50.3	2.5	50	0	101	66	130	46.71	7.3(20)	
2-Butanone (MEK)	797	50	1000	0	80	23	182	731	8.7(22)	
cis-1,2-Dichloroethene	52.3	2.5	50	0	105	70	130	48.38	7.9(20)	
Bromochloromethane	53.7	2.5	50	0	107	70	132	50.01	7.2(20)	
Chloroform	45.7	2.5	50	0	91	70	130	43.02	6.0(20)	
2,2-Dichloropropane	48.2	2.5	50	0	96	38	154	44.25	8.6(22)	
1,2-Dichloroethane	51.6	2.5	50	0	103	65	134	47.87	7.5(20)	
1,1,1-Trichloroethane	52.5	2.5	50	0	105	65	136	48.82	7.3(20)	
1,1-Dichloropropene	55.2	2.5	50	0	110	68	132	51.13	7.7(20)	
Carbon tetrachloride	48.3	2.5	50	0	97	58	148	43.98	9.4(20)	
Benzene	50.3	1.3	50	0	101	59	138	47.07	6.7(21)	
Dibromomethane	52	2.5	50	0	104	70	130	48.32	7.4(20)	
1,2-Dichloropropane	48.2	2.5	50	0	96	70	131	44.45	8.0(20)	
Trichloroethene	51.9	2.5	50	0	104	65	144	48.21	7.3(20)	
Bromodichloromethane	47.4	2.5	50	0	95	50	157	43.42	8.7(20)	
4-Methyl-2-pentanone (MIBK)	121	13	125	0	97	20	182	109.5	10.4(20)	
cis-1,3-Dichloropropene	46.7	2.5	50	0	93	63	131	42.03	10.5(20)	
trans-1,3-Dichloropropene	47.5	2.5	50	0	95	65	136	42.59	11.0(20)	
1,1,2-Trichloroethane	53.6	2.5	50	0	107	70	131	49.12	8.7(20)	
Toluene	47.9	1.3	50	0	96	68	130	45.2	5.7(20)	
1,3-Dichloropropane	51.9	2.5	50	0	104	70	130	47.67	8.6(20)	
2-Hexanone	377	25	500	0	75	20	182	345.7	8.7(20)	
Dibromochloromethane	46.8	2.5	50	0	94	42	155	42.51	9.6(20)	
1,2-Dibromoethane (EDB)	101	5	100	0	101	70	130	92.53	9.1(20)	
Tetrachloroethene	51.6	2.5	50	0	103	65	130	48.07	7.2(20)	
1,1,1,2-Tetrachloroethane	54.9	2.5	50	0	110	70	130	50.36	8.6(20)	
Chlorobenzene	51.3	2.5	50	0	103	70	130	47.78	7.0(20)	
Ethylbenzene	49.8	1.3	50	0	99.6	68	130	46.46	6.9(20)	
m,p-Xylene	48.6	1.3	50	0	97	68	131	45.53	6.5(20)	
Bromoform	46	2.5	50	0	92	65	143	41.44	10.5(20)	
Styrene	44.5	2.5	50	0	89	59	153	40.95	8.4(37)	
o-Xylene	48.4	1.3	50	0	97	70	130	45.2	6.8(20)	
1,1,2,2-Tetrachloroethane	52.6	2.5	50	0	105	67	130	48.41	8.3(20)	
1,2,3-Trichloropropane	110	10	100	0	110	70	130	100.4	9.0(20)	
Isopropylbenzene	49.2	2.5	50	0	98	55	138	46.15	6.5(20)	
Bromobenzene	50.8	2.5	50	0	102	70	130	47.52	6.7(20)	
n-Propylbenzene	51.1	2.5	50	0	102	67	133	47.75	6.8(30)	
4-Chlorotoluene	50.8	2.5	50	0	102	70	130	47.5	6.8(20)	
2-Chlorotoluene	49.7	2.5	50	0	99	70	130	46.17	7.4(20)	
1,3,5-Trimethylbenzene	51.1	2.5	50	0	102	67	134	48.04	6.2(21)	
tert-Butylbenzene	50.4	2.5	50	0	101	55	147	46.86	7.2(20)	
1,2,4-Trimethylbenzene	50.9	2.5	50	0	102	65	135	48.02	5.8(25)	
sec-Butylbenzene	50.9	2.5	50	0	102	68	135	47.5	6.9(20)	
1,3-Dichlorobenzene	48	2.5	50	0	96	70	130	44.12	8.4(20)	
1,4-Dichlorobenzene	50.5	2.5	50	0	101	70	130	46.69	7.9(20)	
4-Isopropyltoluene	51.9	2.5	50	0	104	68	132	48.42	6.8(20)	
1,2-Dichlorobenzene	48.6	2.5	50	0	97	70	130	45.18	7.3(20)	
n-Butylbenzene	51.6	2.5	50	0	103	62	134	47.68	7.9(21)	
1,2-Dibromo-3-chloropropane (DBCP)	268	15	250	0	107	64	130	242.1	10.1(20)	
1,2,4-Trichlorobenzene	49.2	10	50	0	98	62	133	43.37	12.5(29)	
Naphthalene	44.8	10	50	0	90	32	166	38.74	14.6(40)	
Hexachlorobutadiene	103	10	100	0	103	63	130	91.66	11.7(21)	
1,2,3-Trichlorobenzene	42.7	10	50	0	85	55	138	36.44	15.9(36)	

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *09-May-12*

QC Summary Report

Work Order: 12042702

Surr: 1,2-Dichloroethane-d4	52.1	50	104	70	130
Surr: Toluene-d8	48.7	50	97	70	130
Surr: 4-Bromofluorobenzene	46.5	50	93	70	130

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12042702

Report Due By : 5:00 PM On : 11-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : Chase Brogdon, David Loera

PO : 287215

Client's COC # : 28886, 58154 Job : 100006114/JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
1 °C	27-Apr-12	27-Apr-12

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12042702-01A	MW-5	AQ	04/26/12 09:36	5	0	10	Cl, NO3, NO2,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042702-02A	DUPE-7-2Q12	AQ	04/26/12 09:36	5	0	10	Cl, NO3, NO2,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042702-03A	MW-10	AQ	04/26/12 11:58	5	0	10	Cl, NO3, NO2,SO4	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042702-04A	MW-4-5	AQ	04/26/12 08:30	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042702-05A	MW-4-4	AQ	04/26/12 09:00	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	Level IV QC
BMI12042702-06A	MW-4-3	AQ	04/26/12 09:27	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042702-07A	MW-4-2	AQ	04/26/12 10:02	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042702-08A	MW-4-1	AQ	04/26/12 12:07	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	

Comments: No Security seals. Frozen Ice. Temp. Blank #8539 received @ 1°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -05A. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Lee	Sara Lee	Alpha Analytical, Inc.	4/27/12 10 20

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12042702

Report Due By : 5:00 PM On : 11-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : Chase Brogdon, David Loera

PO : 287215

Client's COC # : 28886, 58154 Job : 100006114/JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
1 °C	27-Apr-12	27-Apr-12

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12042702-09A	EB-4-4/26/12	AQ	04/26/12 11:51	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12042702-10A	TB-4-4/26/12	AQ	04/26/12 07:00	1	0	10							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 1/9/12

Comments: No Security seals. Frozen Ice. Temp. Blank #8539 received @ 1°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -05A. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Loftee	Sara Loftee	Alpha Analytical, Inc.	4/27/12 10:20

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

58154

Billing Information: Battelle
Company Name
Attn: David Conner
Address 505 King Ave
City, State, Zip Columbus, OH 43201
Phone Number 614-726-7311 Fax 614-458-6641

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State? AZ ___ CA X NV ___ WA ___ DOD Site ___
ID ___ OR ___ OTHER ___ Page # 1 of 1

Consultant / Client Name: SAME AS Above
Address
City, State, Zip
Job # 100006114 Job Name: JPL-GW-2Q12
Report Attention / Project Manager
Name: David Conner
Email: connerd@battelle.org
Phone: 614-726-7311 Mobile: 614
P.O. # 287215

Data Validation Level: III or IV
EDD / EDF? YES ___ NO ___
Global ID # ___

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	# Containers**	VOCs	Anions *	Cations **	Perchlorate	pH, TDS	Alkalinity	bicarbonate/carbonate	REMARKS
0936	4/26/12	AQ	BMI1204702-01A	MW-5	10		2P3V	X	X	X	X	X	X	X	No Orthophosphate
0936	4/26/12	AQ	02A	DUPE-7-2Q12	10		2P3V	X	X	X	X	X	X	X	No Orthophosphate
1158	4/26/12	AQ	03A	MW-10	10		2P3V	X	X	X	X	X	X	X	No Orthophosphate

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: * Chloride, Nitrate, Nitrite, Orthophosphate, Sulfate ** Total Cr, Pb, Ca, Mg, As, Fe, Na, K

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: David Loera

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:
David L / Battelle	/ INSIGHT	4/26/12	1330
/ INSIGHT	FED-EX # 8989-1206-7775	4/26/12	1400
	Lakeoffice alpha	4/27/12	9:48

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Billing Information:

Name: BATTELLE - ATTN: GERALD TOMPKINS
Address: 505 KING AVE.
City, State, Zip: COLUMBUS, OH 43201
Phone Number ______ Fax ______

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State? AZ ___ CA ✓ NV ___ WA ___ ID ___ OR ___ OTHER ___

28886

Page # 1 of 1

Client Name: BATTELLE - DAVID CONNER
Address: 3990 OLD TOWN AVE. C-205
City, State, Zip: SAN DIEGO, CA 92110
P.O. #: 286215
Job #: 10020614 / PO# 286479
EMail Address: Connerd@battelle.org
Phone #: MOBILE: (619) 726-7311
Fax #:
Sampled by: CHASE BRUGDON
Report Attention: DAVID CONNER

Required QC Level? I II (III) IV
EDD / EDF? YES ___ NO ___
Global ID # ___

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	Total and type of containers ** See below	524.2 VOCs	(200.8) *	PERCHLORATE (314.0)	(SM2320C, SM2540C, 150.1) *	(300.0) *			REMARKS
0830	4/26/12	AQ	-04A	MW-4-5			3V/2P	X	X	X	X	X			
0900			-05A	MW-4-4				X	X	X	X	X			QC IV
0927			-06A	MW-4-3				X	X	X	X	X			
1002			-07A	MW-4-2				X	X	X	X	X			
1207			-08A	MW-4-1			3V/2P	X	X	X	X	X			
1157			-09A	EB-4-4/26/12			3V/2P	X	X	X	X	X			EQUIP BLANK
0700	4/26/12	AQ	-10A	TB-4-4/26/12			1V	X							TRIP BLANK

ADDITIONAL INSTRUCTIONS: *(200.8) - TOTAL Cr, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320B, SM2540C, 150.1) CO3, HCO3, TDS, PH, ALK. *(300.0) - CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

	Signature	Print Name	Company	Date	Time
Relinquished by	[signature]	CHASE BRUGDON	INSIGHT	4/26/12	1400
Received by	FED-EX	TRACKING # 8989-1206-7775		4/26/12	1400
Relinquished by	[signature]	Sara Coffee	alpha	4/27/12	9:48
Received by					
Relinquished by					
Received by					

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *11-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Work Order: BMI12050104 **Cooler Temp:** 0 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12050104-01A	MW-12-5	Aqueous
12050104-02A	MW-12-4	Aqueous
12050104-03A	MW-12-3	Aqueous
12050104-04A	MW-12-2	Aqueous
12050104-05A	MW-12-1	Aqueous
12050104-06A	EB-5-4/30/12	Aqueous
12050104-07A	TB-5-4/30/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/01/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-12-5**					
Lab ID : BMI12050104-01A	Chloride	18	0.50 mg/L	05/01/12 10:01	05/01/12 15:19
Date Sampled 04/30/12 08:04	Nitrite (NO2) - N	ND	0.25 mg/L	05/01/12 10:01	05/01/12 15:19
	Nitrate (NO3) - N	1.9	0.25 mg/L	05/01/12 10:01	05/01/12 15:19
	Phosphate, ortho - P	ND	0.50 mg/L	05/01/12 10:01	05/01/12 15:19
	Sulfate (SO4)	21	0.50 mg/L	05/01/12 10:01	05/01/12 15:19
Client ID: **MW-12-4**					
Lab ID : BMI12050104-02A	Chloride	15	0.50 mg/L	05/01/12 10:01	05/01/12 16:15
Date Sampled 04/30/12 08:35	Nitrite (NO2) - N	ND	0.25 mg/L	05/01/12 10:01	05/01/12 16:15
	Nitrate (NO3) - N	1.4	0.25 mg/L	05/01/12 10:01	05/01/12 16:15
	Phosphate, ortho - P	ND	0.50 mg/L	05/01/12 10:01	05/01/12 16:15
	Sulfate (SO4)	35	0.50 mg/L	05/01/12 10:01	05/01/12 16:15
Client ID: **MW-12-3**					
Lab ID : BMI12050104-03A	Chloride	15	0.50 mg/L	05/01/12 10:01	05/01/12 16:33
Date Sampled 04/30/12 09:10	Nitrite (NO2) - N	ND	0.25 mg/L	05/01/12 10:01	05/01/12 16:33
	Nitrate (NO3) - N	ND	0.25 mg/L	05/01/12 10:01	05/01/12 16:33
	Phosphate, ortho - P	ND	0.50 mg/L	05/01/12 10:01	05/01/12 16:33
	Sulfate (SO4)	32	0.50 mg/L	05/01/12 10:01	05/01/12 16:33
Client ID: **MW-12-2**					
Lab ID : BMI12050104-04A	Chloride	28	0.50 mg/L	05/01/12 10:01	05/01/12 16:52
Date Sampled 04/30/12 09:45	Nitrite (NO2) - N	ND	0.25 mg/L	05/01/12 10:01	05/01/12 16:52
	Nitrate (NO3) - N	2.2	0.25 mg/L	05/01/12 10:01	05/01/12 16:52
	Phosphate, ortho - P	ND	0.50 mg/L	05/01/12 10:01	05/01/12 16:52
	Sulfate (SO4)	58	0.50 mg/L	05/01/12 10:01	05/01/12 16:52
Client ID: **MW-12-1**					
Lab ID : BMI12050104-05A	Chloride	8.4	0.50 mg/L	05/01/12 10:01	05/01/12 17:10
Date Sampled 04/30/12 10:20	Nitrite (NO2) - N	ND	0.25 mg/L	05/01/12 10:01	05/01/12 17:10
	Nitrate (NO3) - N	ND	0.25 mg/L	05/01/12 10:01	05/01/12 17:10
	Phosphate, ortho - P	ND	0.50 mg/L	05/01/12 10:01	05/01/12 17:10
	Sulfate (SO4)	24	0.50 mg/L	05/01/12 10:01	05/01/12 17:10
Client ID: **EB-5-4/30/12**					
Lab ID : BMI12050104-06A	Chloride	ND	0.50 mg/L	05/01/12 10:01	05/01/12 18:24
Date Sampled 04/30/12 10:04	Nitrite (NO2) - N	ND	0.25 mg/L	05/01/12 10:01	05/01/12 18:24
	Nitrate (NO3) - N	ND	0.25 mg/L	05/01/12 10:01	05/01/12 18:24
	Phosphate, ortho - P	ND	0.50 mg/L	05/01/12 10:01	05/01/12 18:24
	Sulfate (SO4)	ND	0.50 mg/L	05/01/12 10:01	05/01/12 18:24

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/11/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/01/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-12-5**					
Lab ID : BMI12050104-01A	Perchlorate	2.40	1.00 µg/L	05/02/12 16:09	05/02/12 21:19
Date Sampled 04/30/12 08:04					
Client ID: **MW-12-4**					
Lab ID : BMI12050104-02A	Perchlorate	3.89	1.00 µg/L	05/02/12 16:09	05/02/12 21:56
Date Sampled 04/30/12 08:35					
Client ID: **MW-12-3**					
Lab ID : BMI12050104-03A	Perchlorate	2.13	1.00 µg/L	05/02/12 16:09	05/02/12 22:14
Date Sampled 04/30/12 09:10					
Client ID: **MW-12-2**					
Lab ID : BMI12050104-04A	Perchlorate	10.7	1.00 µg/L	05/02/12 16:09	05/02/12 22:33
Date Sampled 04/30/12 09:45					
Client ID: **MW-12-1**					
Lab ID : BMI12050104-05A	Perchlorate	ND	1.00 µg/L	05/02/12 16:09	05/02/12 22:51
Date Sampled 04/30/12 10:20					
Client ID: **EB-5-4/30/12**					
Lab ID : BMI12050104-06A	Perchlorate	ND	1.00 µg/L	05/02/12 16:09	05/02/12 23:10
Date Sampled 04/30/12 10:04					

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/11/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/01/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-12-5**					
Lab ID : BMI12050104-01A	Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	05/02/12 11:33	05/02/12 11:33
Date Sampled 04/30/12 08:04	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/02/12 11:33	05/02/12 11:33
	Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	05/02/12 11:33	05/02/12 11:33
Client ID: **MW-12-4**					
Lab ID : BMI12050104-02A	Alkalinity, Bicarbonate (As CaCO3)	220	10 mg/L	05/02/12 11:44	05/02/12 11:44
Date Sampled 04/30/12 08:35	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/02/12 11:44	05/02/12 11:44
	Alkalinity, Total (As CaCO3 at pH 4.5)	220	10 mg/L	05/02/12 11:44	05/02/12 11:44
Client ID: **MW-12-3**					
Lab ID : BMI12050104-03A	Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	05/02/12 11:49	05/02/12 11:49
Date Sampled 04/30/12 09:10	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/02/12 11:49	05/02/12 11:49
	Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	05/02/12 11:49	05/02/12 11:49
Client ID: **MW-12-2**					
Lab ID : BMI12050104-04A	Alkalinity, Bicarbonate (As CaCO3)	230	10 mg/L	05/02/12 11:55	05/02/12 11:55
Date Sampled 04/30/12 09:45	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/02/12 11:55	05/02/12 11:55
	Alkalinity, Total (As CaCO3 at pH 4.5)	230	10 mg/L	05/02/12 11:55	05/02/12 11:55
Client ID: **MW-12-1**					
Lab ID : BMI12050104-05A	Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	05/02/12 12:00	05/02/12 12:00
Date Sampled 04/30/12 10:20	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/02/12 12:00	05/02/12 12:00
	Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	05/02/12 12:00	05/02/12 12:00
Client ID: **EB-5-4/30/12**					
Lab ID : BMI12050104-06A	Alkalinity, Bicarbonate (As CaCO3)	ND	10 mg/L	05/02/12 12:04	05/02/12 12:04
Date Sampled 04/30/12 10:04	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/02/12 12:04	05/02/12 12:04
	Alkalinity, Total (As CaCO3 at pH 4.5)	ND	10 mg/L	05/02/12 12:04	05/02/12 12:04

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/11/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/01/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-12-5**					
Lab ID : BMI12050104-01A	Sodium (Na)	40	0.50 mg/L	05/03/12 12:27	05/10/12 13:43
Date Sampled 04/30/12 08:04	Magnesium (Mg)	12	0.50 mg/L	05/03/12 12:27	05/10/12 13:43
	Potassium (K)	2.0	0.50 mg/L	05/03/12 12:27	05/10/12 13:43
	Calcium (Ca)	42	0.50 mg/L	05/03/12 12:27	05/10/12 13:43
	Chromium (Cr)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 13:43
	Iron (Fe)	0.59	0.50 mg/L	05/03/12 12:27	05/10/12 13:43
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 13:43
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 13:43
Client ID: **MW-12-4**					
Lab ID : BMI12050104-02A	Sodium (Na)	26	0.50 mg/L	05/03/12 12:27	05/10/12 13:49
Date Sampled 04/30/12 08:35	Magnesium (Mg)	16	0.50 mg/L	05/03/12 12:27	05/10/12 13:49
	Potassium (K)	2.3	0.50 mg/L	05/03/12 12:27	05/10/12 13:49
	Calcium (Ca)	60	0.50 mg/L	05/03/12 12:27	05/10/12 13:49
	Chromium (Cr)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 13:49
	Iron (Fe)	1.2	0.50 mg/L	05/03/12 12:27	05/10/12 13:49
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 13:49
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 13:49
Client ID: **MW-12-3**					
Lab ID : BMI12050104-03A	Sodium (Na)	27	0.50 mg/L	05/03/12 12:27	05/10/12 13:20
Date Sampled 04/30/12 09:10	Magnesium (Mg)	15	0.50 mg/L	05/03/12 12:27	05/10/12 13:20
	Potassium (K)	2.7	0.50 mg/L	05/03/12 12:27	05/10/12 13:20
	Calcium (Ca)	47	0.50 mg/L	05/03/12 12:27	05/10/12 13:20
	Chromium (Cr)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 13:20
	Iron (Fe)	0.67	0.50 mg/L	05/03/12 12:27	05/10/12 13:20
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 13:20
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 13:20
Client ID: **MW-12-2**					
Lab ID : BMI12050104-04A	Sodium (Na)	28	0.50 mg/L	05/03/12 12:27	05/10/12 13:55
Date Sampled 04/30/12 09:45	Magnesium (Mg)	24	0.50 mg/L	05/03/12 12:27	05/10/12 13:55
	Potassium (K)	3.6	0.50 mg/L	05/03/12 12:27	05/10/12 13:55
	Calcium (Ca)	68	0.50 mg/L	05/03/12 12:27	05/10/12 13:55
	Chromium (Cr)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 13:55
	Iron (Fe)	0.84	0.50 mg/L	05/03/12 12:27	05/10/12 13:55
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 13:55
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 13:55

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Client ID: **MW-12-1**					
Lab ID : BMI12050104-05A	Sodium (Na)	23	0.50 mg/L	05/03/12 12:27	05/10/12 14:00
Date Sampled 04/30/12 10:20	Magnesium (Mg)	15	0.50 mg/L	05/03/12 12:27	05/10/12 14:00
	Potassium (K)	3.1	0.50 mg/L	05/03/12 12:27	05/10/12 14:00
	Calcium (Ca)	45	0.50 mg/L	05/03/12 12:27	05/10/12 14:00
	Chromium (Cr)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 14:00
	Iron (Fe)	2.5	0.50 mg/L	05/03/12 12:27	05/10/12 14:00
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 14:00
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 14:00
Client ID: **EB-5-4/30/12**					
Lab ID : BMI12050104-06A	Sodium (Na)	ND	0.50 mg/L	05/03/12 12:27	05/12/12 10:33
Date Sampled 04/30/12 10:04	Magnesium (Mg)	ND	0.50 mg/L	05/03/12 12:27	05/12/12 10:33
	Potassium (K)	ND	0.50 mg/L	05/03/12 12:27	05/12/12 10:33
	Calcium (Ca)	ND	0.50 mg/L	05/03/12 12:27	05/12/12 10:33
	Chromium (Cr)	ND	0.0050 mg/L	05/03/12 12:27	05/12/12 10:33
	Iron (Fe)	ND	0.50 mg/L	05/03/12 12:27	05/12/12 10:33
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/12/12 10:33
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/12/12 10:33

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/14/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/01/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-12-5**				
Lab ID : BMI12050104-01A pH	8.0	1.7 pH Units	05/01/12 14:16	05/01/12 14:16
Date Sampled 04/30/12 08:04 pH - Temperature	23	1.0 °C	05/01/12 14:16	05/01/12 14:16
Client ID: **MW-12-4**				
Lab ID : BMI12050104-02A pH	7.9	1.7 pH Units	05/01/12 14:19	05/01/12 14:19
Date Sampled 04/30/12 08:35 pH - Temperature	23	1.0 °C	05/01/12 14:19	05/01/12 14:19
Client ID: **MW-12-3**				
Lab ID : BMI12050104-03A pH	8.0	1.7 pH Units	05/01/12 14:24	05/01/12 14:24
Date Sampled 04/30/12 09:10 pH - Temperature	22	1.0 °C	05/01/12 14:24	05/01/12 14:24
Client ID: **MW-12-2**				
Lab ID : BMI12050104-04A pH	7.6	1.7 pH Units	05/01/12 14:26	05/01/12 14:26
Date Sampled 04/30/12 09:45 pH - Temperature	23	1.0 °C	05/01/12 14:26	05/01/12 14:26
Client ID: **MW-12-1**				
Lab ID : BMI12050104-05A pH	7.6	1.7 pH Units	05/01/12 14:28	05/01/12 14:28
Date Sampled 04/30/12 10:20 pH - Temperature	23	1.0 °C	05/01/12 14:28	05/01/12 14:28
Client ID: **EB-5-4/30/12**				
Lab ID : BMI12050104-06A pH	6.7	1.7 pH Units	05/01/12 14:38	05/01/12 14:38
Date Sampled 04/30/12 10:04 pH - Temperature	22	1.0 °C	05/01/12 14:38	05/01/12 14:38

Information regarding the estimate of the uncertainty of measurement is available upon client request.

The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.
The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/11/12
Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/01/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-12-5**					
Lab ID : BMI12050104-01A	Solids, Total Dissolved (TDS)	250	10 mg/L	05/02/12	05/02/12
Date Sampled 04/30/12 08:04					
Client ID: **MW-12-4**					
Lab ID : BMI12050104-02A	Solids, Total Dissolved (TDS)	290	10 mg/L	05/02/12	05/02/12
Date Sampled 04/30/12 08:35					
Client ID: **MW-12-3**					
Lab ID : BMI12050104-03A	Solids, Total Dissolved (TDS)	240	10 mg/L	05/02/12	05/02/12
Date Sampled 04/30/12 09:10					
Client ID: **MW-12-2**					
Lab ID : BMI12050104-04A	Solids, Total Dissolved (TDS)	350	10 mg/L	05/02/12	05/02/12
Date Sampled 04/30/12 09:45					
Client ID: **MW-12-1**					
Lab ID : BMI12050104-05A	Solids, Total Dissolved (TDS)	240	10 mg/L	05/02/12	05/02/12
Date Sampled 04/30/12 10:20					
Client ID: **EB-5-4/30/12**					
Lab ID : BMI12050104-06A	Solids, Total Dissolved (TDS)	ND	10 mg/L	05/02/12	05/02/12
Date Sampled 04/30/12 10:04					

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Battelle Memorial Institute
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San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/01/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-12-5**					
Lab ID : BMI12050104-01A	Acrylonitrile	ND	10 µg/L	05/07/12 13:44	05/07/12 13:44
Date Sampled 04/30/12 08:04	Allyl chloride	ND	2.0 µg/L	05/07/12 13:44	05/07/12 13:44
	Carbon disulfide	ND	2.0 µg/L	05/07/12 13:44	05/07/12 13:44
	Chloroacetonitrile	ND	10 µg/L	05/07/12 13:44	05/07/12 13:44
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 13:44	05/07/12 13:44
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 13:44	05/07/12 13:44
	Diethyl ether	ND	2.0 µg/L	05/07/12 13:44	05/07/12 13:44
	Ethyl methacrylate	ND	10 µg/L	05/07/12 13:44	05/07/12 13:44
	Hexachloroethane	ND	10 µg/L	05/07/12 13:44	05/07/12 13:44
	Methacrylonitrile	ND	10 µg/L	05/07/12 13:44	05/07/12 13:44
	Methyl acrylate	ND	10 µg/L	05/07/12 13:44	05/07/12 13:44
	Methyl iodide	ND	2.0 µg/L	05/07/12 13:44	05/07/12 13:44
	Methyl methacrylate	ND	10 µg/L	05/07/12 13:44	05/07/12 13:44
	Nitrobenzene	ND	10 µg/L	05/07/12 13:44	05/07/12 13:44
	2-Nitropropane	ND	2.0 µg/L	05/07/12 13:44	05/07/12 13:44
	Pentachloroethane	ND	2.0 µg/L	05/07/12 13:44	05/07/12 13:44
	Propionitrile	ND	50 µg/L	05/07/12 13:44	05/07/12 13:44
	Tetrahydrofuran	ND	10 µg/L	05/07/12 13:44	05/07/12 13:44
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 13:44	05/07/12 13:44
Client ID: **MW-12-4**					
Lab ID : BMI12050104-02A	Acrylonitrile	ND	10 µg/L	05/07/12 14:05	05/07/12 14:05
Date Sampled 04/30/12 08:35	Allyl chloride	ND	2.0 µg/L	05/07/12 14:05	05/07/12 14:05
	Carbon disulfide	ND	2.0 µg/L	05/07/12 14:05	05/07/12 14:05
	Chloroacetonitrile	ND	10 µg/L	05/07/12 14:05	05/07/12 14:05
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 14:05	05/07/12 14:05
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 14:05	05/07/12 14:05
	Diethyl ether	ND	2.0 µg/L	05/07/12 14:05	05/07/12 14:05
	Ethyl methacrylate	ND	10 µg/L	05/07/12 14:05	05/07/12 14:05
	Hexachloroethane	ND	10 µg/L	05/07/12 14:05	05/07/12 14:05
	Methacrylonitrile	ND	10 µg/L	05/07/12 14:05	05/07/12 14:05
	Methyl acrylate	ND	10 µg/L	05/07/12 14:05	05/07/12 14:05
	Methyl iodide	ND	2.0 µg/L	05/07/12 14:05	05/07/12 14:05
	Methyl methacrylate	ND	10 µg/L	05/07/12 14:05	05/07/12 14:05
	Nitrobenzene	ND	10 µg/L	05/07/12 14:05	05/07/12 14:05
	2-Nitropropane	ND	2.0 µg/L	05/07/12 14:05	05/07/12 14:05
	Pentachloroethane	ND	2.0 µg/L	05/07/12 14:05	05/07/12 14:05
	Propionitrile	ND	50 µg/L	05/07/12 14:05	05/07/12 14:05
	Tetrahydrofuran	ND	10 µg/L	05/07/12 14:05	05/07/12 14:05
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 14:05	05/07/12 14:05

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Client ID: **MW-12-3**					
Lab ID : BMI12050104-03A	Acrylonitrile	ND	10 µg/L	05/07/12 14:27	05/07/12 14:27
Date Sampled 04/30/12 09:10	Allyl chloride	ND	2.0 µg/L	05/07/12 14:27	05/07/12 14:27
	Carbon disulfide	ND	2.0 µg/L	05/07/12 14:27	05/07/12 14:27
	Chloroacetonitrile	ND	10 µg/L	05/07/12 14:27	05/07/12 14:27
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 14:27	05/07/12 14:27
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 14:27	05/07/12 14:27
	Diethyl ether	ND	2.0 µg/L	05/07/12 14:27	05/07/12 14:27
	Ethyl methacrylate	ND	10 µg/L	05/07/12 14:27	05/07/12 14:27
	Hexachloroethane	ND	10 µg/L	05/07/12 14:27	05/07/12 14:27
	Methacrylonitrile	ND	10 µg/L	05/07/12 14:27	05/07/12 14:27
	Methyl acrylate	ND	10 µg/L	05/07/12 14:27	05/07/12 14:27
	Methyl iodide	ND	2.0 µg/L	05/07/12 14:27	05/07/12 14:27
	Methyl methacrylate	ND	10 µg/L	05/07/12 14:27	05/07/12 14:27
	Nitrobenzene	ND	10 µg/L	05/07/12 14:27	05/07/12 14:27
	2-Nitropropane	ND	2.0 µg/L	05/07/12 14:27	05/07/12 14:27
	Pentachloroethane	ND	2.0 µg/L	05/07/12 14:27	05/07/12 14:27
	Propionitrile	ND	50 µg/L	05/07/12 14:27	05/07/12 14:27
	Tetrahydrofuran	ND	10 µg/L	05/07/12 14:27	05/07/12 14:27
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 14:27	05/07/12 14:27
Client ID: **MW-12-2**					
Lab ID : BMI12050104-04A	Acrylonitrile	ND	10 µg/L	05/07/12 14:49	05/07/12 14:49
Date Sampled 04/30/12 09:45	Allyl chloride	ND	2.0 µg/L	05/07/12 14:49	05/07/12 14:49
	Carbon disulfide	ND	2.0 µg/L	05/07/12 14:49	05/07/12 14:49
	Chloroacetonitrile	ND	10 µg/L	05/07/12 14:49	05/07/12 14:49
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 14:49	05/07/12 14:49
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 14:49	05/07/12 14:49
	Diethyl ether	ND	2.0 µg/L	05/07/12 14:49	05/07/12 14:49
	Ethyl methacrylate	ND	10 µg/L	05/07/12 14:49	05/07/12 14:49
	Hexachloroethane	ND	10 µg/L	05/07/12 14:49	05/07/12 14:49
	Methacrylonitrile	ND	10 µg/L	05/07/12 14:49	05/07/12 14:49
	Methyl acrylate	ND	10 µg/L	05/07/12 14:49	05/07/12 14:49
	Methyl iodide	ND	2.0 µg/L	05/07/12 14:49	05/07/12 14:49
	Methyl methacrylate	ND	10 µg/L	05/07/12 14:49	05/07/12 14:49
	Nitrobenzene	ND	10 µg/L	05/07/12 14:49	05/07/12 14:49
	2-Nitropropane	ND	2.0 µg/L	05/07/12 14:49	05/07/12 14:49
	Pentachloroethane	ND	2.0 µg/L	05/07/12 14:49	05/07/12 14:49
	Propionitrile	ND	50 µg/L	05/07/12 14:49	05/07/12 14:49
	Tetrahydrofuran	ND	10 µg/L	05/07/12 14:49	05/07/12 14:49
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 14:49	05/07/12 14:49

Alpha Analytical, Inc.

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Client ID: **MW-12-1**					
Lab ID : BMI12050104-05A	Acrylonitrile	ND	10 µg/L	05/07/12 15:10	05/07/12 15:10
Date Sampled 04/30/12 10:20	Allyl chloride	ND	2.0 µg/L	05/07/12 15:10	05/07/12 15:10
	Carbon disulfide	ND	2.0 µg/L	05/07/12 15:10	05/07/12 15:10
	Chloroacetonitrile	ND	10 µg/L	05/07/12 15:10	05/07/12 15:10
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 15:10	05/07/12 15:10
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 15:10	05/07/12 15:10
	Diethyl ether	ND	2.0 µg/L	05/07/12 15:10	05/07/12 15:10
	Ethyl methacrylate	ND	10 µg/L	05/07/12 15:10	05/07/12 15:10
	Hexachloroethane	ND	10 µg/L	05/07/12 15:10	05/07/12 15:10
	Methacrylonitrile	ND	10 µg/L	05/07/12 15:10	05/07/12 15:10
	Methyl acrylate	ND	10 µg/L	05/07/12 15:10	05/07/12 15:10
	Methyl iodide	ND	2.0 µg/L	05/07/12 15:10	05/07/12 15:10
	Methyl methacrylate	ND	10 µg/L	05/07/12 15:10	05/07/12 15:10
	Nitrobenzene	ND	10 µg/L	05/07/12 15:10	05/07/12 15:10
	2-Nitropropane	ND	2.0 µg/L	05/07/12 15:10	05/07/12 15:10
	Pentachloroethane	ND	2.0 µg/L	05/07/12 15:10	05/07/12 15:10
	Propionitrile	ND	50 µg/L	05/07/12 15:10	05/07/12 15:10
	Tetrahydrofuran	ND	10 µg/L	05/07/12 15:10	05/07/12 15:10
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 15:10	05/07/12 15:10
Client ID: **EB-5-4/30/12**					
Lab ID : BMI12050104-06A	Acrylonitrile	ND	10 µg/L	05/07/12 15:32	05/07/12 15:32
Date Sampled 04/30/12 10:04	Allyl chloride	ND	2.0 µg/L	05/07/12 15:32	05/07/12 15:32
	Carbon disulfide	ND	2.0 µg/L	05/07/12 15:32	05/07/12 15:32
	Chloroacetonitrile	ND	10 µg/L	05/07/12 15:32	05/07/12 15:32
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 15:32	05/07/12 15:32
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 15:32	05/07/12 15:32
	Diethyl ether	ND	2.0 µg/L	05/07/12 15:32	05/07/12 15:32
	Ethyl methacrylate	ND	10 µg/L	05/07/12 15:32	05/07/12 15:32
	Hexachloroethane	ND	10 µg/L	05/07/12 15:32	05/07/12 15:32
	Methacrylonitrile	ND	10 µg/L	05/07/12 15:32	05/07/12 15:32
	Methyl acrylate	ND	10 µg/L	05/07/12 15:32	05/07/12 15:32
	Methyl iodide	ND	2.0 µg/L	05/07/12 15:32	05/07/12 15:32
	Methyl methacrylate	ND	10 µg/L	05/07/12 15:32	05/07/12 15:32
	Nitrobenzene	ND	10 µg/L	05/07/12 15:32	05/07/12 15:32
	2-Nitropropane	ND	2.0 µg/L	05/07/12 15:32	05/07/12 15:32
	Pentachloroethane	ND	2.0 µg/L	05/07/12 15:32	05/07/12 15:32
	Propionitrile	ND	50 µg/L	05/07/12 15:32	05/07/12 15:32
	Tetrahydrofuran	ND	10 µg/L	05/07/12 15:32	05/07/12 15:32
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 15:32	05/07/12 15:32

Alpha Analytical, Inc.

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Client ID: **TB-5-4/30/12**

Lab ID : BMI12050104-07A

Date Sampled 04/30/12 00:00

Acrylonitrile	ND	10 µg/L	05/07/12 15:54	05/07/12 15:54
Allyl chloride	ND	2.0 µg/L	05/07/12 15:54	05/07/12 15:54
Carbon disulfide	ND	2.0 µg/L	05/07/12 15:54	05/07/12 15:54
Chloroacetonitrile	ND	10 µg/L	05/07/12 15:54	05/07/12 15:54
1-Chlorobutane	ND	2.0 µg/L	05/07/12 15:54	05/07/12 15:54
1,1-Dichloropropanone	ND	10 µg/L	05/07/12 15:54	05/07/12 15:54
Diethyl ether	ND	2.0 µg/L	05/07/12 15:54	05/07/12 15:54
Ethyl methacrylate	ND	10 µg/L	05/07/12 15:54	05/07/12 15:54
Hexachloroethane	ND	10 µg/L	05/07/12 15:54	05/07/12 15:54
Methacrylonitrile	ND	10 µg/L	05/07/12 15:54	05/07/12 15:54
Methyl acrylate	ND	10 µg/L	05/07/12 15:54	05/07/12 15:54
Methyl iodide	ND	2.0 µg/L	05/07/12 15:54	05/07/12 15:54
Methyl methacrylate	ND	10 µg/L	05/07/12 15:54	05/07/12 15:54
Nitrobenzene	ND	10 µg/L	05/07/12 15:54	05/07/12 15:54
2-Nitropropane	ND	2.0 µg/L	05/07/12 15:54	05/07/12 15:54
Pentachloroethane	ND	2.0 µg/L	05/07/12 15:54	05/07/12 15:54
Propionitrile	ND	50 µg/L	05/07/12 15:54	05/07/12 15:54
Tetrahydrofuran	ND	10 µg/L	05/07/12 15:54	05/07/12 15:54
trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 15:54	05/07/12 15:54

Information regarding the estimate of the uncertainty of measurement is available upon client request.

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/11/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050104-01A
Client I.D. Number: MW-12-5

Sampled: 04/30/12 08:04
Received: 05/01/12
Extracted: 05/07/12 13:44
Analyzed: 05/07/12 13:44

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	1.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	1.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
63	Naphthalene	ND	1.0	µg/L
64	Hexachlorobutadiene	ND	1.0	µg/L
65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	101	(70-130)	%REC
67	Surr: Toluene-d8	102	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/11/12
Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050104-02A
Client I.D. Number: MW-12-4

Sampled: 04/30/12 08:35
Received: 05/01/12
Extracted: 05/07/12 14:05
Analyzed: 05/07/12 14:05

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
2	Chloromethane	ND	1.0	µg/L	46 1,2,3-Trichloropropane	ND	1.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
17	Chloroform	0.56	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	1.0	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	63 Naphthalene	ND	1.0	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	1.0	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	1.0	µg/L
22	Carbon tetrachloride	0.69	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
23	Benzene	ND	0.50	µg/L	67 Surr: Toluene-d8	102	(70-130)	%REC
24	Dibromomethane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
25	1,2-Dichloropropane	ND	0.50	µg/L				
26	Trichloroethene	ND	0.50	µg/L				
27	Bromodichloromethane	ND	0.50	µg/L				
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L				
29	cis-1,3-Dichloropropene	ND	0.50	µg/L				
30	trans-1,3-Dichloropropene	ND	0.50	µg/L				
31	1,1,2-Trichloroethane	ND	0.50	µg/L				
32	Toluene	ND	0.50	µg/L				
33	1,3-Dichloropropane	ND	0.50	µg/L				
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L				
37	Tetrachloroethene	ND	0.50	µg/L				
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L				
39	Chlorobenzene	ND	0.50	µg/L				
40	Ethylbenzene	ND	0.50	µg/L				
41	m,p-Xylene	ND	0.50	µg/L				
42	Bromoform	ND	0.50	µg/L				
43	Styrene	ND	0.50	µg/L				
44	o-Xylene	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/11/12
Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050104-03A
Client I.D. Number: MW-12-3

Sampled: 04/30/12 09:10
Received: 05/01/12
Extracted: 05/07/12 14:27
Analyzed: 05/07/12 14:27

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	1.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	0.61	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	0.66	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	1.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
63	Naphthalene	ND	1.0	µg/L
64	Hexachlorobutadiene	ND	1.0	µg/L
65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
67	Surr: Toluene-d8	101	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/11/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050104-04A
Client I.D. Number: MW-12-2

Sampled: 04/30/12 09:45
Received: 05/01/12
Extracted: 05/07/12 14:49
Analyzed: 05/07/12 14:49

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	1.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	1.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
63	Naphthalene	ND	1.0	µg/L
64	Hexachlorobutadiene	ND	1.0	µg/L
65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
67	Surr: Toluene-d8	101	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050104-05A
Client I.D. Number: MW-12-1

Sampled: 04/30/12 10:20
Received: 05/01/12
Extracted: 05/07/12 15:10
Analyzed: 05/07/12 15:10

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	1.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	1.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
63	Naphthalene	ND	1.0	µg/L
64	Hexachlorobutadiene	ND	1.0	µg/L
65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
67	Surr: Toluene-d8	100	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050104-06A
Client I.D. Number: EB-5-4/30/12

Sampled: 04/30/12 10:04
Received: 05/01/12
Extracted: 05/07/12 15:32
Analyzed: 05/07/12 15:32

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	1.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	1.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
63	Naphthalene	ND	1.0	µg/L
64	Hexachlorobutadiene	ND	1.0	µg/L
65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
67	Surr: Toluene-d8	101	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050104-07A
Client I.D. Number: TB-5-4/30/12

Sampled: 04/30/12 00:00
Received: 05/01/12
Extracted: 05/07/12 15:54
Analyzed: 05/07/12 15:54

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	1.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	1.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
63	Naphthalene	ND	1.0	µg/L
64	Hexachlorobutadiene	ND	1.0	µg/L
65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
67	Surr: Toluene-d8	103	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/11/12
Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

VOC Sample Preservation Report

Work Order: BMI12050104 **Job:** 100006114 / JPL Groundwater Monitoring

Alpha's Sample ID	Client's Sample ID	Matrix	pH
12050104-01A	MW-12-5	Aqueous	2
12050104-02A	MW-12-4	Aqueous	2
12050104-03A	MW-12-3	Aqueous	2
12050104-04A	MW-12-2	Aqueous	2
12050104-05A	MW-12-1	Aqueous	2
12050104-06A	EB-5-4/30/12	Aqueous	2
12050104-07A	TB-5-4/30/12	Aqueous	2

5/11/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *08-May-12*

QC Summary Report

Work Order: 12050104

Method Blank

Type **MBLK** Test Code: **EPA Method 300.0**

File ID: **25** Batch ID: **28633K** Analysis Date: **05/01/2012 10:59**

Sample ID: **MB-28633** Units : **mg/L** Run ID: **IC_1_120501B** Prep Date: **05/01/2012 10:01**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0**

File ID: **26** Batch ID: **28633K** Analysis Date: **05/01/2012 11:18**

Sample ID: **LFB-28633** Units : **mg/L** Run ID: **IC_1_120501B** Prep Date: **05/01/2012 10:01**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	53.3	0.5	50		107	90	110			
Nitrite (NO2) - N	5.25	0.25	5		105	90	110			
Nitrate (NO3) - N	5.18	0.25	5		104	90	110			
Phosphate, ortho - P	4.95	0.5	5		99	90	110			
Sulfate (SO4)	103	0.5	100		103	90	110			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0**

File ID: **35** Batch ID: **28633K** Analysis Date: **05/01/2012 15:38**

Sample ID: **12050104-01ALFM** Units : **mg/L** Run ID: **IC_1_120501B** Prep Date: **05/01/2012 10:01**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	284	1.3	250	17.69	107	90	110			
Nitrite (NO2) - N	27.8	0.63	25	0	111	90	110			M1
Nitrate (NO3) - N	26.9	0.63	25	1.903	100	90	110			
Phosphate, ortho - P	26.9	1.3	25	0	108	90	110			
Sulfate (SO4)	521	1.3	500	21.25	100	90	110			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0**

File ID: **36** Batch ID: **28633K** Analysis Date: **05/01/2012 15:56**

Sample ID: **12050104-01ALFMD** Units : **mg/L** Run ID: **IC_1_120501B** Prep Date: **05/01/2012 10:01**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	281	1.3	250	17.69	105	90	110	284.5	1.2(15)	
Nitrite (NO2) - N	26.1	0.63	25	0	104	90	110	27.8	6.2(15)	
Nitrate (NO3) - N	27.2	0.63	25	1.903	101	90	110	26.93	0.8(15)	
Phosphate, ortho - P	26.7	1.3	25	0	107	90	110	26.93	0.8(15)	
Sulfate (SO4)	524	1.3	500	21.25	101	90	110	521	0.6(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

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Date: *11-May-12*

QC Summary Report

Work Order: 12050104

Method Blank

Type: **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **28650K** Analysis Date: **05/02/2012 17:02**

Sample ID: **MB-28650** Units : **µg/L** Run ID: **IC_3_120502A** Prep Date: **05/02/2012 16:09**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **28650K** Analysis Date: **05/02/2012 17:20**

Sample ID: **LFB-28650** Units : **µg/L** Run ID: **IC_3_120502A** Prep Date: **05/02/2012 16:09**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	27.6	2	25		111	85	115			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 314.0**

File ID: **18** Batch ID: **28650K** Analysis Date: **05/02/2012 18:15**

Sample ID: **12042702-01ALFM** Units : **µg/L** Run ID: **IC_3_120502A** Prep Date: **05/02/2012 16:09**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	24	2	25	0	96	85	115			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 314.0**

File ID: **19** Batch ID: **28650K** Analysis Date: **05/02/2012 18:34**

Sample ID: **12042702-01ALFMD** Units : **µg/L** Run ID: **IC_3_120502A** Prep Date: **05/02/2012 16:09**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	26.5	2	25	0	106	85	115	24	9.8(15)	

Comments:

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Date: *07-May-12*

QC Summary Report

Work Order: 12050104

Laboratory Control Spike Type **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0502AL** Analysis Date: **05/02/2012 11:28**

Sample ID: **LCS-W0502AL** Units : **mg/L** Run ID: **WETLAB_120502D** Prep Date: **05/02/2012 11:28**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	245.9	10	250		98	80	120			
Alkalinity, Carbonate (As CaCO3)	245.9	10	250		98	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	246	10	250		98	80	120			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *14-May-12*

QC Summary Report

Work Order: 12050104

Method Blank

Type: **MBLK** Test Code: **EPA Method 200.8**

File ID: **051012.B\019_M.D** Batch ID: **28661K** Analysis Date: **05/10/2012 12:51**

Sample ID: **MB-28661** Units : **mg/L** Run ID: **ICP/MS_120510A** Prep Date: **05/03/2012 12:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 200.8**

File ID: **051012.B\020_M.D** Batch ID: **28661K** Analysis Date: **05/10/2012 12:57**

Sample ID: **LCS-28661** Units : **mg/L** Run ID: **ICP/MS_120510A** Prep Date: **05/03/2012 12:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	5.66	0.5	5		113	80	120			
Magnesium (Mg)	5.65	0.5	5		113	80	120			
Potassium (K)	5.4	0.5	5		108	80	120			
Calcium (Ca)	5.5	0.5	5		110	80	120			
Chromium (Cr)	0.0521	0.005	0.05		104	80	120			
Iron (Fe)	5.62	0.3	5		112	80	120			
Arsenic (As)	0.0527	0.002	0.05		105	80	120			
Lead (Pb)	0.0526	0.005	0.05		105	80	120			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method 200.8**

File ID: **051012.B\025_M.D** Batch ID: **28661K** Analysis Date: **05/10/2012 13:26**

Sample ID: **12050104-03AMS** Units : **mg/L** Run ID: **ICP/MS_120510A** Prep Date: **05/03/2012 12:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	31.5	0.5	5	26.64	98	80	120			
Magnesium (Mg)	20.6	0.5	5	15.36	105	80	120			
Potassium (K)	7.73	0.5	5	2.724	100	80	120			
Calcium (Ca)	52	0.5	5	47.3	94	80	120			
Chromium (Cr)	0.0473	0.005	0.05	0	95	80	120			
Iron (Fe)	5.76	0.3	5	0.6678	102	80	120			
Arsenic (As)	0.0429	0.002	0.05	0	86	80	120			
Lead (Pb)	0.0483	0.005	0.05	0	97	80	120			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method 200.8**

File ID: **051012.B\026_M.D** Batch ID: **28661K** Analysis Date: **05/10/2012 13:31**

Sample ID: **12050104-03AMSD** Units : **mg/L** Run ID: **ICP/MS_120510A** Prep Date: **05/03/2012 12:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	31.8	0.5	5	26.64	103	80	120	31.52	0.9(20)	
Magnesium (Mg)	20.9	0.5	5	15.36	110	80	120	20.6	1.3(20)	
Potassium (K)	7.86	0.5	5	2.724	103	80	120	7.726	1.8(20)	
Calcium (Ca)	51.8	0.5	5	47.3	89	80	120	52.02	0.5(20)	
Chromium (Cr)	0.048	0.005	0.05	0	96	80	120	0.04731	1.5(20)	
Iron (Fe)	5.82	0.3	5	0.6678	103	80	120	5.761	1.1(20)	
Arsenic (As)	0.0465	0.002	0.05	0	93	80	120	0.04292	8.1(20)	
Lead (Pb)	0.0496	0.005	0.05	0	99	80	120	0.04834	2.5(20)	

Comments:

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Date: *08-May-12*

QC Summary Report

Work Order: 12050104

Laboratory Control Spike Type **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0501PH** Analysis Date: **05/01/2012 14:13**

Sample ID: **LCS-W0501PH** Units : **pH Units** Run ID: **WETLAB_120501A** Prep Date: **05/01/2012 14:13**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5.04	1.7	5		101	90	110			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *08-May-12*

QC Summary Report

Work Order: 12050104

Method Blank

Type **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0501DS** Analysis Date: **05/02/2012 00:00**

Sample ID: **MBLK-W0501DS** Units : **mg/L** Run ID: **WETLAB_120501B** Prep Date: **05/02/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0501DS** Analysis Date: **05/02/2012 00:00**

Sample ID: **LCS-W0501DS** Units : **mg/L** Run ID: **WETLAB_120501B** Prep Date: **05/02/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	100	10	100		100	70	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *11-May-12*

QC Summary Report

Work Order: 12050104

Method Blank Type: **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12050706.D** Batch ID: **MS15W0507M** Analysis Date: **05/07/2012 11:54**

Sample ID: **MBLK MS15W0507M** Units : **µg/L** Run ID: **MSD_15_120507B** Prep Date: **05/07/2012 11:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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Date: *11-May-12*

QC Summary Report

Work Order: 12050104

Surr: 1,2-Dichloroethane-d4	10.1	10	101	70	130
Surr: Toluene-d8	10.3	10	103	70	130
Surr: 4-Bromofluorobenzene	9.23	10	92	70	130

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Date: *11-May-12*

QC Summary Report

Work Order: 12050104

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method SW8260B**

File ID: **12050704.D** Batch ID: **MS15W0507M** Analysis Date: **05/07/2012 11:08**

Sample ID: **LCS MS15W0507M** Units : **µg/L** Run ID: **MSD_15_120507B** Prep Date: **05/07/2012 11:08**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	10.4	1	10		104	70	130			
Chloromethane	7.45	2	10		75	70	130			
Vinyl chloride	11.3	1	10		113	70	130			
Chloroethane	9.19	1	10		92	70	130			
Bromomethane	8.57	2	10		86	70	130			
Trichlorofluoromethane	10.8	1	10		108	70	130			
Acetone	288	10	200		144	36	171			
1,1-Dichloroethene	10.1	1	10		101	70	130			
Dichloromethane	8.74	2	10		87	70	130			
Freon-113	10.8	1	10		108	70	137			
trans-1,2-Dichloroethene	10	1	10		100	70	130			
Methyl tert-butyl ether (MTBE)	8.76	0.5	10		88	70	130			
1,1-Dichloroethane	9.75	1	10		98	70	130			
2-Butanone (MEK)	244	10	200		122	70	130			
cis-1,2-Dichloroethene	10.1	1	10		101	70	130			
Bromochloromethane	10.3	1	10		103	70	130			
Chloroform	9.08	1	10		91	70	130			
2,2-Dichloropropane	9.54	1	10		95	70	130			
1,2-Dichloroethane	9.76	1	10		98	70	130			
1,1,1-Trichloroethane	10.3	1	10		103	70	130			
1,1-Dichloropropene	10.8	1	10		108	70	130			
Carbon tetrachloride	9.5	1	10		95	70	130			
Benzene	9.83	0.5	10		98	70	130			
Dibromomethane	9.82	1	10		98	70	130			
1,2-Dichloropropane	9.16	1	10		92	70	130			
Trichloroethene	10.1	1	10		101	70	130			
Bromodichloromethane	9.16	1	10		92	70	130			
4-Methyl-2-pentanone (MIBK)	23.3	2.5	25		93	20	182			
cis-1,3-Dichloropropene	9.24	1	10		92	70	130			
trans-1,3-Dichloropropene	9.08	1	10		91	70	130			
1,1,2-Trichloroethane	10	1	10		100	70	130			
Toluene	9.45	0.5	10		95	70	130			
1,3-Dichloropropane	9.67	1	10		97	70	130			
2-Hexanone	113	5	100		113	20	182			
Dibromochloromethane	8.94	1	10		89	70	130			
1,2-Dibromoethane (EDB)	18.8	2	20		94	70	130			
Tetrachloroethene	10.1	1	10		101	70	130			
1,1,1,2-Tetrachloroethane	10.6	1	10		106	70	130			
Chlorobenzene	10	1	10		100	70	130			
Ethylbenzene	9.74	0.5	10		97	70	130			
m,p-Xylene	9.6	0.5	10		96	70	130			
Bromoform	8.69	1	10		87	70	130			
Styrene	8.58	1	10		86	70	130			
o-Xylene	9.48	0.5	10		95	70	130			
1,1,2,2-Tetrachloroethane	9.71	1	10		97	70	130			
1,2,3-Trichloropropane	20.3	2	20		102	70	130			
Isopropylbenzene	9.61	1	10		96	70	130			
Bromobenzene	9.9	1	10		99	70	130			
n-Propylbenzene	10	1	10		100	70	130			
4-Chlorotoluene	9.83	1	10		98	70	130			
2-Chlorotoluene	9.72	1	10		97	70	130			
1,3,5-Trimethylbenzene	9.99	1	10		99.9	70	130			
tert-Butylbenzene	9.7	1	10		97	70	130			
1,2,4-Trimethylbenzene	9.95	1	10		100	70	130			
sec-Butylbenzene	9.88	1	10		99	70	130			
1,3-Dichlorobenzene	9.22	1	10		92	70	130			
1,4-Dichlorobenzene	9.61	1	10		96	70	130			
4-Isopropyltoluene	10.1	1	10		101	70	130			
1,2-Dichlorobenzene	9.36	1	10		94	70	130			
n-Butylbenzene	10	1	10		100	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	49.3	3	50		99	67	130			
1,2,4-Trichlorobenzene	8.94	2	10		89	70	130			
Naphthalene	7.93	2	10		79	70	130			
Hexachlorobutadiene	19.5	2	20		98	70	130			
1,2,3-Trichlorobenzene	7.62	2	10		76	70	130			

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *11-May-12*

QC Summary Report

Work Order: 12050104

Surr: 1,2-Dichloroethane-d4	11	10	110	70	130
Surr: Toluene-d8	9.85	10	99	70	130
Surr: 4-Bromofluorobenzene	9.32	10	93	70	130

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Date: *11-May-12*

QC Summary Report

Work Order: 12050104

Sample Matrix Spike Type: **MS** Test Code: **EPA Method SW8260B**

File ID: **12050707.D** Batch ID: **MS15W0507M** Analysis Date: **05/07/2012 12:17**

Sample ID: **12050201-02AMS** Units : **µg/L** Run ID: **MSD_15_120507B** Prep Date: **05/07/2012 12:17**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	48.1	2.5	50	0	96	21	138			
Chloromethane	36.3	10	50	0	73	23	144			
Vinyl chloride	53.1	2.5	50	0	106	49	136			
Chloroethane	44.1	2.5	50	0	88	21	159			
Bromomethane	36.6	10	50	0	73	10	174			
Trichlorofluoromethane	52.6	2.5	50	0	105	32	154			
Acetone	553	50	1000	0	55	10	171			
1,1-Dichloroethene	46.4	2.5	50	0	93	64	130			
Dichloromethane	40.3	10	50	0	81	69	130			
Freon-113	50.2	2.5	50	0	100	55	141			
trans-1,2-Dichloroethene	45	2.5	50	0	90	63	130			
Methyl tert-butyl ether (MTBE)	40.2	1.3	50	0	80	47	150			
1,1-Dichloroethane	44.8	2.5	50	0	90	66	130			
2-Butanone (MEK)	672	50	1000	0	67	23	182			
cis-1,2-Dichloroethene	45.9	2.5	50	0	92	70	130			
Bromochloromethane	47	2.5	50	0	94	70	132			
Chloroform	41.1	2.5	50	0	82	70	130			
2,2-Dichloropropane	43.4	2.5	50	0	87	38	154			
1,2-Dichloroethane	45.2	2.5	50	0	90	65	134			
1,1,1-Trichloroethane	46.8	2.5	50	0	94	65	136			
1,1-Dichloropropene	49.6	2.5	50	0	99	68	132			
Carbon tetrachloride	43	2.5	50	0	86	58	148			
Benzene	45.1	1.3	50	0	90	59	138			
Dibromomethane	44.7	2.5	50	0	89	70	130			
1,2-Dichloropropane	41.8	2.5	50	0	84	70	131			
Trichloroethene	45.7	2.5	50	0	91	65	144			
Bromodichloromethane	41.8	2.5	50	0	84	50	157			
4-Methyl-2-pentanone (MIBK)	101	13	125	0	81	20	182			
cis-1,3-Dichloropropene	40.4	2.5	50	0	81	63	131			
trans-1,3-Dichloropropene	41.2	2.5	50	0	82	65	136			
1,1,2-Trichloroethane	46.1	2.5	50	0	92	70	131			
Toluene	43.1	1.3	50	0	86	68	130			
1,3-Dichloropropane	44.6	2.5	50	0	89	70	130			
2-Hexanone	317	25	500	0	63	20	182			
Dibromochloromethane	41	2.5	50	0	82	42	155			
1,2-Dibromoethane (EDB)	86.9	5	100	0	87	70	130			
Tetrachloroethene	46.4	2.5	50	0	93	65	130			
1,1,1,2-Tetrachloroethane	48.6	2.5	50	0	97	70	130			
Chlorobenzene	46.6	2.5	50	0	93	70	130			
Ethylbenzene	44.8	1.3	50	0	90	68	130			
m,p-Xylene	43.6	1.3	50	0	87	68	131			
Bromoform	40.5	2.5	50	0	81	65	143			
Styrene	39.4	2.5	50	0	79	59	153			
o-Xylene	43.6	1.3	50	0	87	70	130			
1,1,2,2-Tetrachloroethane	46	2.5	50	0	92	67	130			
1,2,3-Trichloropropane	94.8	10	100	0	95	70	130			
Isopropylbenzene	44.6	2.5	50	0	89	55	138			
Bromobenzene	45.8	2.5	50	0	92	70	130			
n-Propylbenzene	46.5	2.5	50	0	93	67	133			
4-Chlorotoluene	45.5	2.5	50	0	91	70	130			
2-Chlorotoluene	44.9	2.5	50	0	90	70	130			
1,3,5-Trimethylbenzene	46.5	2.5	50	0	93	67	134			
tert-Butylbenzene	45.2	2.5	50	0	90	55	147			
1,2,4-Trimethylbenzene	45.8	2.5	50	0	92	65	135			
sec-Butylbenzene	46.5	2.5	50	0	93	68	135			
1,3-Dichlorobenzene	42.9	2.5	50	0	86	70	130			
1,4-Dichlorobenzene	45.2	2.5	50	0	90	70	130			
4-Isopropyltoluene	47.1	2.5	50	0	94	68	132			
1,2-Dichlorobenzene	43.2	2.5	50	0	86	70	130			
n-Butylbenzene	46.6	2.5	50	0	93	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	229	15	250	0	92	64	130			
1,2,4-Trichlorobenzene	41.8	10	50	0	84	62	133			
Naphthalene	37	10	50	0	74	32	166			
Hexachlorobutadiene	89.6	10	100	0	90	63	130			
1,2,3-Trichlorobenzene	35.7	10	50	0	71	55	138			

Alpha Analytical, Inc.

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Date: *11-May-12*

QC Summary Report

Work Order: 12050104

Surr: 1,2-Dichloroethane-d4	54.5	50	109	70	130
Surr: Toluene-d8	49	50	98	70	130
Surr: 4-Bromofluorobenzene	46.8	50	94	70	130

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Date: *11-May-12*

QC Summary Report

Work Order: 12050104

Sample Matrix Spike Duplicate Type: **MSD** Test Code: **EPA Method SW8260B**

File ID: **12050708.D** Batch ID: **MS15W0507M** Analysis Date: **05/07/2012 12:38**

Sample ID: **12050201-02AMSD** Units : **µg/L** Run ID: **MSD_15_120507B** Prep Date: **05/07/2012 12:38**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	54.5	2.5	50	0	109	21	138	48.07	12.5(33)	
Chloromethane	40.3	10	50	0	81	23	144	36.29	10.6(27)	
Vinyl chloride	60.2	2.5	50	0	120	49	136	53.12	12.4(21)	
Chloroethane	48.5	2.5	50	0	97	21	159	44.14	9.4(40)	
Bromomethane	44	10	50	0	88	10	174	36.58	18.3(40)	
Trichlorofluoromethane	58.1	2.5	50	0	116	32	154	52.58	10.0(37)	
Acetone	632	50	1000	0	63	10	171	553.3	13.4(23)	
1,1-Dichloroethene	52.8	2.5	50	0	106	64	130	46.35	13.0(21)	
Dichloromethane	45.8	10	50	0	92	69	130	40.28	12.9(20)	
Freon-113	55.2	2.5	50	0	110	55	141	50.18	9.5(40)	
trans-1,2-Dichloroethene	51.9	2.5	50	0	104	63	130	45.01	14.3(20)	
Methyl tert-butyl ether (MTBE)	47.2	1.3	50	0	94	47	150	40.17	16.2(40)	
1,1-Dichloroethane	51.4	2.5	50	0	103	66	130	44.79	13.7(20)	
2-Butanone (MEK)	770	50	1000	0	77	23	182	671.8	13.6(22)	
cis-1,2-Dichloroethene	52.5	2.5	50	0	105	70	130	45.86	13.5(20)	
Bromochloromethane	53.9	2.5	50	0	108	70	132	47.03	13.5(20)	
Chloroform	46.8	2.5	50	0	94	70	130	41.06	13.1(20)	
2,2-Dichloropropane	49.9	2.5	50	0	99.8	38	154	43.35	14.1(22)	
1,2-Dichloroethane	51.3	2.5	50	0	103	65	134	45.21	12.6(20)	
1,1,1-Trichloroethane	53.5	2.5	50	0	107	65	136	46.79	13.3(20)	
1,1-Dichloropropene	56.1	2.5	50	0	112	68	132	49.59	12.4(20)	
Carbon tetrachloride	50	2.5	50	0	100	58	148	43.04	14.9(20)	
Benzene	51.2	1.3	50	0	102	59	138	45.09	12.7(21)	
Dibromomethane	51.5	2.5	50	0	103	70	130	44.67	14.2(20)	
1,2-Dichloropropane	48.1	2.5	50	0	96	70	131	41.75	14.1(20)	
Trichloroethene	52.3	2.5	50	0	105	65	144	45.72	13.4(20)	
Bromodichloromethane	48.4	2.5	50	0	97	50	157	41.81	14.5(20)	
4-Methyl-2-pentanone (MIBK)	117	13	125	0	94	20	182	100.9	15.1(20)	
cis-1,3-Dichloropropene	46.9	2.5	50	0	94	63	131	40.36	14.9(20)	
trans-1,3-Dichloropropene	47.3	2.5	50	0	95	65	136	41.17	13.9(20)	
1,1,2-Trichloroethane	52.5	2.5	50	0	105	70	131	46.09	12.9(20)	
Toluene	48.5	1.3	50	0	97	68	130	43.14	11.7(20)	
1,3-Dichloropropane	50.6	2.5	50	0	101	70	130	44.64	12.4(20)	
2-Hexanone	362	25	500	0	72	20	182	316.6	13.2(20)	
Dibromochloromethane	46.9	2.5	50	0	94	42	155	41.03	13.2(20)	
1,2-Dibromoethane (EDB)	99.4	5	100	0	99	70	130	86.9	13.4(20)	
Tetrachloroethene	52.2	2.5	50	0	104	65	130	46.37	11.8(20)	
1,1,1,2-Tetrachloroethane	55.3	2.5	50	0	111	70	130	48.6	12.9(20)	
Chlorobenzene	51.5	2.5	50	0	103	70	130	46.56	10.0(20)	
Ethylbenzene	50.2	1.3	50	0	100	68	130	44.78	11.4(20)	
m,p-Xylene	49.3	1.3	50	0	99	68	131	43.62	12.1(20)	
Bromoform	46.4	2.5	50	0	93	65	143	40.53	13.5(20)	
Styrene	44.8	2.5	50	0	90	59	153	39.44	12.7(37)	
o-Xylene	48.8	1.3	50	0	98	70	130	43.57	11.3(20)	
1,1,2,2-Tetrachloroethane	52	2.5	50	0	104	67	130	45.98	12.3(20)	
1,2,3-Trichloropropane	108	10	100	0	108	70	130	94.82	12.7(20)	
Isopropylbenzene	50.1	2.5	50	0	100	55	138	44.6	11.6(20)	
Bromobenzene	51.5	2.5	50	0	103	70	130	45.75	11.7(20)	
n-Propylbenzene	52.2	2.5	50	0	104	67	133	46.54	11.5(30)	
4-Chlorotoluene	51.2	2.5	50	0	102	70	130	45.53	11.6(20)	
2-Chlorotoluene	50.5	2.5	50	0	101	70	130	44.93	11.8(20)	
1,3,5-Trimethylbenzene	52.2	2.5	50	0	104	67	134	46.47	11.7(21)	
tert-Butylbenzene	50.8	2.5	50	0	102	55	147	45.19	11.7(20)	
1,2,4-Trimethylbenzene	52	2.5	50	0	104	65	135	45.8	12.6(25)	
sec-Butylbenzene	52.2	2.5	50	0	104	68	135	46.5	11.5(20)	
1,3-Dichlorobenzene	48.7	2.5	50	0	97	70	130	42.85	12.7(20)	
1,4-Dichlorobenzene	51.1	2.5	50	0	102	70	130	45.24	12.2(20)	
4-Isopropyltoluene	52.8	2.5	50	0	106	68	132	47.11	11.3(20)	
1,2-Dichlorobenzene	49.1	2.5	50	0	98	70	130	43.15	12.9(20)	
n-Butylbenzene	52.3	2.5	50	0	105	62	134	46.59	11.6(21)	
1,2-Dibromo-3-chloropropane (DBCP)	264	15	250	0	106	64	130	229.2	14.0(20)	
1,2,4-Trichlorobenzene	48.3	10	50	0	97	62	133	41.81	14.5(29)	
Naphthalene	44.2	10	50	0	88	32	166	37.04	17.6(40)	
Hexachlorobutadiene	102	10	100	0	102	63	130	89.62	13.4(21)	
1,2,3-Trichlorobenzene	42.6	10	50	0	85	55	138	35.68	17.7(36)	

Alpha Analytical, Inc.

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Date: *11-May-12*

QC Summary Report

Work Order: 12050104

Surr: 1,2-Dichloroethane-d4	55.4	50	111	70	130
Surr: Toluene-d8	48.7	50	97	70	130
Surr: 4-Bromofluorobenzene	46.9	50	94	70	130

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12050104

Report Due By : 5:00 PM On : 14-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : M.M

PO :

Client's COC # : 53778 Job : 100006114/JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
0 °C	01-May-12	**01-May-12**

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12050104-01A	MW-12-5	AQ	04/30/12 08:04	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050104-02A	MW-12-4	AQ	04/30/12 08:35	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050104-03A	MW-12-3	AQ	04/30/12 09:10	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	Level IV QC
BMI12050104-04A	MW-12-2	AQ	04/30/12 09:45	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050104-05A	MW-12-1	AQ	04/30/12 10:20	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050104-06A	EB-5-4/30/12	AQ	04/30/12 10:04	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050104-07A	TB-5-4/30/12	AQ	04/30/12 00:00	1	0	9							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 4/2/12

Comments: Security seals intact. Frozen Ice. Temp. Blank #8842 received @ 0°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -03A. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Loffee	Sara Loffee	**Alpha Analytical, Inc.**	5/1/12 9 65

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

53778

Billing Information:
Company Name BATTELLE
Attn: GERALD TOMPKINS
Address 505 KING AVE
City, State, Zip COLUMBUS, OH 43201
Phone Number ____ Fax ____

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ___ CA ✓ NV ___ WA ___ DOD Site ___
ID ___ OR ___ OTHER ___ Page # 1 of 1

Consultant / Client Name: BATTELLE / DAVID CONNER
Address: 3990 OLD TOWN AVE, C-205
City, State, Zip: SAN DIEGO, CA 92110
P.O. # ~~286479~~ 286215
Job #: 12000614/PO# ~~286~~479
Job Name: JPL GW MON 2012

Report Attention / Project Manager
Name: DAVID CONNER
Email: Connerd@battelle.org
Phone: ____ Mobile: (619) 726-7311

Data Validation Level: (III) or IV
EDD / EDF? YES ___ NO ___
Global ID # ___

Analyses Required: (524.2) VOCs; (200.8) *; PERCHLORATE (314.0); (SM2320B, SM2540C, 150.2) *; (300.0) *

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	# Containers**	524.2 VOCs	200.8 *	Perchlorate 314.0	SM2320B, SM2540C, 150.2 *	300.0 *			REMARKS
804	4/30/12	AQ	BMI12050104-01A	MW-12-5	NORM		3V, 2P	X	X	X	X	X			
835	|	|	-02A	MW-12-4	|		|	X	X	X	X	X			
910	|	|	-03A	MW-12-3	|		|	X	X	X	X	X			QC IV
945	|	|	-04A	MW-12-2	|		|	X	X	X	X	X			
1020	|	|	-05A	MW-12-1	|		3V, 2P	X	X	X	X	X			
1004	|	|	-06A	EB-5-4/30/12	|		3V, 2P	X	X	X	X	X			EQUIP BLANK
—	4/30/12	AQ	-07A	TB-5-4/30/12			1V	X							TRIP BLANK

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: *(200.8) - TOTAL Cr, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320B, SM2540C, 150.2) CO3, HCO3, TDS, PH, ALK. *(300.0) - CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: MARIOS MENDOZA

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:
[signature]	[signature] / Alpha Analytical	4/30/12	1100
[signature] / Alpha Analytical	[signature]	5/1/12	9:50

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *14-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Work Order: BMI12050201 **Cooler Temp:** 2 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12050201-01A	MW-23-5	Aqueous
12050201-02A	MW-23-4	Aqueous
12050201-03A	MW-23-3	Aqueous
12050201-04A	MW-23-2	Aqueous
12050201-05A	MW-23-1	Aqueous
12050201-06A	DUPE-3-2Q12	Aqueous
12050201-07A	EB-6-5/1/12	Aqueous
12050201-08A	TB-6-5/1/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/02/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-23-5**					
Lab ID : BMI12050201-01A	Chloride	11	0.50 mg/L	05/02/12 08:34	05/02/12 12:48
Date Sampled 05/01/12 08:58	Nitrite (NO2) - N	ND	0.25 mg/L	05/02/12 08:34	05/02/12 12:48
	Nitrate (NO3) - N	ND	0.25 mg/L	05/02/12 08:34	05/02/12 12:48
	Phosphate, ortho - P	ND	0.50 mg/L	05/02/12 08:34	05/02/12 12:48
	Sulfate (SO4)	6.3	0.50 mg/L	05/02/12 08:34	05/02/12 12:48
Client ID: **MW-23-4**					
Lab ID : BMI12050201-02A	Chloride	14	0.50 mg/L	05/02/12 08:34	05/02/12 13:06
Date Sampled 05/01/12 09:28	Nitrite (NO2) - N	ND	0.25 mg/L	05/02/12 08:34	05/02/12 13:06
	Nitrate (NO3) - N	5.2	0.25 mg/L	05/02/12 08:34	05/02/12 13:06
	Phosphate, ortho - P	ND	0.50 mg/L	05/02/12 08:34	05/02/12 13:06
	Sulfate (SO4)	8.3	0.50 mg/L	05/02/12 08:34	05/02/12 13:06
Client ID: **MW-23-3**					
Lab ID : BMI12050201-03A	Chloride	23	0.50 mg/L	05/02/12 08:34	05/02/12 14:02
Date Sampled 05/01/12 10:17	Nitrite (NO2) - N	ND	0.25 mg/L	05/02/12 08:34	05/02/12 14:02
	Nitrate (NO3) - N	7.5	0.25 mg/L	05/02/12 08:34	05/02/12 14:02
	Phosphate, ortho - P	ND	0.50 mg/L	05/02/12 08:34	05/02/12 14:02
	Sulfate (SO4)	17	0.50 mg/L	05/02/12 08:34	05/02/12 14:02
Client ID: **MW-23-2**					
Lab ID : BMI12050201-04A	Chloride	110	75 mg/L	05/02/12 08:34	05/02/12 14:20
Date Sampled 05/01/12 10:46	Nitrite (NO2) - N	ND	0.25 mg/L	05/02/12 08:34	05/02/12 14:20
	Nitrate (NO3) - N	13	0.25 mg/L	05/02/12 08:34	05/02/12 14:20
	Phosphate, ortho - P	ND	0.50 mg/L	05/02/12 08:34	05/02/12 14:20
	Sulfate (SO4)	150	75 mg/L	05/02/12 08:34	05/02/12 14:20
Client ID: **MW-23-1**					
Lab ID : BMI12050201-05A	Chloride	91	50 mg/L	05/02/12 08:34	05/03/12 10:02
Date Sampled 05/01/12 11:22	Nitrite (NO2) - N	ND	0.25 mg/L	05/02/12 08:34	05/03/12 10:02
	Nitrate (NO3) - N	8.8	0.25 mg/L	05/02/12 08:34	05/03/12 10:02
	Phosphate, ortho - P	ND	0.50 mg/L	05/02/12 08:34	05/03/12 10:02
	Sulfate (SO4)	140	0.50 mg/L	05/02/12 08:34	05/03/12 10:02
Client ID: **DUPE-3-2Q12**					
Lab ID : BMI12050201-06A	Chloride	91	50 mg/L	05/02/12 08:34	05/03/12 10:20
Date Sampled 05/01/12 00:00	Nitrite (NO2) - N	ND	0.25 mg/L	05/02/12 08:34	05/03/12 10:20
	Nitrate (NO3) - N	8.6	0.25 mg/L	05/02/12 08:34	05/03/12 10:20
	Phosphate, ortho - P	ND	0.50 mg/L	05/02/12 08:34	05/03/12 10:20
	Sulfate (SO4)	140	0.50 mg/L	05/02/12 08:34	05/03/12 10:20

Alpha Analytical, Inc.

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Client ID: **EB-6-5/1/12**

Lab ID :	BMI12050201-07A	Chloride	ND	0.50 mg/L	05/02/12 08:34	05/02/12 15:16
Date Sampled	05/01/12 11:04	Nitrite (NO2) - N	ND	0.25 mg/L	05/02/12 08:34	05/02/12 15:16
		Nitrate (NO3) - N	ND	0.25 mg/L	05/02/12 08:34	05/02/12 15:16
		Phosphate, ortho - P	ND	0.50 mg/L	05/02/12 08:34	05/02/12 15:16
		Sulfate (SO4)	ND	0.50 mg/L	05/02/12 08:34	05/02/12 15:16

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

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5/14/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/02/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-23-5**				
Lab ID : BMI12050201-01A Perchlorate	ND	1.00 µg/L	05/02/12 16:33	05/03/12 00:23
Date Sampled 05/01/12 08:58				
Client ID: **MW-23-4**				
Lab ID : BMI12050201-02A Perchlorate	1.21	1.00 µg/L	05/02/12 16:33	05/03/12 00:42
Date Sampled 05/01/12 09:28				
Client ID: **MW-23-3**				
Lab ID : BMI12050201-03A Perchlorate	1.88	1.00 µg/L	05/02/12 16:33	05/03/12 01:37
Date Sampled 05/01/12 10:17				
Client ID: **MW-23-2**				
Lab ID : BMI12050201-04A Perchlorate	4.91	1.00 µg/L	05/02/12 16:33	05/03/12 01:55
Date Sampled 05/01/12 10:46				
Client ID: **MW-23-1**				
Lab ID : BMI12050201-05A Perchlorate	11.2	1.00 µg/L	05/02/12 16:33	05/03/12 02:14
Date Sampled 05/01/12 11:22				
Client ID: **DUPE-3-2Q12**				
Lab ID : BMI12050201-06A Perchlorate	12.5	1.00 µg/L	05/02/12 16:33	05/03/12 02:50
Date Sampled 05/01/12 00:00				
Client ID: **EB-6-5/1/12**				
Lab ID : BMI12050201-07A Perchlorate	ND	1.00 µg/L	05/02/12 16:33	05/03/12 03:09
Date Sampled 05/01/12 11:04				

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ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/02/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-23-5**					
Lab ID : BMI12050201-01A	Alkalinity, Bicarbonate (As CaCO3)	72	10 mg/L	05/02/12 13:50	05/02/12 13:50
Date Sampled 05/01/12 08:58	Alkalinity, Carbonate (As CaCO3)	120	10 mg/L	05/02/12 13:50	05/02/12 13:50
	Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	05/02/12 13:50	05/02/12 13:50
Client ID: **MW-23-4**					
Lab ID : BMI12050201-02A	Alkalinity, Bicarbonate (As CaCO3)	150	10 mg/L	05/02/12 14:00	05/02/12 14:00
Date Sampled 05/01/12 09:28	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/02/12 14:00	05/02/12 14:00
	Alkalinity, Total (As CaCO3 at pH 4.5)	150	10 mg/L	05/02/12 14:00	05/02/12 14:00
Client ID: **MW-23-3**					
Lab ID : BMI12050201-03A	Alkalinity, Bicarbonate (As CaCO3)	150	10 mg/L	05/02/12 14:06	05/02/12 14:06
Date Sampled 05/01/12 10:17	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/02/12 14:06	05/02/12 14:06
	Alkalinity, Total (As CaCO3 at pH 4.5)	150	10 mg/L	05/02/12 14:06	05/02/12 14:06
Client ID: **MW-23-2**					
Lab ID : BMI12050201-04A	Alkalinity, Bicarbonate (As CaCO3)	250	10 mg/L	05/02/12 14:10	05/02/12 14:10
Date Sampled 05/01/12 10:46	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/02/12 14:10	05/02/12 14:10
	Alkalinity, Total (As CaCO3 at pH 4.5)	250	10 mg/L	05/02/12 14:10	05/02/12 14:10
Client ID: **MW-23-1**					
Lab ID : BMI12050201-05A	Alkalinity, Bicarbonate (As CaCO3)	230	10 mg/L	05/02/12 14:15	05/02/12 14:15
Date Sampled 05/01/12 11:22	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/02/12 14:15	05/02/12 14:15
	Alkalinity, Total (As CaCO3 at pH 4.5)	230	10 mg/L	05/02/12 14:15	05/02/12 14:15
Client ID: **DUPE-3-2Q12**					
Lab ID : BMI12050201-06A	Alkalinity, Bicarbonate (As CaCO3)	240	10 mg/L	05/02/12 14:21	05/02/12 14:21
Date Sampled 05/01/12 00:00	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/02/12 14:21	05/02/12 14:21
	Alkalinity, Total (As CaCO3 at pH 4.5)	240	10 mg/L	05/02/12 14:21	05/02/12 14:21
Client ID: **EB-6-5/1/12**					
Lab ID : BMI12050201-07A	Alkalinity, Bicarbonate (As CaCO3)	ND	10 mg/L	05/02/12 14:25	05/02/12 14:25
Date Sampled 05/01/12 11:04	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/02/12 14:25	05/02/12 14:25
	Alkalinity, Total (As CaCO3 at pH 4.5)	ND	10 mg/L	05/02/12 14:25	05/02/12 14:25

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/02/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-23-5**					
Lab ID : BMI12050201-01A	Sodium (Na)	95	0.50 mg/L	05/03/12 12:27	05/10/12 14:12
Date Sampled 05/01/12 08:58	Magnesium (Mg)	ND	0.50 mg/L	05/03/12 12:27	05/10/12 14:12
	Potassium (K)	1.9	0.50 mg/L	05/03/12 12:27	05/10/12 14:12
	Calcium (Ca)	4.5	0.50 mg/L	05/03/12 12:27	05/10/12 14:12
	Chromium (Cr)	0.0054	0.0050 mg/L	05/03/12 12:27	05/10/12 14:12
	Iron (Fe)	ND	0.50 mg/L	05/03/12 12:27	05/10/12 22:46
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 22:46
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 14:12
Client ID: **MW-23-4**					
Lab ID : BMI12050201-02A	Sodium (Na)	31	0.50 mg/L	05/03/12 12:27	05/10/12 14:18
Date Sampled 05/01/12 09:28	Magnesium (Mg)	12	0.50 mg/L	05/03/12 12:27	05/10/12 14:18
	Potassium (K)	2.1	0.50 mg/L	05/03/12 12:27	05/10/12 14:18
	Calcium (Ca)	30	0.50 mg/L	05/03/12 12:27	05/10/12 14:18
	Chromium (Cr)	0.0071	0.0050 mg/L	05/03/12 12:27	05/10/12 14:18
	Iron (Fe)	0.79	0.50 mg/L	05/03/12 12:27	05/10/12 14:18
	Arsenic (As)	0.0033	0.0020 mg/L	05/03/12 12:27	05/10/12 14:18
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 14:18
Client ID: **MW-23-3**					
Lab ID : BMI12050201-03A	Sodium (Na)	30	0.50 mg/L	05/03/12 12:27	05/10/12 14:24
Date Sampled 05/01/12 10:17	Magnesium (Mg)	14	0.50 mg/L	05/03/12 12:27	05/10/12 14:24
	Potassium (K)	2.0	0.50 mg/L	05/03/12 12:27	05/10/12 14:24
	Calcium (Ca)	41	0.50 mg/L	05/03/12 12:27	05/10/12 14:24
	Chromium (Cr)	0.0078	0.0050 mg/L	05/03/12 12:27	05/10/12 14:24
	Iron (Fe)	0.91	0.50 mg/L	05/03/12 12:27	05/10/12 14:24
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 14:24
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 14:24
Client ID: **MW-23-2**					
Lab ID : BMI12050201-04A	Sodium (Na)	40	0.50 mg/L	05/03/12 12:27	05/10/12 14:30
Date Sampled 05/01/12 10:46	Magnesium (Mg)	46	0.50 mg/L	05/03/12 12:27	05/10/12 14:30
	Potassium (K)	3.1	0.50 mg/L	05/03/12 12:27	05/10/12 14:30
	Calcium (Ca)	130	0.50 mg/L	05/03/12 12:27	05/10/12 14:30
	Chromium (Cr)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 14:30
	Iron (Fe)	2.3	0.50 mg/L	05/03/12 12:27	05/10/12 14:30
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 14:30
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 14:30

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Client ID: **MW-23-1**					
Lab ID : BMI12050201-05A	Sodium (Na)	39	0.50 mg/L	05/03/12 12:27	05/10/12 14:58
Date Sampled 05/01/12 11:22	Magnesium (Mg)	41	0.50 mg/L	05/03/12 12:27	05/10/12 14:58
	Potassium (K)	2.9	0.50 mg/L	05/03/12 12:27	05/10/12 14:58
	Calcium (Ca)	120	0.50 mg/L	05/03/12 12:27	05/10/12 14:58
	Chromium (Cr)	ND	0.50 mg/L	05/03/12 12:27	05/10/12 14:58
	Iron (Fe)	2.5	0.50 mg/L	05/03/12 12:27	05/10/12 14:58
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 14:58
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 14:58
Client ID: **DUPE-3-2Q12**					
Lab ID : BMI12050201-06A	Sodium (Na)	38	0.50 mg/L	05/03/12 12:27	05/10/12 15:04
Date Sampled 05/01/12 00:00	Magnesium (Mg)	39	0.50 mg/L	05/03/12 12:27	05/10/12 15:04
	Potassium (K)	2.8	0.50 mg/L	05/03/12 12:27	05/10/12 15:04
	Calcium (Ca)	110	0.50 mg/L	05/03/12 12:27	05/10/12 15:04
	Chromium (Cr)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:04
	Iron (Fe)	2.3	0.30 mg/L	05/03/12 12:27	05/10/12 15:04
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 15:04
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:04
Client ID: **EB-6-5/1/12**					
Lab ID : BMI12050201-07A	Sodium (Na)	ND	0.50 mg/L	05/03/12 12:27	05/10/12 15:10
Date Sampled 05/01/12 11:04	Magnesium (Mg)	ND	0.50 mg/L	05/03/12 12:27	05/10/12 15:10
	Potassium (K)	ND	0.50 mg/L	05/03/12 12:27	05/10/12 15:10
	Calcium (Ca)	ND	0.50 mg/L	05/03/12 12:27	05/10/12 15:10
	Chromium (Cr)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:10
	Iron (Fe)	ND	0.50 mg/L	05/03/12 12:27	05/10/12 15:10
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 15:10
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:10

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/02/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-23-5**				
Lab ID : BMI12050201-01A pH	9.6	1.7 pH Units	05/02/12 16:37	05/02/12 16:37
Date Sampled 05/01/12 08:58 pH - Temperature	22	1.0 °C	05/02/12 16:37	05/02/12 16:37
Client ID: **MW-23-4**				
Lab ID : BMI12050201-02A pH	8.3	1.7 pH Units	05/02/12 16:40	05/02/12 16:40
Date Sampled 05/01/12 09:28 pH - Temperature	22	1.0 °C	05/02/12 16:40	05/02/12 16:40
Client ID: **MW-23-3**				
Lab ID : BMI12050201-03A pH	7.8	1.7 pH Units	05/02/12 16:40	05/02/12 16:40
Date Sampled 05/01/12 10:17 pH - Temperature	22	1.0 °C	05/02/12 16:40	05/02/12 16:40
Client ID: **MW-23-2**				
Lab ID : BMI12050201-04A pH	7.6	1.7 pH Units	05/02/12 16:44	05/02/12 16:44
Date Sampled 05/01/12 10:46 pH - Temperature	22	1.0 °C	05/02/12 16:44	05/02/12 16:44
Client ID: **MW-23-1**				
Lab ID : BMI12050201-05A pH	7.1	1.7 pH Units	05/02/12 16:46	05/02/12 16:46
Date Sampled 05/01/12 11:22 pH - Temperature	22	1.0 °C	05/02/12 16:46	05/02/12 16:46
Client ID: **DUPE-3-2Q12**				
Lab ID : BMI12050201-06A pH	7.1	1.7 pH Units	05/02/12 16:48	05/02/12 16:48
Date Sampled 05/01/12 00:00 pH - Temperature	22	1.0 °C	05/02/12 16:48	05/02/12 16:48
Client ID: **EB-6-5/1/12**				
Lab ID : BMI12050201-07A pH	7.2	1.7 pH Units	05/02/12 16:53	05/02/12 16:53
Date Sampled 05/01/12 11:04 pH - Temperature	22	1.0 °C	05/02/12 16:53	05/02/12 16:53

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.

The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/14/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/02/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-23-5**					
Lab ID : BMI12050201-01A	Solids, Total Dissolved (TDS)	220	10 mg/L	05/03/12	05/03/12
Date Sampled 05/01/12 08:58					
Client ID: **MW-23-4**					
Lab ID : BMI12050201-02A	Solids, Total Dissolved (TDS)	210	10 mg/L	05/03/12	05/03/12
Date Sampled 05/01/12 09:28					
Client ID: **MW-23-3**					
Lab ID : BMI12050201-03A	Solids, Total Dissolved (TDS)	240	10 mg/L	05/03/12	05/03/12
Date Sampled 05/01/12 10:17					
Client ID: **MW-23-2**					
Lab ID : BMI12050201-04A	Solids, Total Dissolved (TDS)	650	10 mg/L	05/03/12	05/03/12
Date Sampled 05/01/12 10:46					
Client ID: **MW-23-1**					
Lab ID : BMI12050201-05A	Solids, Total Dissolved (TDS)	610	10 mg/L	05/03/12	05/03/12
Date Sampled 05/01/12 11:22					
Client ID: **DUPE-3-2Q12**					
Lab ID : BMI12050201-06A	Solids, Total Dissolved (TDS)	580	10 mg/L	05/03/12	05/03/12
Date Sampled 05/01/12 00:00					
Client ID: **EB-6-5/1/12**					
Lab ID : BMI12050201-07A	Solids, Total Dissolved (TDS)	ND	10 mg/L	05/03/12	05/03/12
Date Sampled 05/01/12 11:04					

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/14/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/02/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-23-5**					
Lab ID : BMI12050201-01A	Acrylonitrile	ND	10 µg/L	05/07/12 16:16	05/07/12 16:16
Date Sampled 05/01/12 08:58	Allyl chloride	ND	2.0 µg/L	05/07/12 16:16	05/07/12 16:16
	Carbon disulfide	ND	2.5 µg/L	05/07/12 16:16	05/07/12 16:16
	Chloroacetonitrile	ND	10 µg/L	05/07/12 16:16	05/07/12 16:16
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 16:16	05/07/12 16:16
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 16:16	05/07/12 16:16
	Diethyl ether	ND	2.0 µg/L	05/07/12 16:16	05/07/12 16:16
	Ethyl methacrylate	ND	10 µg/L	05/07/12 16:16	05/07/12 16:16
	Hexachloroethane	ND	10 µg/L	05/07/12 16:16	05/07/12 16:16
	Methacrylonitrile	ND	10 µg/L	05/07/12 16:16	05/07/12 16:16
	Methyl acrylate	ND	10 µg/L	05/07/12 16:16	05/07/12 16:16
	Methyl iodide	ND	2.0 µg/L	05/07/12 16:16	05/07/12 16:16
	Methyl methacrylate	ND	10 µg/L	05/07/12 16:16	05/07/12 16:16
	Nitrobenzene	ND	10 µg/L	05/07/12 16:16	05/07/12 16:16
	2-Nitropropane	ND	2.0 µg/L	05/07/12 16:16	05/07/12 16:16
	Pentachloroethane	ND	2.0 µg/L	05/07/12 16:16	05/07/12 16:16
	Propionitrile	ND	50 µg/L	05/07/12 16:16	05/07/12 16:16
	Tetrahydrofuran	ND	10 µg/L	05/07/12 16:16	05/07/12 16:16
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 16:16	05/07/12 16:16
Client ID: **MW-23-4**					
Lab ID : BMI12050201-02A	Acrylonitrile	ND	10 µg/L	05/07/12 16:37	05/07/12 16:37
Date Sampled 05/01/12 09:28	Allyl chloride	ND	2.0 µg/L	05/07/12 16:37	05/07/12 16:37
	Carbon disulfide	ND	2.5 µg/L	05/07/12 16:37	05/07/12 16:37
	Chloroacetonitrile	ND	10 µg/L	05/07/12 16:37	05/07/12 16:37
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 16:37	05/07/12 16:37
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 16:37	05/07/12 16:37
	Diethyl ether	ND	2.0 µg/L	05/07/12 16:37	05/07/12 16:37
	Ethyl methacrylate	ND	10 µg/L	05/07/12 16:37	05/07/12 16:37
	Hexachloroethane	ND	10 µg/L	05/07/12 16:37	05/07/12 16:37
	Methacrylonitrile	ND	10 µg/L	05/07/12 16:37	05/07/12 16:37
	Methyl acrylate	ND	10 µg/L	05/07/12 16:37	05/07/12 16:37
	Methyl iodide	ND	2.0 µg/L	05/07/12 16:37	05/07/12 16:37
	Methyl methacrylate	ND	10 µg/L	05/07/12 16:37	05/07/12 16:37
	Nitrobenzene	ND	10 µg/L	05/07/12 16:37	05/07/12 16:37
	2-Nitropropane	ND	2.0 µg/L	05/07/12 16:37	05/07/12 16:37
	Pentachloroethane	ND	2.0 µg/L	05/07/12 16:37	05/07/12 16:37
	Propionitrile	ND	50 µg/L	05/07/12 16:37	05/07/12 16:37
	Tetrahydrofuran	ND	10 µg/L	05/07/12 16:37	05/07/12 16:37
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 16:37	05/07/12 16:37

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Client ID: **MW-23-3**					
Lab ID: BMI12050201-03A	Acrylonitrile	ND	10 µg/L	05/07/12 16:59	05/07/12 16:59
Date Sampled 05/01/12 10:17	Allyl chloride	ND	2.0 µg/L	05/07/12 16:59	05/07/12 16:59
	Carbon disulfide	ND	2.5 µg/L	05/07/12 16:59	05/07/12 16:59
	Chloroacetonitrile	ND	10 µg/L	05/07/12 16:59	05/07/12 16:59
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 16:59	05/07/12 16:59
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 16:59	05/07/12 16:59
	Diethyl ether	ND	2.0 µg/L	05/07/12 16:59	05/07/12 16:59
	Ethyl methacrylate	ND	10 µg/L	05/07/12 16:59	05/07/12 16:59
	Hexachloroethane	ND	10 µg/L	05/07/12 16:59	05/07/12 16:59
	Methacrylonitrile	ND	10 µg/L	05/07/12 16:59	05/07/12 16:59
	Methyl acrylate	ND	10 µg/L	05/07/12 16:59	05/07/12 16:59
	Methyl iodide	ND	2.0 µg/L	05/07/12 16:59	05/07/12 16:59
	Methyl methacrylate	ND	10 µg/L	05/07/12 16:59	05/07/12 16:59
	Nitrobenzene	ND	10 µg/L	05/07/12 16:59	05/07/12 16:59
	2-Nitropropane	ND	2.0 µg/L	05/07/12 16:59	05/07/12 16:59
	Pentachloroethane	ND	2.0 µg/L	05/07/12 16:59	05/07/12 16:59
	Propionitrile	ND	50 µg/L	05/07/12 16:59	05/07/12 16:59
	Tetrahydrofuran	ND	10 µg/L	05/07/12 16:59	05/07/12 16:59
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 16:59	05/07/12 16:59
Client ID: **MW-23-2**					
Lab ID: BMI12050201-04A	Acrylonitrile	ND	10 µg/L	05/07/12 17:21	05/07/12 17:21
Date Sampled 05/01/12 10:46	Allyl chloride	ND	2.0 µg/L	05/07/12 17:21	05/07/12 17:21
	Carbon disulfide	ND	2.5 µg/L	05/07/12 17:21	05/07/12 17:21
	Chloroacetonitrile	ND	10 µg/L	05/07/12 17:21	05/07/12 17:21
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 17:21	05/07/12 17:21
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 17:21	05/07/12 17:21
	Diethyl ether	ND	2.0 µg/L	05/07/12 17:21	05/07/12 17:21
	Ethyl methacrylate	ND	10 µg/L	05/07/12 17:21	05/07/12 17:21
	Hexachloroethane	ND	10 µg/L	05/07/12 17:21	05/07/12 17:21
	Methacrylonitrile	ND	10 µg/L	05/07/12 17:21	05/07/12 17:21
	Methyl acrylate	ND	10 µg/L	05/07/12 17:21	05/07/12 17:21
	Methyl iodide	ND	2.0 µg/L	05/07/12 17:21	05/07/12 17:21
	Methyl methacrylate	ND	10 µg/L	05/07/12 17:21	05/07/12 17:21
	Nitrobenzene	ND	10 µg/L	05/07/12 17:21	05/07/12 17:21
	2-Nitropropane	ND	2.0 µg/L	05/07/12 17:21	05/07/12 17:21
	Pentachloroethane	ND	2.0 µg/L	05/07/12 17:21	05/07/12 17:21
	Propionitrile	ND	50 µg/L	05/07/12 17:21	05/07/12 17:21
	Tetrahydrofuran	ND	10 µg/L	05/07/12 17:21	05/07/12 17:21
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 17:21	05/07/12 17:21

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Client ID: **MW-23-1**					
Lab ID: BMI12050201-05A	Acrylonitrile	ND	10 µg/L	05/07/12 17:42	05/07/12 17:42
Date Sampled 05/01/12 11:22	Allyl chloride	ND	2.0 µg/L	05/07/12 17:42	05/07/12 17:42
	Carbon disulfide	ND	2.5 µg/L	05/07/12 17:42	05/07/12 17:42
	Chloroacetonitrile	ND	10 µg/L	05/07/12 17:42	05/07/12 17:42
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 17:42	05/07/12 17:42
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 17:42	05/07/12 17:42
	Diethyl ether	ND	2.0 µg/L	05/07/12 17:42	05/07/12 17:42
	Ethyl methacrylate	ND	10 µg/L	05/07/12 17:42	05/07/12 17:42
	Hexachloroethane	ND	10 µg/L	05/07/12 17:42	05/07/12 17:42
	Methacrylonitrile	ND	10 µg/L	05/07/12 17:42	05/07/12 17:42
	Methyl acrylate	ND	10 µg/L	05/07/12 17:42	05/07/12 17:42
	Methyl iodide	ND	2.0 µg/L	05/07/12 17:42	05/07/12 17:42
	Methyl methacrylate	ND	10 µg/L	05/07/12 17:42	05/07/12 17:42
	Nitrobenzene	ND	10 µg/L	05/07/12 17:42	05/07/12 17:42
	2-Nitropropane	ND	2.0 µg/L	05/07/12 17:42	05/07/12 17:42
	Pentachloroethane	ND	2.0 µg/L	05/07/12 17:42	05/07/12 17:42
	Propionitrile	ND	50 µg/L	05/07/12 17:42	05/07/12 17:42
	Tetrahydrofuran	ND	10 µg/L	05/07/12 17:42	05/07/12 17:42
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 17:42	05/07/12 17:42
Client ID: **DUPE-3-2Q12**					
Lab ID: BMI12050201-06A	Acrylonitrile	ND	10 µg/L	05/07/12 18:04	05/07/12 18:04
Date Sampled 05/01/12 00:00	Allyl chloride	ND	2.0 µg/L	05/07/12 18:04	05/07/12 18:04
	Carbon disulfide	ND	2.5 µg/L	05/07/12 18:04	05/07/12 18:04
	Chloroacetonitrile	ND	10 µg/L	05/07/12 18:04	05/07/12 18:04
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 18:04	05/07/12 18:04
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 18:04	05/07/12 18:04
	Diethyl ether	ND	2.0 µg/L	05/07/12 18:04	05/07/12 18:04
	Ethyl methacrylate	ND	10 µg/L	05/07/12 18:04	05/07/12 18:04
	Hexachloroethane	ND	10 µg/L	05/07/12 18:04	05/07/12 18:04
	Methacrylonitrile	ND	10 µg/L	05/07/12 18:04	05/07/12 18:04
	Methyl acrylate	ND	10 µg/L	05/07/12 18:04	05/07/12 18:04
	Methyl iodide	ND	2.0 µg/L	05/07/12 18:04	05/07/12 18:04
	Methyl methacrylate	ND	10 µg/L	05/07/12 18:04	05/07/12 18:04
	Nitrobenzene	ND	10 µg/L	05/07/12 18:04	05/07/12 18:04
	2-Nitropropane	ND	2.0 µg/L	05/07/12 18:04	05/07/12 18:04
	Pentachloroethane	ND	2.0 µg/L	05/07/12 18:04	05/07/12 18:04
	Propionitrile	ND	50 µg/L	05/07/12 18:04	05/07/12 18:04
	Tetrahydrofuran	ND	10 µg/L	05/07/12 18:04	05/07/12 18:04
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 18:04	05/07/12 18:04

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Client ID: **EB-6-5/1/12**					
Lab ID : BMI12050201-07A	Acrylonitrile	ND	10 µg/L	05/07/12 18:26	05/07/12 18:26
Date Sampled 05/01/12 11:04	Allyl chloride	ND	2.0 µg/L	05/07/12 18:26	05/07/12 18:26
	Carbon disulfide	ND	2.5 µg/L	05/07/12 18:26	05/07/12 18:26
	Chloroacetonitrile	ND	10 µg/L	05/07/12 18:26	05/07/12 18:26
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 18:26	05/07/12 18:26
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 18:26	05/07/12 18:26
	Diethyl ether	ND	2.0 µg/L	05/07/12 18:26	05/07/12 18:26
	Ethyl methacrylate	ND	10 µg/L	05/07/12 18:26	05/07/12 18:26
	Hexachloroethane	ND	10 µg/L	05/07/12 18:26	05/07/12 18:26
	Methacrylonitrile	ND	10 µg/L	05/07/12 18:26	05/07/12 18:26
	Methyl acrylate	ND	10 µg/L	05/07/12 18:26	05/07/12 18:26
	Methyl iodide	ND	2.0 µg/L	05/07/12 18:26	05/07/12 18:26
	Methyl methacrylate	ND	10 µg/L	05/07/12 18:26	05/07/12 18:26
	Nitrobenzene	ND	10 µg/L	05/07/12 18:26	05/07/12 18:26
	2-Nitropropane	ND	2.0 µg/L	05/07/12 18:26	05/07/12 18:26
	Pentachloroethane	ND	2.0 µg/L	05/07/12 18:26	05/07/12 18:26
	Propionitrile	ND	50 µg/L	05/07/12 18:26	05/07/12 18:26
	Tetrahydrofuran	ND	10 µg/L	05/07/12 18:26	05/07/12 18:26
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 18:26	05/07/12 18:26
Client ID: **TB-6-5/1/12**					
Lab ID : BMI12050201-08A	Acrylonitrile	ND	10 µg/L	05/07/12 18:47	05/07/12 18:47
Date Sampled 05/01/12 00:00	Allyl chloride	ND	2.0 µg/L	05/07/12 18:47	05/07/12 18:47
	Carbon disulfide	ND	2.5 µg/L	05/07/12 18:47	05/07/12 18:47
	Chloroacetonitrile	ND	10 µg/L	05/07/12 18:47	05/07/12 18:47
	1-Chlorobutane	ND	2.0 µg/L	05/07/12 18:47	05/07/12 18:47
	1,1-Dichloropropanone	ND	10 µg/L	05/07/12 18:47	05/07/12 18:47
	Diethyl ether	ND	2.0 µg/L	05/07/12 18:47	05/07/12 18:47
	Ethyl methacrylate	ND	10 µg/L	05/07/12 18:47	05/07/12 18:47
	Hexachloroethane	ND	10 µg/L	05/07/12 18:47	05/07/12 18:47
	Methacrylonitrile	ND	10 µg/L	05/07/12 18:47	05/07/12 18:47
	Methyl acrylate	ND	10 µg/L	05/07/12 18:47	05/07/12 18:47
	Methyl iodide	ND	2.0 µg/L	05/07/12 18:47	05/07/12 18:47
	Methyl methacrylate	ND	10 µg/L	05/07/12 18:47	05/07/12 18:47
	Nitrobenzene	ND	10 µg/L	05/07/12 18:47	05/07/12 18:47
	2-Nitropropane	ND	2.0 µg/L	05/07/12 18:47	05/07/12 18:47
	Pentachloroethane	ND	2.0 µg/L	05/07/12 18:47	05/07/12 18:47
	Propionitrile	ND	50 µg/L	05/07/12 18:47	05/07/12 18:47
	Tetrahydrofuran	ND	10 µg/L	05/07/12 18:47	05/07/12 18:47
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/07/12 18:47	05/07/12 18:47

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Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/14/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050201-01A
Client I.D. Number: MW-23-5

Sampled: 05/01/12 08:58
Received: 05/02/12
Extracted: 05/07/12 16:16
Analyzed: 05/07/12 16:16

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
67	Surr: Toluene-d8	100	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/14/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050201-02A
Client I.D. Number: MW-23-4

Sampled: 05/01/12 09:28
Received: 05/02/12
Extracted: 05/07/12 16:37
Analyzed: 05/07/12 16:37

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
67	Surr: Toluene-d8	103	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/14/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050201-03A
Client I.D. Number: MW-23-3

Sampled: 05/01/12 10:17
Received: 05/02/12
Extracted: 05/07/12 16:59
Analyzed: 05/07/12 16:59

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
67	Surr: Toluene-d8	101	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/14/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050201-04A
Client I.D. Number: MW-23-2

Sampled: 05/01/12 10:46
Received: 05/02/12
Extracted: 05/07/12 17:21
Analyzed: 05/07/12 17:21

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	0.80	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
67	Surr: Toluene-d8	102	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050201-05A
Client I.D. Number: MW-23-1

Sampled: 05/01/12 11:22
Received: 05/02/12
Extracted: 05/07/12 17:42
Analyzed: 05/07/12 17:42

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	0.91	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	107	(70-130)	%REC
67	Surr: Toluene-d8	100	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/14/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050201-06A
Client I.D. Number: DUPE-3-2Q12

Sampled: 05/01/12 00:00
Received: 05/02/12
Extracted: 05/07/12 18:04
Analyzed: 05/07/12 18:04

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	0.75	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
67	Surr: Toluene-d8	101	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/14/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050201-07A
Client I.D. Number: EB-6-5/1/12

Sampled: 05/01/12 11:04
Received: 05/02/12
Extracted: 05/07/12 18:26
Analyzed: 05/07/12 18:26

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
67	Surr: Toluene-d8	103	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.
Information regarding the estimate of the uncertainty of measurement is available upon client request.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/14/12
Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050201-08A
Client I.D. Number: TB-6-5/1/12

Sampled: 05/01/12 00:00
Received: 05/02/12
Extracted: 05/07/12 18:47
Analyzed: 05/07/12 18:47

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
67	Surr: Toluene-d8	103	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

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5/14/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *09-May-12*

QC Summary Report

Work Order: 12050201

Method Blank

Type **MBLK** Test Code: **EPA Method 300.0**

File ID: **25** Batch ID: **28640K** Analysis Date: **05/02/2012 11:52**

Sample ID: **MB-28640** Units : **mg/L** Run ID: **IC_1_120502B** Prep Date: **05/02/2012 08:34**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0**

File ID: **26** Batch ID: **28640K** Analysis Date: **05/02/2012 12:11**

Sample ID: **LFB-28640** Units : **mg/L** Run ID: **IC_1_120502B** Prep Date: **05/02/2012 08:34**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	50.7	0.5	50		101	90	110			
Nitrite (NO2) - N	5.08	0.25	5		102	90	110			
Nitrate (NO3) - N	4.9	0.25	5		98	90	110			
Phosphate, ortho - P	4.84	0.5	5		97	90	110			
Sulfate (SO4)	98.7	0.5	100		99	90	110			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0**

File ID: **30** Batch ID: **28640K** Analysis Date: **05/02/2012 13:25**

Sample ID: **12050201-02ALFM** Units : **mg/L** Run ID: **IC_1_120502B** Prep Date: **05/02/2012 08:34**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	277	1.3	250	13.81	105	90	110			
Nitrite (NO2) - N	26.1	0.63	25	0	105	90	110			
Nitrate (NO3) - N	30.2	0.63	25	5.19	100	90	110			
Phosphate, ortho - P	25	1.3	25	0	100	90	110			
Sulfate (SO4)	514	1.3	500	8.33	101	90	110			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0**

File ID: **31** Batch ID: **28640K** Analysis Date: **05/02/2012 13:43**

Sample ID: **12050201-02ALFMD** Units : **mg/L** Run ID: **IC_1_120502B** Prep Date: **05/02/2012 08:34**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	281	1.3	250	13.81	107	90	110	276.6	1.7(15)	
Nitrite (NO2) - N	26.3	0.63	25	0	105	90	110	26.14	0.7(15)	
Nitrate (NO3) - N	30.4	0.63	25	5.19	101	90	110	30.2	0.6(15)	
Phosphate, ortho - P	26.7	1.3	25	0	107	90	110	25.04	6.4(15)	
Sulfate (SO4)	524	1.3	500	8.33	103	90	110	514.4	1.9(15)	

Comments:

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Date: *09-May-12*

QC Summary Report

Work Order: 12050201

Method Blank

Type **MBLK** Test Code: **EPA Method 314.0**

File ID: **35** Batch ID: **28651K** Analysis Date: **05/02/2012 23:28**

Sample ID: **MB-28651** Units : **µg/L** Run ID: **IC_3_120502B** Prep Date: **05/02/2012 16:33**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 314.0**

File ID: **36** Batch ID: **28651K** Analysis Date: **05/02/2012 23:46**

Sample ID: **LFB-28651** Units : **µg/L** Run ID: **IC_3_120502B** Prep Date: **05/02/2012 16:33**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.4	2	25		101	85	115			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 314.0**

File ID: **40** Batch ID: **28651K** Analysis Date: **05/03/2012 01:00**

Sample ID: **12050201-02ALFM** Units : **µg/L** Run ID: **IC_3_120502B** Prep Date: **05/02/2012 16:33**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	27.6	2	25	1.212	106	85	115			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 314.0**

File ID: **41** Batch ID: **28651K** Analysis Date: **05/03/2012 01:18**

Sample ID: **12050201-02ALFMD** Units : **µg/L** Run ID: **IC_3_120502B** Prep Date: **05/02/2012 16:33**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	27.5	2	25	1.212	105	85	115	27.62	0.4(15)	

Comments:

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Date: *14-May-12*

QC Summary Report

Work Order: 12050201

Laboratory Control Spike Type: **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0502ALA** Analysis Date: **05/02/2012 13:46**

Sample ID: **LCS-W0502ALA** Units : **mg/L** Run ID: **WETLAB_120502E** Prep Date: **05/02/2012 13:46**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	243.3	10	250		97	80	120			
Alkalinity, Carbonate (As CaCO3)	243.3	10	250		97	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	243	10	250		97	80	120			

Comments:

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Date: *14-May-12*

QC Summary Report

Work Order: 12050201

Method Blank

Type: **MBLK** Test Code: **EPA Method 200.8**

File ID: **051012.B\019_M.D** Batch ID: **28661K** Analysis Date: **05/10/2012 12:51**

Sample ID: **MB-28661** Units : **mg/L** Run ID: **ICP/MS_120510A** Prep Date: **05/03/2012 12:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 200.8**

File ID: **051012.B\020_M.D** Batch ID: **28661K** Analysis Date: **05/10/2012 12:57**

Sample ID: **LCS-28661** Units : **mg/L** Run ID: **ICP/MS_120510A** Prep Date: **05/03/2012 12:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	5.66	0.5	5		113	80	120			
Magnesium (Mg)	5.65	0.5	5		113	80	120			
Potassium (K)	5.4	0.5	5		108	80	120			
Calcium (Ca)	5.5	0.5	5		110	80	120			
Chromium (Cr)	0.0521	0.005	0.05		104	80	120			
Iron (Fe)	5.62	0.3	5		112	80	120			
Arsenic (As)	0.0527	0.002	0.05		105	80	120			
Lead (Pb)	0.0526	0.005	0.05		105	80	120			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method 200.8**

File ID: **051012.B\025_M.D** Batch ID: **28661K** Analysis Date: **05/10/2012 13:26**

Sample ID: **12050104-03AMS** Units : **mg/L** Run ID: **ICP/MS_120510A** Prep Date: **05/03/2012 12:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	31.5	0.5	5	26.64	98	80	120			
Magnesium (Mg)	20.6	0.5	5	15.36	105	80	120			
Potassium (K)	7.73	0.5	5	2.724	100	80	120			
Calcium (Ca)	52	0.5	5	47.3	94	80	120			
Chromium (Cr)	0.0473	0.005	0.05	0	95	80	120			
Iron (Fe)	5.76	0.3	5	0.6678	102	80	120			
Arsenic (As)	0.0429	0.002	0.05	0	86	80	120			
Lead (Pb)	0.0483	0.005	0.05	0	97	80	120			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method 200.8**

File ID: **051012.B\026_M.D** Batch ID: **28661K** Analysis Date: **05/10/2012 13:31**

Sample ID: **12050104-03AMSD** Units : **mg/L** Run ID: **ICP/MS_120510A** Prep Date: **05/03/2012 12:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	31.8	0.5	5	26.64	103	80	120	31.52	0.9(20)	
Magnesium (Mg)	20.9	0.5	5	15.36	110	80	120	20.6	1.3(20)	
Potassium (K)	7.86	0.5	5	2.724	103	80	120	7.726	1.8(20)	
Calcium (Ca)	51.8	0.5	5	47.3	89	80	120	52.02	0.5(20)	
Chromium (Cr)	0.048	0.005	0.05	0	96	80	120	0.04731	1.5(20)	
Iron (Fe)	5.82	0.3	5	0.6678	103	80	120	5.761	1.1(20)	
Arsenic (As)	0.0465	0.002	0.05	0	93	80	120	0.04292	8.1(20)	
Lead (Pb)	0.0496	0.005	0.05	0	99	80	120	0.04834	2.5(20)	

Comments:

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QC Summary Report

Work Order: 12050201

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0502PH** Analysis Date: **05/02/2012 12:10**

Sample ID: **LCS-W0502PH** Units : **pH Units** Run ID: **WETLAB_120502A** Prep Date: **05/02/2012 12:10**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5.07	1.7	5		101	90	110			

Comments:

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QC Summary Report

Work Order: 12050201

Method Blank

Type: **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0502DS** Analysis Date: **05/03/2012 00:00**

Sample ID: **MBLK-W0502DS** Units : **mg/L** Run ID: **WETLAB_120502F** Prep Date: **05/03/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type: **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0502DS** Analysis Date: **05/03/2012 00:00**

Sample ID: **LCS-W0502DS** Units : **mg/L** Run ID: **WETLAB_120502F** Prep Date: **05/03/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	84	10	100		84	70	130			

Comments:

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QC Summary Report

Work Order: 12050201

Method Blank Type: **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12050706.D** Batch ID: **MS15W0507M** Analysis Date: **05/07/2012 11:54**

Sample ID: **MBLK MS15W0507M** Units : **µg/L** Run ID: **MSD_15_120507B** Prep Date: **05/07/2012 11:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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QC Summary Report

Work Order: 12050201

Surr: 1,2-Dichloroethane-d4	10.1	10	101	70	130
Surr: Toluene-d8	10.3	10	103	70	130
Surr: 4-Bromofluorobenzene	9.23	10	92	70	130

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QC Summary Report

Work Order: 12050201

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method SW8260B**

File ID: **12050704.D** Batch ID: **MS15W0507M** Analysis Date: **05/07/2012 11:08**

Sample ID: **LCS MS15W0507M** Units : **µg/L** Run ID: **MSD_15_120507B** Prep Date: **05/07/2012 11:08**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	10.4	1	10		104	70	130			
Chloromethane	7.45	2	10		75	70	130			
Vinyl chloride	11.3	1	10		113	70	130			
Chloroethane	9.19	1	10		92	70	130			
Bromomethane	8.57	2	10		86	70	130			
Trichlorofluoromethane	10.8	1	10		108	70	130			
Acetone	288	10	200		144	36	171			
1,1-Dichloroethene	10.1	1	10		101	70	130			
Dichloromethane	8.74	2	10		87	70	130			
Freon-113	10.8	1	10		108	70	137			
trans-1,2-Dichloroethene	10	1	10		100	70	130			
Methyl tert-butyl ether (MTBE)	8.76	0.5	10		88	70	130			
1,1-Dichloroethane	9.75	1	10		98	70	130			
2-Butanone (MEK)	244	10	200		122	70	130			
cis-1,2-Dichloroethene	10.1	1	10		101	70	130			
Bromochloromethane	10.3	1	10		103	70	130			
Chloroform	9.08	1	10		91	70	130			
2,2-Dichloropropane	9.54	1	10		95	70	130			
1,2-Dichloroethane	9.76	1	10		98	70	130			
1,1,1-Trichloroethane	10.3	1	10		103	70	130			
1,1-Dichloropropene	10.8	1	10		108	70	130			
Carbon tetrachloride	9.5	1	10		95	70	130			
Benzene	9.83	0.5	10		98	70	130			
Dibromomethane	9.82	1	10		98	70	130			
1,2-Dichloropropane	9.16	1	10		92	70	130			
Trichloroethene	10.1	1	10		101	70	130			
Bromodichloromethane	9.16	1	10		92	70	130			
4-Methyl-2-pentanone (MIBK)	23.3	2.5	25		93	20	182			
cis-1,3-Dichloropropene	9.24	1	10		92	70	130			
trans-1,3-Dichloropropene	9.08	1	10		91	70	130			
1,1,2-Trichloroethane	10	1	10		100	70	130			
Toluene	9.45	0.5	10		95	70	130			
1,3-Dichloropropane	9.67	1	10		97	70	130			
2-Hexanone	113	5	100		113	20	182			
Dibromochloromethane	8.94	1	10		89	70	130			
1,2-Dibromoethane (EDB)	18.8	2	20		94	70	130			
Tetrachloroethene	10.1	1	10		101	70	130			
1,1,1,2-Tetrachloroethane	10.6	1	10		106	70	130			
Chlorobenzene	10	1	10		100	70	130			
Ethylbenzene	9.74	0.5	10		97	70	130			
m,p-Xylene	9.6	0.5	10		96	70	130			
Bromoform	8.69	1	10		87	70	130			
Styrene	8.58	1	10		86	70	130			
o-Xylene	9.48	0.5	10		95	70	130			
1,1,2,2-Tetrachloroethane	9.71	1	10		97	70	130			
1,2,3-Trichloropropane	20.3	2	20		102	70	130			
Isopropylbenzene	9.61	1	10		96	70	130			
Bromobenzene	9.9	1	10		99	70	130			
n-Propylbenzene	10	1	10		100	70	130			
4-Chlorotoluene	9.83	1	10		98	70	130			
2-Chlorotoluene	9.72	1	10		97	70	130			
1,3,5-Trimethylbenzene	9.99	1	10		99.9	70	130			
tert-Butylbenzene	9.7	1	10		97	70	130			
1,2,4-Trimethylbenzene	9.95	1	10		100	70	130			
sec-Butylbenzene	9.88	1	10		99	70	130			
1,3-Dichlorobenzene	9.22	1	10		92	70	130			
1,4-Dichlorobenzene	9.61	1	10		96	70	130			
4-Isopropyltoluene	10.1	1	10		101	70	130			
1,2-Dichlorobenzene	9.36	1	10		94	70	130			
n-Butylbenzene	10	1	10		100	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	49.3	3	50		99	67	130			
1,2,4-Trichlorobenzene	8.94	2	10		89	70	130			
Naphthalene	7.93	2	10		79	70	130			
Hexachlorobutadiene	19.5	2	20		98	70	130			
1,2,3-Trichlorobenzene	7.62	2	10		76	70	130			

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QC Summary Report

Work Order: 12050201

Surr: 1,2-Dichloroethane-d4	11	10	110	70	130
Surr: Toluene-d8	9.85	10	99	70	130
Surr: 4-Bromofluorobenzene	9.32	10	93	70	130

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Date: *14-May-12*

QC Summary Report

Work Order: 12050201

Sample Matrix Spike Type: **MS** Test Code: **EPA Method SW8260B**

File ID: **12050707.D** Batch ID: **MS15W0507M** Analysis Date: **05/07/2012 12:17**

Sample ID: **12050201-02AMS** Units : **µg/L** Run ID: **MSD_15_120507B** Prep Date: **05/07/2012 12:17**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	48.1	2.5	50	0	96	21	138			
Chloromethane	36.3	10	50	0	73	23	144			
Vinyl chloride	53.1	2.5	50	0	106	49	136			
Chloroethane	44.1	2.5	50	0	88	21	159			
Bromomethane	36.6	10	50	0	73	10	174			
Trichlorofluoromethane	52.6	2.5	50	0	105	32	154			
Acetone	553	50	1000	0	55	10	171			
1,1-Dichloroethene	46.4	2.5	50	0	93	64	130			
Dichloromethane	40.3	10	50	0	81	69	130			
Freon-113	50.2	2.5	50	0	100	55	141			
trans-1,2-Dichloroethene	45	2.5	50	0	90	63	130			
Methyl tert-butyl ether (MTBE)	40.2	1.3	50	0	80	47	150			
1,1-Dichloroethane	44.8	2.5	50	0	90	66	130			
2-Butanone (MEK)	672	50	1000	0	67	23	182			
cis-1,2-Dichloroethene	45.9	2.5	50	0	92	70	130			
Bromochloromethane	47	2.5	50	0	94	70	132			
Chloroform	41.1	2.5	50	0	82	70	130			
2,2-Dichloropropane	43.4	2.5	50	0	87	38	154			
1,2-Dichloroethane	45.2	2.5	50	0	90	65	134			
1,1,1-Trichloroethane	46.8	2.5	50	0	94	65	136			
1,1-Dichloropropene	49.6	2.5	50	0	99	68	132			
Carbon tetrachloride	43	2.5	50	0	86	58	148			
Benzene	45.1	1.3	50	0	90	59	138			
Dibromomethane	44.7	2.5	50	0	89	70	130			
1,2-Dichloropropane	41.8	2.5	50	0	84	70	131			
Trichloroethene	45.7	2.5	50	0	91	65	144			
Bromodichloromethane	41.8	2.5	50	0	84	50	157			
4-Methyl-2-pentanone (MIBK)	101	13	125	0	81	20	182			
cis-1,3-Dichloropropene	40.4	2.5	50	0	81	63	131			
trans-1,3-Dichloropropene	41.2	2.5	50	0	82	65	136			
1,1,2-Trichloroethane	46.1	2.5	50	0	92	70	131			
Toluene	43.1	1.3	50	0	86	68	130			
1,3-Dichloropropane	44.6	2.5	50	0	89	70	130			
2-Hexanone	317	25	500	0	63	20	182			
Dibromochloromethane	41	2.5	50	0	82	42	155			
1,2-Dibromoethane (EDB)	86.9	5	100	0	87	70	130			
Tetrachloroethene	46.4	2.5	50	0	93	65	130			
1,1,1,2-Tetrachloroethane	48.6	2.5	50	0	97	70	130			
Chlorobenzene	46.6	2.5	50	0	93	70	130			
Ethylbenzene	44.8	1.3	50	0	90	68	130			
m,p-Xylene	43.6	1.3	50	0	87	68	131			
Bromoform	40.5	2.5	50	0	81	65	143			
Styrene	39.4	2.5	50	0	79	59	153			
o-Xylene	43.6	1.3	50	0	87	70	130			
1,1,2,2-Tetrachloroethane	46	2.5	50	0	92	67	130			
1,2,3-Trichloropropane	94.8	10	100	0	95	70	130			
Isopropylbenzene	44.6	2.5	50	0	89	55	138			
Bromobenzene	45.8	2.5	50	0	92	70	130			
n-Propylbenzene	46.5	2.5	50	0	93	67	133			
4-Chlorotoluene	45.5	2.5	50	0	91	70	130			
2-Chlorotoluene	44.9	2.5	50	0	90	70	130			
1,3,5-Trimethylbenzene	46.5	2.5	50	0	93	67	134			
tert-Butylbenzene	45.2	2.5	50	0	90	55	147			
1,2,4-Trimethylbenzene	45.8	2.5	50	0	92	65	135			
sec-Butylbenzene	46.5	2.5	50	0	93	68	135			
1,3-Dichlorobenzene	42.9	2.5	50	0	86	70	130			
1,4-Dichlorobenzene	45.2	2.5	50	0	90	70	130			
4-Isopropyltoluene	47.1	2.5	50	0	94	68	132			
1,2-Dichlorobenzene	43.2	2.5	50	0	86	70	130			
n-Butylbenzene	46.6	2.5	50	0	93	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	229	15	250	0	92	64	130			
1,2,4-Trichlorobenzene	41.8	10	50	0	84	62	133			
Naphthalene	37	10	50	0	74	32	166			
Hexachlorobutadiene	89.6	10	100	0	90	63	130			
1,2,3-Trichlorobenzene	35.7	10	50	0	71	55	138			

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *14-May-12*

QC Summary Report

Work Order: 12050201

Surr: 1,2-Dichloroethane-d4	54.5	50	109	70	130
Surr: Toluene-d8	49	50	98	70	130
Surr: 4-Bromofluorobenzene	46.8	50	94	70	130

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *14-May-12*

QC Summary Report

Work Order: 12050201

Sample Matrix Spike Duplicate Type: **MSD** Test Code: **EPA Method SW8260B**

File ID: **12050708.D** Batch ID: **MS15W0507M** Analysis Date: **05/07/2012 12:38**

Sample ID: **12050201-02AMSD** Units : **µg/L** Run ID: **MSD_15_120507B** Prep Date: **05/07/2012 12:38**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	54.5	2.5	50	0	109	21	138	48.07	12.5(33)	
Chloromethane	40.3	10	50	0	81	23	144	36.29	10.6(27)	
Vinyl chloride	60.2	2.5	50	0	120	49	136	53.12	12.4(21)	
Chloroethane	48.5	2.5	50	0	97	21	159	44.14	9.4(40)	
Bromomethane	44	10	50	0	88	10	174	36.58	18.3(40)	
Trichlorofluoromethane	58.1	2.5	50	0	116	32	154	52.58	10.0(37)	
Acetone	632	50	1000	0	63	10	171	553.3	13.4(23)	
1,1-Dichloroethene	52.8	2.5	50	0	106	64	130	46.35	13.0(21)	
Dichloromethane	45.8	10	50	0	92	69	130	40.28	12.9(20)	
Freon-113	55.2	2.5	50	0	110	55	141	50.18	9.5(40)	
trans-1,2-Dichloroethene	51.9	2.5	50	0	104	63	130	45.01	14.3(20)	
Methyl tert-butyl ether (MTBE)	47.2	1.3	50	0	94	47	150	40.17	16.2(40)	
1,1-Dichloroethane	51.4	2.5	50	0	103	66	130	44.79	13.7(20)	
2-Butanone (MEK)	770	50	1000	0	77	23	182	671.8	13.6(22)	
cis-1,2-Dichloroethene	52.5	2.5	50	0	105	70	130	45.86	13.5(20)	
Bromochloromethane	53.9	2.5	50	0	108	70	132	47.03	13.5(20)	
Chloroform	46.8	2.5	50	0	94	70	130	41.06	13.1(20)	
2,2-Dichloropropane	49.9	2.5	50	0	99.8	38	154	43.35	14.1(22)	
1,2-Dichloroethane	51.3	2.5	50	0	103	65	134	45.21	12.6(20)	
1,1,1-Trichloroethane	53.5	2.5	50	0	107	65	136	46.79	13.3(20)	
1,1-Dichloropropene	56.1	2.5	50	0	112	68	132	49.59	12.4(20)	
Carbon tetrachloride	50	2.5	50	0	100	58	148	43.04	14.9(20)	
Benzene	51.2	1.3	50	0	102	59	138	45.09	12.7(21)	
Dibromomethane	51.5	2.5	50	0	103	70	130	44.67	14.2(20)	
1,2-Dichloropropane	48.1	2.5	50	0	96	70	131	41.75	14.1(20)	
Trichloroethene	52.3	2.5	50	0	105	65	144	45.72	13.4(20)	
Bromodichloromethane	48.4	2.5	50	0	97	50	157	41.81	14.5(20)	
4-Methyl-2-pentanone (MIBK)	117	13	125	0	94	20	182	100.9	15.1(20)	
cis-1,3-Dichloropropene	46.9	2.5	50	0	94	63	131	40.36	14.9(20)	
trans-1,3-Dichloropropene	47.3	2.5	50	0	95	65	136	41.17	13.9(20)	
1,1,2-Trichloroethane	52.5	2.5	50	0	105	70	131	46.09	12.9(20)	
Toluene	48.5	1.3	50	0	97	68	130	43.14	11.7(20)	
1,3-Dichloropropane	50.6	2.5	50	0	101	70	130	44.64	12.4(20)	
2-Hexanone	362	25	500	0	72	20	182	316.6	13.2(20)	
Dibromochloromethane	46.9	2.5	50	0	94	42	155	41.03	13.2(20)	
1,2-Dibromoethane (EDB)	99.4	5	100	0	99	70	130	86.9	13.4(20)	
Tetrachloroethene	52.2	2.5	50	0	104	65	130	46.37	11.8(20)	
1,1,1,2-Tetrachloroethane	55.3	2.5	50	0	111	70	130	48.6	12.9(20)	
Chlorobenzene	51.5	2.5	50	0	103	70	130	46.56	10.0(20)	
Ethylbenzene	50.2	1.3	50	0	100	68	130	44.78	11.4(20)	
m,p-Xylene	49.3	1.3	50	0	99	68	131	43.62	12.1(20)	
Bromoform	46.4	2.5	50	0	93	65	143	40.53	13.5(20)	
Styrene	44.8	2.5	50	0	90	59	153	39.44	12.7(37)	
o-Xylene	48.8	1.3	50	0	98	70	130	43.57	11.3(20)	
1,1,2,2-Tetrachloroethane	52	2.5	50	0	104	67	130	45.98	12.3(20)	
1,2,3-Trichloropropane	108	10	100	0	108	70	130	94.82	12.7(20)	
Isopropylbenzene	50.1	2.5	50	0	100	55	138	44.6	11.6(20)	
Bromobenzene	51.5	2.5	50	0	103	70	130	45.75	11.7(20)	
n-Propylbenzene	52.2	2.5	50	0	104	67	133	46.54	11.5(30)	
4-Chlorotoluene	51.2	2.5	50	0	102	70	130	45.53	11.6(20)	
2-Chlorotoluene	50.5	2.5	50	0	101	70	130	44.93	11.8(20)	
1,3,5-Trimethylbenzene	52.2	2.5	50	0	104	67	134	46.47	11.7(21)	
tert-Butylbenzene	50.8	2.5	50	0	102	55	147	45.19	11.7(20)	
1,2,4-Trimethylbenzene	52	2.5	50	0	104	65	135	45.8	12.6(25)	
sec-Butylbenzene	52.2	2.5	50	0	104	68	135	46.5	11.5(20)	
1,3-Dichlorobenzene	48.7	2.5	50	0	97	70	130	42.85	12.7(20)	
1,4-Dichlorobenzene	51.1	2.5	50	0	102	70	130	45.24	12.2(20)	
4-Isopropyltoluene	52.8	2.5	50	0	106	68	132	47.11	11.3(20)	
1,2-Dichlorobenzene	49.1	2.5	50	0	98	70	130	43.15	12.9(20)	
n-Butylbenzene	52.3	2.5	50	0	105	62	134	46.59	11.6(21)	
1,2-Dibromo-3-chloropropane (DBCP)	264	15	250	0	106	64	130	229.2	14.0(20)	
1,2,4-Trichlorobenzene	48.3	10	50	0	97	62	133	41.81	14.5(29)	
Naphthalene	44.2	10	50	0	88	32	166	37.04	17.6(40)	
Hexachlorobutadiene	102	10	100	0	102	63	130	89.62	13.4(21)	
1,2,3-Trichlorobenzene	42.6	10	50	0	85	55	138	35.68	17.7(36)	

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *14-May-12*

QC Summary Report

Work Order: 12050201

Surr: 1,2-Dichloroethane-d4	55.4	50	111	70	130
Surr: Toluene-d8	48.7	50	97	70	130
Surr: 4-Bromofluorobenzene	46.9	50	94	70	130

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12050201

Report Due By : 5:00 PM On : 15-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : M.M

PO : 286215

Client's COC # : 53772 Job : 100006114 / JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
2 °C	02-May-12	**02-May-12**

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12050201-01A	MW-23-5	AQ	05/01/12 08:58	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050201-02A	MW-23-4	AQ	05/01/12 09:28	10	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	MS/MSD
BMI12050201-03A	MW-23-3	AQ	05/01/12 10:17	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	Level IV QC
BMI12050201-04A	MW-23-2	AQ	05/01/12 10:46	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050201-05A	MW-23-1	AQ	05/01/12 11:22	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050201-06A	DUPE-3-2Q12	AQ	05/01/12 00:00	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050201-07A	EB-6-5/1/12	AQ	05/01/12 11:04	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050201-08A	TB-6-5/1/12	AQ	05/01/12 00:00	1	0	9							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 4/2/12

Comments: Security seals intact. Frozen Ice. Temp. Blank #7771 received @ 2°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -03A. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Loffee	Sara Loffee	**Alpha Analytical, Inc.**	5/2/12 10:45

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

53772

Billing Information:

Company Name: BATTELLE
Attn: GERALD TOMPKINS
Address: 505 KING AVE.
City, State, Zip: COLUMBUS, OH 43201
Phone Number: _____ Fax: _____

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ___ CA X NV ___ WA ___ DOD Site ___
ID ___ OR ___ OTHER ___ Page # 1 of 1

Consultant / Client Name: BATTELLE/DAVID CONNEN
Address: 3990 OLD TOWN AVE, C-205
City, State, Zip: SAN DIEGO, CA 92110
P.O.# ~~286477~~ 286215
Job # 100006114 / ~~286479~~
Job Name: JPL GW MON 2012
Report Attention / Project Manager
Name: DAVID CONNEN
Email: Conner@battelle.org
Phone: _____ Mobile (619) 726-7311

Data Validation Level: (I) II or IV
EDD / EDF? YES ___ NO ___
Global ID # ___

Analyses Required: (524.2) VOA; (200.8) *; (3M4.0) PERCHLORATE; (SM2320B, SM2540C, 150.2) *; (300.0) *

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	# Containers**	(524.2)	(200.8)	(3M4.0)	(SM2320B, SM2540C, 150.2)	(300.0)			REMARKS
858	5/1/12	AQ	BMI12050201-01A	MW-23-5	NORM		3v, 2p	X	X	X	X	X			
928			02A	MW-23-4			6v, 4p	X	X	X	X	X			MS/MSD
1017			03A	MW-23-3			3v, 2p	X	X	X	X	X			QC IV
1046			04A	MW-23-2			3v, 2p	X	X	X	X	X			
1122		AQ	05A	MW-23-1			3v, 2p	X	X	X	X	X			
~~---~~	5/1/12	AQ	06A	DUPE-3 - 2012			3v, 2p	X	X	X	X	X			DUPLICATE
1104		AQ	07A	EB-6-5/1/12			3v, 2p	X	X	X	X	X			EQUIP BLANK
		AQ	08A	TB-6-5/1/12			1v	X							TRIP BLANK

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: *(200.8) = TOTAL CR, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320B, SM2540C, 150.2) = CO_3, HCO_3, TDS, PH, ALK. *(300.0) = CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: MARCO MENDOZA

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:
	/ Alpha Analytical	5/1/12	1241
/ Alpha Analytical	Adelle Apple / alpha	5/2/12	10:45

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *15-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Work Order: BMI12050301 **Cooler Temp:** 0 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12050301-01A	MW-11-5	Aqueous
12050301-02A	MW-11-4	Aqueous
12050301-03A	MW-11-3	Aqueous
12050301-04A	MW-11-2	Aqueous
12050301-05A	MW-11-1	Aqueous
12050301-06A	EB-7-5/2/12	Aqueous
12050301-07A	TB-7-5/2/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/03/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-11-5**					
Lab ID : BMI12050301-01A	Chloride	11	0.50 mg/L	05/03/12 09:52	05/03/12 11:53
Date Sampled 05/02/12 09:03	Nitrite (NO2) - N	ND	0.25 mg/L	05/03/12 09:52	05/03/12 11:53
	Nitrate (NO3) - N	ND	0.25 mg/L	05/03/12 09:52	05/03/12 11:53
	Phosphate, ortho - P	ND	0.50 mg/L	05/03/12 09:52	05/03/12 11:53
	Sulfate (SO4)	17	0.50 mg/L	05/03/12 09:52	05/03/12 11:53
Client ID: **MW-11-4**					
Lab ID : BMI12050301-02A	Chloride	12	0.50 mg/L	05/03/12 09:52	05/03/12 12:11
Date Sampled 05/02/12 09:56	Nitrite (NO2) - N	ND	0.25 mg/L	05/03/12 09:52	05/03/12 12:11
	Nitrate (NO3) - N	ND	0.25 mg/L	05/03/12 09:52	05/03/12 12:11
	Phosphate, ortho - P	ND	0.50 mg/L	05/03/12 09:52	05/03/12 12:11
	Sulfate (SO4)	ND	0.50 mg/L	05/03/12 09:52	05/03/12 12:11
Client ID: **MW-11-3**					
Lab ID : BMI12050301-03A	Chloride	12	0.50 mg/L	05/03/12 09:52	05/03/12 12:30
Date Sampled 05/02/12 10:34	Nitrite (NO2) - N	ND	0.25 mg/L	05/03/12 09:52	05/03/12 12:30
	Nitrate (NO3) - N	ND	0.25 mg/L	05/03/12 09:52	05/03/12 12:30
	Phosphate, ortho - P	ND	0.50 mg/L	05/03/12 09:52	05/03/12 12:30
	Sulfate (SO4)	22	0.50 mg/L	05/03/12 09:52	05/03/12 12:30
Client ID: **MW-11-2**					
Lab ID : BMI12050301-04A	Chloride	17	0.50 mg/L	05/03/12 09:52	05/03/12 13:25
Date Sampled 05/02/12 11:34	Nitrite (NO2) - N	ND	0.25 mg/L	05/03/12 09:52	05/03/12 13:25
	Nitrate (NO3) - N	ND	0.25 mg/L	05/03/12 09:52	05/03/12 13:25
	Phosphate, ortho - P	ND	0.50 mg/L	05/03/12 09:52	05/03/12 13:25
	Sulfate (SO4)	34	0.50 mg/L	05/03/12 09:52	05/03/12 13:25
Client ID: **MW-11-1**					
Lab ID : BMI12050301-05A	Chloride	22	0.50 mg/L	05/03/12 09:52	05/03/12 13:44
Date Sampled 05/02/12 12:11	Nitrite (NO2) - N	ND	0.25 mg/L	05/03/12 09:52	05/03/12 13:44
	Nitrate (NO3) - N	1.1	0.25 mg/L	05/03/12 09:52	05/03/12 13:44
	Phosphate, ortho - P	ND	0.50 mg/L	05/03/12 09:52	05/03/12 13:44
	Sulfate (SO4)	52	0.50 mg/L	05/03/12 09:52	05/03/12 13:44
Client ID: **EB-7-5/2/12**					
Lab ID : BMI12050301-06A	Chloride	ND	0.50 mg/L	05/03/12 09:52	05/03/12 14:02
Date Sampled 05/02/12 11:53	Nitrite (NO2) - N	ND	0.25 mg/L	05/03/12 09:52	05/03/12 14:02
	Nitrate (NO3) - N	ND	0.25 mg/L	05/03/12 09:52	05/03/12 14:02
	Phosphate, ortho - P	ND	0.50 mg/L	05/03/12 09:52	05/03/12 14:02
	Sulfate (SO4)	ND	0.50 mg/L	05/03/12 09:52	05/03/12 14:02

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/15/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/03/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-11-5**				
Lab ID : BMI12050301-01A Perchlorate	ND	1.00 µg/L	05/10/12 15:50	05/10/12 17:42
Date Sampled 05/02/12 09:03				
Client ID: **MW-11-4**				
Lab ID : BMI12050301-02A Perchlorate	ND	1.00 µg/L	05/10/12 15:50	05/10/12 18:01
Date Sampled 05/02/12 09:56				
Client ID: **MW-11-3**				
Lab ID : BMI12050301-03A Perchlorate	ND	1.00 µg/L	05/10/12 15:50	05/10/12 18:19
Date Sampled 05/02/12 10:34				
Client ID: **MW-11-2**				
Lab ID : BMI12050301-04A Perchlorate	ND	1.00 µg/L	05/10/12 15:50	05/10/12 19:14
Date Sampled 05/02/12 11:34				
Client ID: **MW-11-1**				
Lab ID : BMI12050301-05A Perchlorate	ND	1.00 µg/L	05/10/12 15:50	05/10/12 19:33
Date Sampled 05/02/12 12:11				
Client ID: **EB-7-5/2/12**				
Lab ID : BMI12050301-06A Perchlorate	ND	1.00 µg/L	05/10/12 15:50	05/10/12 19:51
Date Sampled 05/02/12 11:53				

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Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/03/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-11-5**					
Lab ID : BMI12050301-01A	Alkalinity, Bicarbonate (As CaCO3)	140	10 mg/L	05/04/12 13:01	05/04/12 13:01
Date Sampled 05/02/12 09:03	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/04/12 13:01	05/04/12 13:01
	Alkalinity, Total (As CaCO3 at pH 4.5)	140	10 mg/L	05/04/12 13:01	05/04/12 13:01
Client ID: **MW-11-4**					
Lab ID : BMI12050301-02A	Alkalinity, Bicarbonate (As CaCO3)	60	10 mg/L	05/04/12 13:09	05/04/12 13:09
Date Sampled 05/02/12 09:56	Alkalinity, Carbonate (As CaCO3)	60	10 mg/L	05/04/12 13:09	05/04/12 13:09
	Alkalinity, Total (As CaCO3 at pH 4.5)	120	10 mg/L	05/04/12 13:09	05/04/12 13:09
Client ID: **MW-11-3**					
Lab ID : BMI12050301-03A	Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	05/04/12 13:14	05/04/12 13:14
Date Sampled 05/02/12 10:34	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/04/12 13:14	05/04/12 13:14
	Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	05/04/12 13:14	05/04/12 13:14
Client ID: **MW-11-2**					
Lab ID : BMI12050301-04A	Alkalinity, Bicarbonate (As CaCO3)	200	10 mg/L	05/04/12 13:19	05/04/12 13:19
Date Sampled 05/02/12 11:34	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/04/12 13:19	05/04/12 13:19
	Alkalinity, Total (As CaCO3 at pH 4.5)	200	10 mg/L	05/04/12 13:19	05/04/12 13:19
Client ID: **MW-11-1**					
Lab ID : BMI12050301-05A	Alkalinity, Bicarbonate (As CaCO3)	230	10 mg/L	05/04/12 13:25	05/04/12 13:25
Date Sampled 05/02/12 12:11	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/04/12 13:25	05/04/12 13:25
	Alkalinity, Total (As CaCO3 at pH 4.5)	230	10 mg/L	05/04/12 13:25	05/04/12 13:25
Client ID: **EB-7-5/2/12**					
Lab ID : BMI12050301-06A	Alkalinity, Bicarbonate (As CaCO3)	ND	10 mg/L	05/04/12 13:29	05/04/12 13:29
Date Sampled 05/02/12 11:53	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/04/12 13:29	05/04/12 13:29
	Alkalinity, Total (As CaCO3 at pH 4.5)	ND	10 mg/L	05/04/12 13:29	05/04/12 13:29

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ND = Not Detected

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/03/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-11-5**				
Lab ID : BMI12050301-01A Sodium (Na)	55	0.50 mg/L	05/03/12 12:27	05/10/12 15:16
Date Sampled 05/02/12 09:03 Magnesium (Mg)	1.7	0.50 mg/L	05/03/12 12:27	05/10/12 15:16
Potassium (K)	1.2	0.50 mg/L	05/03/12 12:27	05/10/12 15:16
Calcium (Ca)	15	0.50 mg/L	05/03/12 12:27	05/10/12 15:16
Chromium (Cr)	0.0057	0.0050 mg/L	05/03/12 12:27	05/10/12 15:16
Iron (Fe)	0.82	0.30 mg/L	05/03/12 12:27	05/10/12 15:16
Arsenic (As)	0.010	0.0020 mg/L	05/03/12 12:27	05/10/12 22:52
Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:16
Client ID: **MW-11-4**				
Lab ID : BMI12050301-02A Sodium (Na)	29	0.50 mg/L	05/03/12 12:27	05/10/12 15:22
Date Sampled 05/02/12 09:56 Magnesium (Mg)	9.3	0.50 mg/L	05/03/12 12:27	05/10/12 15:22
Potassium (K)	2.2	0.50 mg/L	05/03/12 12:27	05/10/12 15:22
Calcium (Ca)	8.6	0.50 mg/L	05/03/12 12:27	05/10/12 15:22
Chromium (Cr)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:22
Iron (Fe)	0.38	0.30 mg/L	05/03/12 12:27	05/10/12 15:22
Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 22:57
Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:22
Client ID: **MW-11-3**				
Lab ID : BMI12050301-03A Sodium (Na)	29	0.50 mg/L	05/03/12 12:27	05/10/12 15:28
Date Sampled 05/02/12 10:34 Magnesium (Mg)	13	0.50 mg/L	05/03/12 12:27	05/10/12 15:28
Potassium (K)	2.4	0.50 mg/L	05/03/12 12:27	05/10/12 15:28
Calcium (Ca)	37	0.50 mg/L	05/03/12 12:27	05/10/12 15:28
Chromium (Cr)	0.0052	0.0050 mg/L	05/03/12 12:27	05/10/12 15:28
Iron (Fe)	1.1	0.30 mg/L	05/03/12 12:27	05/10/12 15:28
Arsenic (As)	0.0047	0.0020 mg/L	05/03/12 12:27	05/10/12 23:03
Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:28
Client ID: **MW-11-2**				
Lab ID : BMI12050301-04A Sodium (Na)	25	0.50 mg/L	05/03/12 12:27	05/10/12 15:33
Date Sampled 05/02/12 11:34 Magnesium (Mg)	18	0.50 mg/L	05/03/12 12:27	05/10/12 15:33
Potassium (K)	3.1	0.50 mg/L	05/03/12 12:27	05/10/12 15:33
Calcium (Ca)	48	0.50 mg/L	05/03/12 12:27	05/10/12 15:33
Chromium (Cr)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:33
Iron (Fe)	1.5	0.30 mg/L	05/03/12 12:27	05/10/12 15:33
Arsenic (As)	0.0032	0.0020 mg/L	05/03/12 12:27	05/10/12 15:33
Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:33

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Client ID: **MW-11-1**					
Lab ID : BMI12050301-05A	Sodium (Na)	29	0.50 mg/L	05/03/12 12:27	05/10/12 15:39
Date Sampled 05/02/12 12:11	Magnesium (Mg)	21	0.50 mg/L	05/03/12 12:27	05/10/12 15:39
	Potassium (K)	3.5	0.50 mg/L	05/03/12 12:27	05/10/12 15:39
	Calcium (Ca)	62	0.50 mg/L	05/03/12 12:27	05/10/12 15:39
	Chromium (Cr)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:39
	Iron (Fe)	1.1	0.30 mg/L	05/03/12 12:27	05/10/12 15:39
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 15:39
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:39
Client ID: **EB-7-5/2/12**					
Lab ID : BMI12050301-06A	Sodium (Na)	ND	0.50 mg/L	05/03/12 12:27	05/10/12 15:45
Date Sampled 05/02/12 11:53	Magnesium (Mg)	ND	0.50 mg/L	05/03/12 12:27	05/10/12 15:45
	Potassium (K)	ND	0.50 mg/L	05/03/12 12:27	05/10/12 15:45
	Calcium (Ca)	ND	0.50 mg/L	05/03/12 12:27	05/10/12 15:45
	Chromium (Cr)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:45
	Iron (Fe)	ND	0.30 mg/L	05/03/12 12:27	05/10/12 15:45
	Arsenic (As)	ND	0.0020 mg/L	05/03/12 12:27	05/10/12 15:45
	Lead (Pb)	ND	0.0050 mg/L	05/03/12 12:27	05/10/12 15:45

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

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ANALYTICAL REPORT

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655 West Broadway
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Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/03/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-11-5**				
Lab ID : BMI12050301-01A pH	8.6	1.7 pH Units	05/03/12 14:26	05/03/12 14:26
Date Sampled 05/02/12 09:03 pH - Temperature	23	1.0 °C	05/03/12 14:26	05/03/12 14:26
Client ID: **MW-11-4**				
Lab ID : BMI12050301-02A pH	9.2	1.7 pH Units	05/03/12 14:28	05/03/12 14:28
Date Sampled 05/02/12 09:56 pH - Temperature	23	1.0 °C	05/03/12 14:28	05/03/12 14:28
Client ID: **MW-11-3**				
Lab ID : BMI12050301-03A pH	8.4	1.7 pH Units	05/03/12 14:31	05/03/12 14:31
Date Sampled 05/02/12 10:34 pH - Temperature	24	1.0 °C	05/03/12 14:31	05/03/12 14:31
Client ID: **MW-11-2**				
Lab ID : BMI12050301-04A pH	8.1	1.7 pH Units	05/03/12 14:34	05/03/12 14:34
Date Sampled 05/02/12 11:34 pH - Temperature	23	1.0 °C	05/03/12 14:34	05/03/12 14:34
Client ID: **MW-11-1**				
Lab ID : BMI12050301-05A pH	7.8	1.7 pH Units	05/03/12 14:36	05/03/12 14:36
Date Sampled 05/02/12 12:11 pH - Temperature	23	1.0 °C	05/03/12 14:36	05/03/12 14:36
Client ID: **EB-7-5/2/12**				
Lab ID : BMI12050301-06A pH	6.8	1.7 pH Units	05/03/12 14:44	05/03/12 14:44
Date Sampled 05/02/12 11:53 pH - Temperature	22	1.0 °C	05/03/12 14:44	05/03/12 14:44

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The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.

The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

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Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/03/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-11-5**					
Lab ID : BMI12050301-01A	Solids, Total Dissolved (TDS)	170	10 mg/L	05/04/12	05/04/12
Date Sampled 05/02/12 09:03					
Client ID: **MW-11-4**					
Lab ID : BMI12050301-02A	Solids, Total Dissolved (TDS)	120	10 mg/L	05/04/12	05/04/12
Date Sampled 05/02/12 09:56					
Client ID: **MW-11-3**					
Lab ID : BMI12050301-03A	Solids, Total Dissolved (TDS)	210	10 mg/L	05/04/12	05/04/12
Date Sampled 05/02/12 10:34					
Client ID: **MW-11-2**					
Lab ID : BMI12050301-04A	Solids, Total Dissolved (TDS)	240	10 mg/L	05/04/12	05/04/12
Date Sampled 05/02/12 11:34					
Client ID: **MW-11-1**					
Lab ID : BMI12050301-05A	Solids, Total Dissolved (TDS)	310	10 mg/L	05/04/12	05/04/12
Date Sampled 05/02/12 12:11					
Client ID: **EB-7-5/2/12**					
Lab ID : BMI12050301-06A	Solids, Total Dissolved (TDS)	ND	10 mg/L	05/04/12	05/04/12
Date Sampled 05/02/12 11:53					

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Date Received : 05/03/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-11-5**					
Lab ID : BMI12050301-01A	Acrylonitrile	ND	10 µg/L	05/11/12 15:55	05/11/12 15:55
Date Sampled 05/02/12 09:03	Allyl chloride	ND	2.0 µg/L	05/11/12 15:55	05/11/12 15:55
	Carbon disulfide	ND	2.5 µg/L	05/11/12 15:55	05/11/12 15:55
	Chloroacetonitrile	ND	10 µg/L	05/11/12 15:55	05/11/12 15:55
	1-Chlorobutane	ND	2.0 µg/L	05/11/12 15:55	05/11/12 15:55
	1,1-Dichloropropanone	ND	10 µg/L	05/11/12 15:55	05/11/12 15:55
	Diethyl ether	ND	2.0 µg/L	05/11/12 15:55	05/11/12 15:55
	Ethyl methacrylate	ND	10 µg/L	05/11/12 15:55	05/11/12 15:55
	Hexachloroethane	ND	10 µg/L	05/11/12 15:55	05/11/12 15:55
	Methacrylonitrile	ND	10 µg/L	05/11/12 15:55	05/11/12 15:55
	Methyl acrylate	ND	10 µg/L	05/11/12 15:55	05/11/12 15:55
	Methyl iodide	ND	2.0 µg/L	05/11/12 15:55	05/11/12 15:55
	Methyl methacrylate	ND	10 µg/L	05/11/12 15:55	05/11/12 15:55
	Nitrobenzene	ND	10 µg/L	05/11/12 15:55	05/11/12 15:55
	2-Nitropropane	ND	2.0 µg/L	05/11/12 15:55	05/11/12 15:55
	Pentachloroethane	ND	2.0 µg/L	05/11/12 15:55	05/11/12 15:55
	Propionitrile	ND	50 µg/L	05/11/12 15:55	05/11/12 15:55
	Tetrahydrofuran	ND	10 µg/L	05/11/12 15:55	05/11/12 15:55
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 15:55	05/11/12 15:55
Client ID: **MW-11-4**					
Lab ID : BMI12050301-02A	Acrylonitrile	ND	10 µg/L	05/11/12 16:17	05/11/12 16:17
Date Sampled 05/02/12 09:56	Allyl chloride	ND	2.0 µg/L	05/11/12 16:17	05/11/12 16:17
	Carbon disulfide	ND	2.5 µg/L	05/11/12 16:17	05/11/12 16:17
	Chloroacetonitrile	ND	10 µg/L	05/11/12 16:17	05/11/12 16:17
	1-Chlorobutane	ND	2.0 µg/L	05/11/12 16:17	05/11/12 16:17
	1,1-Dichloropropanone	ND	10 µg/L	05/11/12 16:17	05/11/12 16:17
	Diethyl ether	ND	2.0 µg/L	05/11/12 16:17	05/11/12 16:17
	Ethyl methacrylate	ND	10 µg/L	05/11/12 16:17	05/11/12 16:17
	Hexachloroethane	ND	10 µg/L	05/11/12 16:17	05/11/12 16:17
	Methacrylonitrile	ND	10 µg/L	05/11/12 16:17	05/11/12 16:17
	Methyl acrylate	ND	10 µg/L	05/11/12 16:17	05/11/12 16:17
	Methyl iodide	ND	2.0 µg/L	05/11/12 16:17	05/11/12 16:17
	Methyl methacrylate	ND	10 µg/L	05/11/12 16:17	05/11/12 16:17
	Nitrobenzene	ND	10 µg/L	05/11/12 16:17	05/11/12 16:17
	2-Nitropropane	ND	2.0 µg/L	05/11/12 16:17	05/11/12 16:17
	Pentachloroethane	ND	2.0 µg/L	05/11/12 16:17	05/11/12 16:17
	Propionitrile	ND	50 µg/L	05/11/12 16:17	05/11/12 16:17
	Tetrahydrofuran	ND	10 µg/L	05/11/12 16:17	05/11/12 16:17
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 16:17	05/11/12 16:17

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Client ID: **MW-11-3**					
Lab ID : BMI12050301-03A	Acrylonitrile	ND	10 µg/L	05/11/12 16:38	05/11/12 16:38
Date Sampled 05/02/12 10:34	Allyl chloride	ND	2.0 µg/L	05/11/12 16:38	05/11/12 16:38
	Carbon disulfide	ND	2.5 µg/L	05/11/12 16:38	05/11/12 16:38
	Chloroacetonitrile	ND	10 µg/L	05/11/12 16:38	05/11/12 16:38
	1-Chlorobutane	ND	2.0 µg/L	05/11/12 16:38	05/11/12 16:38
	1,1-Dichloropropanone	ND	10 µg/L	05/11/12 16:38	05/11/12 16:38
	Diethyl ether	ND	2.0 µg/L	05/11/12 16:38	05/11/12 16:38
	Ethyl methacrylate	ND	10 µg/L	05/11/12 16:38	05/11/12 16:38
	Hexachloroethane	ND	10 µg/L	05/11/12 16:38	05/11/12 16:38
	Methacrylonitrile	ND	10 µg/L	05/11/12 16:38	05/11/12 16:38
	Methyl acrylate	ND	10 µg/L	05/11/12 16:38	05/11/12 16:38
	Methyl iodide	ND	2.0 µg/L	05/11/12 16:38	05/11/12 16:38
	Methyl methacrylate	ND	10 µg/L	05/11/12 16:38	05/11/12 16:38
	Nitrobenzene	ND	10 µg/L	05/11/12 16:38	05/11/12 16:38
	2-Nitropropane	ND	2.0 µg/L	05/11/12 16:38	05/11/12 16:38
	Pentachloroethane	ND	2.0 µg/L	05/11/12 16:38	05/11/12 16:38
	Propionitrile	ND	50 µg/L	05/11/12 16:38	05/11/12 16:38
	Tetrahydrofuran	ND	10 µg/L	05/11/12 16:38	05/11/12 16:38
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 16:38	05/11/12 16:38
Client ID: **MW-11-2**					
Lab ID : BMI12050301-04A	Acrylonitrile	ND	10 µg/L	05/11/12 17:00	05/11/12 17:00
Date Sampled 05/02/12 11:34	Allyl chloride	ND	2.0 µg/L	05/11/12 17:00	05/11/12 17:00
	Carbon disulfide	ND	2.5 µg/L	05/11/12 17:00	05/11/12 17:00
	Chloroacetonitrile	ND	10 µg/L	05/11/12 17:00	05/11/12 17:00
	1-Chlorobutane	ND	2.0 µg/L	05/11/12 17:00	05/11/12 17:00
	1,1-Dichloropropanone	ND	10 µg/L	05/11/12 17:00	05/11/12 17:00
	Diethyl ether	ND	2.0 µg/L	05/11/12 17:00	05/11/12 17:00
	Ethyl methacrylate	ND	10 µg/L	05/11/12 17:00	05/11/12 17:00
	Hexachloroethane	ND	10 µg/L	05/11/12 17:00	05/11/12 17:00
	Methacrylonitrile	ND	10 µg/L	05/11/12 17:00	05/11/12 17:00
	Methyl acrylate	ND	10 µg/L	05/11/12 17:00	05/11/12 17:00
	Methyl iodide	ND	2.0 µg/L	05/11/12 17:00	05/11/12 17:00
	Methyl methacrylate	ND	10 µg/L	05/11/12 17:00	05/11/12 17:00
	Nitrobenzene	ND	10 µg/L	05/11/12 17:00	05/11/12 17:00
	2-Nitropropane	ND	2.0 µg/L	05/11/12 17:00	05/11/12 17:00
	Pentachloroethane	ND	2.0 µg/L	05/11/12 17:00	05/11/12 17:00
	Propionitrile	ND	50 µg/L	05/11/12 17:00	05/11/12 17:00
	Tetrahydrofuran	ND	10 µg/L	05/11/12 17:00	05/11/12 17:00
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 17:00	05/11/12 17:00

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Client ID: **MW-11-1**					
Lab ID : BMI12050301-05A	Acrylonitrile	ND	10 µg/L	05/11/12 17:22	05/11/12 17:22
Date Sampled 05/02/12 12:11	Allyl chloride	ND	2.0 µg/L	05/11/12 17:22	05/11/12 17:22
	Carbon disulfide	ND	2.5 µg/L	05/11/12 17:22	05/11/12 17:22
	Chloroacetonitrile	ND	10 µg/L	05/11/12 17:22	05/11/12 17:22
	1-Chlorobutane	ND	2.0 µg/L	05/11/12 17:22	05/11/12 17:22
	1,1-Dichloropropanone	ND	10 µg/L	05/11/12 17:22	05/11/12 17:22
	Diethyl ether	ND	2.0 µg/L	05/11/12 17:22	05/11/12 17:22
	Ethyl methacrylate	ND	10 µg/L	05/11/12 17:22	05/11/12 17:22
	Hexachloroethane	ND	10 µg/L	05/11/12 17:22	05/11/12 17:22
	Methacrylonitrile	ND	10 µg/L	05/11/12 17:22	05/11/12 17:22
	Methyl acrylate	ND	10 µg/L	05/11/12 17:22	05/11/12 17:22
	Methyl iodide	ND	2.0 µg/L	05/11/12 17:22	05/11/12 17:22
	Methyl methacrylate	ND	10 µg/L	05/11/12 17:22	05/11/12 17:22
	Nitrobenzene	ND	10 µg/L	05/11/12 17:22	05/11/12 17:22
	2-Nitropropane	ND	2.0 µg/L	05/11/12 17:22	05/11/12 17:22
	Pentachloroethane	ND	2.0 µg/L	05/11/12 17:22	05/11/12 17:22
	Propionitrile	ND	50 µg/L	05/11/12 17:22	05/11/12 17:22
	Tetrahydrofuran	ND	10 µg/L	05/11/12 17:22	05/11/12 17:22
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 17:22	05/11/12 17:22
Client ID: **EB-7-5/2/12**					
Lab ID : BMI12050301-06A	Acrylonitrile	ND	10 µg/L	05/11/12 17:43	05/11/12 17:43
Date Sampled 05/02/12 11:53	Allyl chloride	ND	2.0 µg/L	05/11/12 17:43	05/11/12 17:43
	Carbon disulfide	ND	2.5 µg/L	05/11/12 17:43	05/11/12 17:43
	Chloroacetonitrile	ND	10 µg/L	05/11/12 17:43	05/11/12 17:43
	1-Chlorobutane	ND	2.0 µg/L	05/11/12 17:43	05/11/12 17:43
	1,1-Dichloropropanone	ND	10 µg/L	05/11/12 17:43	05/11/12 17:43
	Diethyl ether	ND	2.0 µg/L	05/11/12 17:43	05/11/12 17:43
	Ethyl methacrylate	ND	10 µg/L	05/11/12 17:43	05/11/12 17:43
	Hexachloroethane	ND	10 µg/L	05/11/12 17:43	05/11/12 17:43
	Methacrylonitrile	ND	10 µg/L	05/11/12 17:43	05/11/12 17:43
	Methyl acrylate	ND	10 µg/L	05/11/12 17:43	05/11/12 17:43
	Methyl iodide	ND	2.0 µg/L	05/11/12 17:43	05/11/12 17:43
	Methyl methacrylate	ND	10 µg/L	05/11/12 17:43	05/11/12 17:43
	Nitrobenzene	ND	10 µg/L	05/11/12 17:43	05/11/12 17:43
	2-Nitropropane	ND	2.0 µg/L	05/11/12 17:43	05/11/12 17:43
	Pentachloroethane	ND	2.0 µg/L	05/11/12 17:43	05/11/12 17:43
	Propionitrile	ND	50 µg/L	05/11/12 17:43	05/11/12 17:43
	Tetrahydrofuran	ND	10 µg/L	05/11/12 17:43	05/11/12 17:43
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 17:43	05/11/12 17:43

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Client ID: **TB-7-5/2/12**
Lab ID : BMI12050301-07A
Date Sampled 05/02/12 00:00

Acrylonitrile	ND	10 µg/L	05/11/12 18:05	05/11/12 18:05
Allyl chloride	ND	2.0 µg/L	05/11/12 18:05	05/11/12 18:05
Carbon disulfide	ND	2.5 µg/L	05/11/12 18:05	05/11/12 18:05
Chloroacetonitrile	ND	10 µg/L	05/11/12 18:05	05/11/12 18:05
1-Chlorobutane	ND	2.0 µg/L	05/11/12 18:05	05/11/12 18:05
1,1-Dichloropropanone	ND	10 µg/L	05/11/12 18:05	05/11/12 18:05
Diethyl ether	ND	2.0 µg/L	05/11/12 18:05	05/11/12 18:05
Ethyl methacrylate	ND	10 µg/L	05/11/12 18:05	05/11/12 18:05
Hexachloroethane	ND	10 µg/L	05/11/12 18:05	05/11/12 18:05
Methacrylonitrile	ND	10 µg/L	05/11/12 18:05	05/11/12 18:05
Methyl acrylate	ND	10 µg/L	05/11/12 18:05	05/11/12 18:05
Methyl iodide	ND	2.0 µg/L	05/11/12 18:05	05/11/12 18:05
Methyl methacrylate	ND	10 µg/L	05/11/12 18:05	05/11/12 18:05
Nitrobenzene	ND	10 µg/L	05/11/12 18:05	05/11/12 18:05
2-Nitropropane	ND	2.0 µg/L	05/11/12 18:05	05/11/12 18:05
Pentachloroethane	ND	2.0 µg/L	05/11/12 18:05	05/11/12 18:05
Propionitrile	ND	50 µg/L	05/11/12 18:05	05/11/12 18:05
Tetrahydrofuran	ND	10 µg/L	05/11/12 18:05	05/11/12 18:05
trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 18:05	05/11/12 18:05

Note: Analysis conducted using EPA Method 524.2 criteria.
Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/15/12
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050301-01A
Client I.D. Number: MW-11-5

Sampled: 05/02/12 09:03
Received: 05/03/12
Extracted: 05/11/12 15:55
Analyzed: 05/11/12 15:55

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
67	Surr: Toluene-d8	101	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/15/12
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050301-02A
Client I.D. Number: MW-11-4

Sampled: 05/02/12 09:56
Received: 05/03/12
Extracted: 05/11/12 16:17
Analyzed: 05/11/12 16:17

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
67	Surr: Toluene-d8	100	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/15/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050301-03A
Client I.D. Number: MW-11-3

Sampled: 05/02/12 10:34
Received: 05/03/12
Extracted: 05/11/12 16:38
Analyzed: 05/11/12 16:38

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
67	Surr: Toluene-d8	101	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/15/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050301-04A
Client I.D. Number: MW-11-2

Sampled: 05/02/12 11:34
Received: 05/03/12
Extracted: 05/11/12 17:00
Analyzed: 05/11/12 17:00

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
67	Surr: Toluene-d8	101	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/15/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050301-05A
Client I.D. Number: MW-11-1

Sampled: 05/02/12 12:11
Received: 05/03/12
Extracted: 05/11/12 17:22
Analyzed: 05/11/12 17:22

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
67	Surr: Toluene-d8	103	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050301-06A
Client I.D. Number: EB-7-5/2/12

Sampled: 05/02/12 11:53
Received: 05/03/12
Extracted: 05/11/12 17:43
Analyzed: 05/11/12 17:43

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
67	Surr: Toluene-d8	102	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

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5/15/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050301-07A
Client I.D. Number: TB-7-5/2/12

Sampled: 05/02/12 00:00
Received: 05/03/12
Extracted: 05/11/12 18:05
Analyzed: 05/11/12 18:05

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
67	Surr: Toluene-d8	101	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/15/12
Report Date

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

VOC Sample Preservation Report

Work Order: BMI12050301 **Job:** 100006114 / JPL Groundwater Monitoring

Alpha's Sample ID	Client's Sample ID	Matrix	pH
12050301-01A	MW-11-5	Aqueous	2
12050301-02A	MW-11-4	Aqueous	2
12050301-03A	MW-11-3	Aqueous	2
12050301-04A	MW-11-2	Aqueous	2
12050301-05A	MW-11-1	Aqueous	2
12050301-06A	EB-7-5/2/12	Aqueous	2
12050301-07A	TB-7-5/2/12	Aqueous	2

5/15/12

Report Date

Alpha Analytical, Inc.

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Date: *15-May-12*

QC Summary Report

Work Order: 12050301

Method Blank

Type: **MBLK** Test Code: **EPA Method 300.0**

File ID: **27** Batch ID: **28656K** Analysis Date: **05/03/2012 10:39**

Sample ID: **MB-28656** Units : **mg/L** Run ID: **IC_1_120503B** Prep Date: **05/03/2012 09:52**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 300.0**

File ID: **28** Batch ID: **28656K** Analysis Date: **05/03/2012 10:57**

Sample ID: **LFB-28656** Units : **mg/L** Run ID: **IC_1_120503B** Prep Date: **05/03/2012 09:52**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	52	0.5	50		104	90	110			
Nitrite (NO2) - N	5.41	0.25	5		108	90	110			
Nitrate (NO3) - N	5.15	0.25	5		103	90	110			
Phosphate, ortho - P	4.94	0.5	5		99	90	110			
Sulfate (SO4)	100	0.5	100		100	90	110			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 300.0**

File ID: **34** Batch ID: **28656K** Analysis Date: **05/03/2012 12:48**

Sample ID: **12050301-03ALFM** Units : **mg/L** Run ID: **IC_1_120503B** Prep Date: **05/03/2012 09:52**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	270	1.3	250	11.65	103	90	110			
Nitrite (NO2) - N	25.7	0.63	25	0	103	90	110			
Nitrate (NO3) - N	25.2	0.63	25	0	101	90	110			
Phosphate, ortho - P	25.4	1.3	25	0	102	90	110			
Sulfate (SO4)	517	1.3	500	21.92	99	90	110			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 300.0**

File ID: **35** Batch ID: **28656K** Analysis Date: **05/03/2012 13:07**

Sample ID: **12050301-03ALFMD** Units : **mg/L** Run ID: **IC_1_120503B** Prep Date: **05/03/2012 09:52**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	272	1.3	250	11.65	104	90	110	269.5	0.8(15)	
Nitrite (NO2) - N	26	0.63	25	0	104	90	110	25.67	1.3(15)	
Nitrate (NO3) - N	25.4	0.63	25	0	102	90	110	25.21	0.8(15)	
Phosphate, ortho - P	27.4	1.3	25	0	110	90	110	25.38	7.6(15)	
Sulfate (SO4)	522	1.3	500	21.92	99.9	90	110	516.9	0.9(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *15-May-12*

QC Summary Report

Work Order: 12050301

Method Blank

Type: **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **28713K** Analysis Date: **05/10/2012 16:47**

Sample ID: **MB-28713** Units : **µg/L** Run ID: **IC_3_120510A** Prep Date: **05/10/2012 15:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **28713K** Analysis Date: **05/10/2012 17:05**

Sample ID: **LFB-28713** Units : **µg/L** Run ID: **IC_3_120510A** Prep Date: **05/10/2012 15:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.5	2	25		102	85	115			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 314.0**

File ID: **20** Batch ID: **28713K** Analysis Date: **05/10/2012 18:38**

Sample ID: **12050301-03ALFM** Units : **µg/L** Run ID: **IC_3_120510A** Prep Date: **05/10/2012 15:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.1	2	25	0	101	85	115			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 314.0**

File ID: **21** Batch ID: **28713K** Analysis Date: **05/10/2012 18:56**

Sample ID: **12050301-03ALFMD** Units : **µg/L** Run ID: **IC_3_120510A** Prep Date: **05/10/2012 15:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	26.2	2	25	0	105	85	115	25.14	4.3(15)	

Comments:

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Date: *15-May-12*

QC Summary Report

Work Order: 12050301

Laboratory Control Spike Type: **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0504AL** Analysis Date: **05/04/2012 12:55**

Sample ID: **LCS-W0504AL** Units : **mg/L** Run ID: **WETLAB_120504E** Prep Date: **05/04/2012 12:55**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	265.2	10	250		106	80	120			
Alkalinity, Carbonate (As CaCO3)	265.2	10	250		106	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	265	10	250		106	80	120			

Comments:

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Date: 15-May-12

QC Summary Report

Work Order: 12050301

Method Blank

Type: **MBLK** Test Code: **EPA Method 200.8**

File ID: **051012.B\019_M.D** Batch ID: **28661K** Analysis Date: **05/10/2012 12:51**

Sample ID: **MB-28661** Units : **mg/L** Run ID: **ICP/MS_120510A** Prep Date: **05/03/2012 12:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 200.8**

File ID: **051012.B\020_M.D** Batch ID: **28661K** Analysis Date: **05/10/2012 12:57**

Sample ID: **LCS-28661** Units : **mg/L** Run ID: **ICP/MS_120510A** Prep Date: **05/03/2012 12:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	5.66	0.5	5		113	80	120			
Magnesium (Mg)	5.65	0.5	5		113	80	120			
Potassium (K)	5.4	0.5	5		108	80	120			
Calcium (Ca)	5.5	0.5	5		110	80	120			
Chromium (Cr)	0.0521	0.005	0.05		104	80	120			
Iron (Fe)	5.62	0.3	5		112	80	120			
Arsenic (As)	0.0527	0.002	0.05		105	80	120			
Lead (Pb)	0.0526	0.005	0.05		105	80	120			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method 200.8**

File ID: **051012.B\025_M.D** Batch ID: **28661K** Analysis Date: **05/10/2012 13:26**

Sample ID: **12050104-03AMS** Units : **mg/L** Run ID: **ICP/MS_120510A** Prep Date: **05/03/2012 12:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	31.5	0.5	5	26.64	98	80	120			
Magnesium (Mg)	20.6	0.5	5	15.36	105	80	120			
Potassium (K)	7.73	0.5	5	2.724	100	80	120			
Calcium (Ca)	52	0.5	5	47.3	94	80	120			
Chromium (Cr)	0.0473	0.005	0.05	0	95	80	120			
Iron (Fe)	5.76	0.3	5	0.6678	102	80	120			
Arsenic (As)	0.0429	0.002	0.05	0	86	80	120			
Lead (Pb)	0.0483	0.005	0.05	0	97	80	120			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method 200.8**

File ID: **051012.B\026_M.D** Batch ID: **28661K** Analysis Date: **05/10/2012 13:31**

Sample ID: **12050104-03AMSD** Units : **mg/L** Run ID: **ICP/MS_120510A** Prep Date: **05/03/2012 12:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	31.8	0.5	5	26.64	103	80	120	31.52	0.9(20)	
Magnesium (Mg)	20.9	0.5	5	15.36	110	80	120	20.6	1.3(20)	
Potassium (K)	7.86	0.5	5	2.724	103	80	120	7.726	1.8(20)	
Calcium (Ca)	51.8	0.5	5	47.3	89	80	120	52.02	0.5(20)	
Chromium (Cr)	0.048	0.005	0.05	0	96	80	120	0.04731	1.5(20)	
Iron (Fe)	5.82	0.3	5	0.6678	103	80	120	5.761	1.1(20)	
Arsenic (As)	0.0465	0.002	0.05	0	93	80	120	0.04292	8.1(20)	
Lead (Pb)	0.0496	0.005	0.05	0	99	80	120	0.04834	2.5(20)	

Comments:

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Date: *15-May-12*

QC Summary Report

Work Order: 12050301

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0503PH** Analysis Date: **05/03/2012 14:18**

Sample ID: **LCS-W0503PH** Units : **pH Units** Run ID: **WETLAB_120503B** Prep Date: **05/03/2012 14:18**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5.07	1.7	5		101	90	110			

Comments:

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Date: *15-May-12*

QC Summary Report

Work Order: 12050301

Method Blank

Type: **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0502DS** Analysis Date: **05/03/2012 00:00**

Sample ID: **MBLK-W0502DS** Units : **mg/L** Run ID: **WETLAB_120502F** Prep Date: **05/03/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type: **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0502DS** Analysis Date: **05/03/2012 00:00**

Sample ID: **LCS-W0502DS** Units : **mg/L** Run ID: **WETLAB_120502F** Prep Date: **05/03/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	84	10	100		84	70	130			

Comments:

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Date: *15-May-12*

QC Summary Report

Work Order: 12050301

Method Blank Type: **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12051106.D** Batch ID: **MS15W0511M** Analysis Date: **05/11/2012 12:18**

Sample ID: **MBLK MS15W0511M** Units : **µg/L** Run ID: **MSD_15_120511B** Prep Date: **05/11/2012 12:18**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

Alpha Analytical, Inc.

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Date: *15-May-12*

QC Summary Report

Work Order: 12050301

Surr: 1,2-Dichloroethane-d4	10.4	10	104	70	130
Surr: Toluene-d8	10.2	10	102	70	130
Surr: 4-Bromofluorobenzene	9.17	10	92	70	130

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Date: *21-May-12*

QC Summary Report

Work Order: 12050301

Laboratory Control Spike Type **LCS** Test Code: **EPA Method SW8260B**

File ID: **12051104.D** Batch ID: **MS15W0511M** Analysis Date: **05/11/2012 11:21**

Sample ID: **LCS MS15W0511M** Units : **µg/L** Run ID: **MSD_15_120511B** Prep Date: **05/11/2012 11:21**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	8.16	1	10		82	70	130			
Chloromethane	8.1	2	10		81	70	130			
Vinyl chloride	9.92	1	10		99	70	130			
Chloroethane	8.81	1	10		88	70	130			
Bromomethane	8.99	2	10		90	70	130			
Trichlorofluoromethane	9.24	1	10		92	70	130			
Acetone	280	10	200		140	36	171			
1,1-Dichloroethene	9.76	1	10		98	70	130			
Dichloromethane	8.67	2	10		87	70	130			
Freon-113	10.3	1	10		103	70	137			
trans-1,2-Dichloroethene	9.79	1	10		98	70	130			
Methyl tert-butyl ether (MTBE)	8.74	0.5	10		87	70	130			
1,1-Dichloroethane	9.64	1	10		96	70	130			
2-Butanone (MEK)	243	10	200		121	70	130			
cis-1,2-Dichloroethene	9.88	1	10		99	70	130			
Bromochloromethane	9.93	1	10		99	70	130			
Chloroform	8.86	1	10		89	70	130			
2,2-Dichloropropane	9.42	1	10		94	70	130			
1,2-Dichloroethane	9.56	1	10		96	70	130			
1,1,1-Trichloroethane	10.1	1	10		101	70	130			
1,1-Dichloropropene	10.5	1	10		105	70	130			
Carbon tetrachloride	9.07	1	10		91	70	130			
Benzene	9.62	0.5	10		96	70	130			
Dibromomethane	9.55	1	10		96	70	130			
1,2-Dichloropropane	9	1	10		90	70	130			
Trichloroethene	9.9	1	10		99	70	130			
Bromodichloromethane	8.75	1	10		88	70	130			
4-Methyl-2-pentanone (MIBK)	23.2	2.5	25		93	20	182			
cis-1,3-Dichloropropene	8.92	1	10		89	70	130			
trans-1,3-Dichloropropene	8.68	1	10		87	70	130			
1,1,2-Trichloroethane	9.62	1	10		96	70	130			
Toluene	9.44	0.5	10		94	70	130			
1,3-Dichloropropane	9.65	1	10		97	70	130			
2-Hexanone	115	5	100		115	20	182			
Dibromochloromethane	8.59	1	10		86	70	130			
1,2-Dibromoethane (EDB)	18.6	2	20		93	70	130			
Tetrachloroethene	10.1	1	10		101	70	130			
1,1,1,2-Tetrachloroethane	10.4	1	10		104	70	130			
Chlorobenzene	9.89	1	10		99	70	130			
Ethylbenzene	9.67	0.5	10		97	70	130			
m,p-Xylene	9.5	0.5	10		95	70	130			
Bromoform	8.25	1	10		83	70	130			
Styrene	8.51	1	10		85	70	130			
o-Xylene	9.37	0.5	10		94	70	130			
1,1,2,2-Tetrachloroethane	9.38	1	10		94	70	130			
1,2,3-Trichloropropane	19.5	2	20		97	70	130			
Isopropylbenzene	9.7	1	10		97	70	130			
Bromobenzene	9.88	1	10		99	70	130			
n-Propylbenzene	10.1	1	10		101	70	130			
4-Chlorotoluene	9.81	1	10		98	70	130			
2-Chlorotoluene	9.84	1	10		98	70	130			
1,3,5-Trimethylbenzene	10.1	1	10		101	70	130			
tert-Butylbenzene	9.84	1	10		98	70	130			
1,2,4-Trimethylbenzene	10.1	1	10		101	70	130			
sec-Butylbenzene	10	1	10		100	70	130			
1,3-Dichlorobenzene	9.21	1	10		92	70	130			
1,4-Dichlorobenzene	9.73	1	10		97	70	130			
4-Isopropyltoluene	10.2	1	10		102	70	130			
1,2-Dichlorobenzene	9.26	1	10		93	70	130			
n-Butylbenzene	10	1	10		100	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	47.1	3	50		94	67	130			
1,2,4-Trichlorobenzene	9.04	2	10		90	70	130			
Naphthalene	7.72	2	10		77	70	130			
Hexachlorobutadiene	19.7	2	20		98	70	130			
1,2,3-Trichlorobenzene	7.65	2	10		77	70	130			

Alpha Analytical, Inc.

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Date: *21-May-12*

QC Summary Report

Work Order: 12050301

Surr: 1,2-Dichloroethane-d4	10	10	100	70	130
Surr: Toluene-d8	9.98	10	99.8	70	130
Surr: 4-Bromofluorobenzene	9.55	10	96	70	130

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Date: *15-May-12*

QC Summary Report

Work Order: 12050301

Sample Matrix Spike Type: **MS** Test Code: **EPA Method SW8260B**

File ID: **12051112.D** Batch ID: **MS15W0511M** Analysis Date: **05/11/2012 14:28**

Sample ID: **12050301-03AMS** Units : **µg/L** Run ID: **MSD_15_120511B** Prep Date: **05/11/2012 14:28**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	52.8	2.5	50	0	106	21	138			
Chloromethane	41.9	10	50	0	84	23	144			
Vinyl chloride	52.8	2.5	50	0	106	49	136			
Chloroethane	44.1	2.5	50	0	88	21	159			
Bromomethane	32.3	10	50	0	65	10	174			
Trichlorofluoromethane	47.3	2.5	50	0	95	32	154			
Acetone	556	50	1000	0	56	10	171			
1,1-Dichloroethene	47.8	2.5	50	0	96	64	130			
Dichloromethane	42.3	10	50	0	85	69	130			
Freon-113	51.9	2.5	50	0	104	55	141			
trans-1,2-Dichloroethene	48	2.5	50	0	96	63	130			
Methyl tert-butyl ether (MTBE)	45.2	1.3	50	0	90	47	150			
1,1-Dichloroethane	47	2.5	50	0	94	66	130			
2-Butanone (MEK)	698	50	1000	0	70	23	182			
cis-1,2-Dichloroethene	47	2.5	50	0	94	70	130			
Bromochloromethane	48.1	2.5	50	0	96	70	132			
Chloroform	42.9	2.5	50	0	86	70	130			
2,2-Dichloropropane	46.2	2.5	50	0	92	38	154			
1,2-Dichloroethane	47.1	2.5	50	0	94	65	134			
1,1,1-Trichloroethane	48.9	2.5	50	0	98	65	136			
1,1-Dichloropropene	51.3	2.5	50	0	103	68	132			
Carbon tetrachloride	43.5	2.5	50	0	87	58	148			
Benzene	47	1.3	50	0	94	59	138			
Dibromomethane	46.6	2.5	50	0	93	70	130			
1,2-Dichloropropane	44.4	2.5	50	0	89	70	131			
Trichloroethene	47.7	2.5	50	0	95	65	144			
Bromodichloromethane	41.6	2.5	50	0	83	50	157			
4-Methyl-2-pentanone (MIBK)	107	13	125	0	86	20	182			
cis-1,3-Dichloropropene	42	2.5	50	0	84	63	131			
trans-1,3-Dichloropropene	42.3	2.5	50	0	85	65	136			
1,1,2-Trichloroethane	48.2	2.5	50	0	96	70	131			
Toluene	45.1	1.3	50	0	90	68	130			
1,3-Dichloropropane	47.9	2.5	50	0	96	70	130			
2-Hexanone	338	25	500	0	68	20	182			
Dibromochloromethane	40.1	2.5	50	0	80	42	155			
1,2-Dibromoethane (EDB)	92.2	5	100	0	92	70	130			
Tetrachloroethene	48.7	2.5	50	0	97	65	130			
1,1,1,2-Tetrachloroethane	49.5	2.5	50	0	99	70	130			
Chlorobenzene	47.7	2.5	50	0	95	70	130			
Ethylbenzene	46.4	1.3	50	0	93	68	130			
m,p-Xylene	45.9	1.3	50	0	92	68	131			
Bromoform	38.4	2.5	50	0	77	65	143			
Styrene	41.2	2.5	50	0	82	59	153			
o-Xylene	45.4	1.3	50	0	91	70	130			
1,1,2,2-Tetrachloroethane	47.9	2.5	50	0	96	67	130			
1,2,3-Trichloropropane	99	10	100	0	99	70	130			
Isopropylbenzene	47	2.5	50	0	94	55	138			
Bromobenzene	48.2	2.5	50	0	96	70	130			
n-Propylbenzene	49	2.5	50	0	98	67	133			
4-Chlorotoluene	48	2.5	50	0	96	70	130			
2-Chlorotoluene	47.4	2.5	50	0	95	70	130			
1,3,5-Trimethylbenzene	48.5	2.5	50	0	97	67	134			
tert-Butylbenzene	47.9	2.5	50	0	96	55	147			
1,2,4-Trimethylbenzene	48.2	2.5	50	0	96	65	135			
sec-Butylbenzene	48.8	2.5	50	0	98	68	135			
1,3-Dichlorobenzene	45.1	2.5	50	0	90	70	130			
1,4-Dichlorobenzene	47.3	2.5	50	0	95	70	130			
4-Isopropyltoluene	49.4	2.5	50	0	99	68	132			
1,2-Dichlorobenzene	45.5	2.5	50	0	91	70	130			
n-Butylbenzene	48.4	2.5	50	0	97	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	231	15	250	0	93	64	130			
1,2,4-Trichlorobenzene	45	10	50	0	90	62	133			
Naphthalene	41.9	10	50	0	84	32	166			
Hexachlorobutadiene	94.2	10	100	0	94	63	130			
1,2,3-Trichlorobenzene	38.3	10	50	0	77	55	138			

Alpha Analytical, Inc.

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Date: *15-May-12*

QC Summary Report

Work Order: 12050301

Surr: 1,2-Dichloroethane-d4	51	50	102	70	130
Surr: Toluene-d8	49.5	50	99	70	130
Surr: 4-Bromofluorobenzene	48.3	50	97	70	130

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Date: 15-May-12

QC Summary Report

Work Order: 12050301

Sample Matrix Spike Duplicate Type: **MSD** Test Code: **EPA Method SW8260B**

File ID: **12051113.D** Batch ID: **MS15W0511M** Analysis Date: **05/11/2012 14:50**

Sample ID: **12050301-03AMSD** Units : **µg/L** Run ID: **MSD_15_120511B** Prep Date: **05/11/2012 14:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	57	2.5	50	0	114	21	138	52.75	7.8(33)	
Chloromethane	50.2	10	50	0	100	23	144	41.94	17.8(27)	
Vinyl chloride	58.5	2.5	50	0	117	49	136	52.84	10.1(21)	
Chloroethane	48	2.5	50	0	96	21	159	44.11	8.5(40)	
Bromomethane	40.2	10	50	0	80	10	174	32.32	21.8(40)	
Trichlorofluoromethane	52.7	2.5	50	0	105	32	154	47.34	10.8(37)	
Acetone	613	50	1000	0	61	10	171	555.8	9.7(23)	
1,1-Dichloroethene	52.2	2.5	50	0	104	64	130	47.81	8.8(21)	
Dichloromethane	46.2	10	50	0	92	69	130	42.32	8.8(20)	
Freon-113	56	2.5	50	0	112	55	141	51.89	7.6(40)	
trans-1,2-Dichloroethene	52.5	2.5	50	0	105	63	130	48.03	8.8(20)	
Methyl tert-butyl ether (MTBE)	50	1.3	50	0	100	47	150	45.19	10.1(40)	
1,1-Dichloroethane	50.9	2.5	50	0	102	66	130	46.95	8.1(20)	
2-Butanone (MEK)	764	50	1000	0	76	23	182	698	9.0(22)	
cis-1,2-Dichloroethene	52.3	2.5	50	0	105	70	130	46.96	10.8(20)	
Bromochloromethane	53.7	2.5	50	0	107	70	132	48.06	11.1(20)	
Chloroform	45.9	2.5	50	0	92	70	130	42.86	6.8(20)	
2,2-Dichloropropane	51.1	2.5	50	0	102	38	154	46.22	10.0(22)	
1,2-Dichloroethane	51.9	2.5	50	0	104	65	134	47.06	9.8(20)	
1,1,1-Trichloroethane	53.3	2.5	50	0	107	65	136	48.88	8.6(20)	
1,1-Dichloropropene	55.5	2.5	50	0	111	68	132	51.28	7.8(20)	
Carbon tetrachloride	48.9	2.5	50	0	98	58	148	43.5	11.7(20)	
Benzene	50.5	1.3	50	0	101	59	138	47	7.1(21)	
Dibromomethane	51.4	2.5	50	0	103	70	130	46.64	9.8(20)	
1,2-Dichloropropane	47.7	2.5	50	0	95	70	131	44.37	7.2(20)	
Trichloroethene	51.5	2.5	50	0	103	65	144	47.65	7.8(20)	
Bromodichloromethane	46.2	2.5	50	0	92	50	157	41.55	10.5(20)	
4-Methyl-2-pentanone (MIBK)	116	13	125	0	93	20	182	107	8.4(20)	
cis-1,3-Dichloropropene	46.5	2.5	50	0	93	63	131	42.03	10.0(20)	
trans-1,3-Dichloropropene	46.6	2.5	50	0	93	65	136	42.3	9.7(20)	
1,1,2-Trichloroethane	51.9	2.5	50	0	104	70	131	48.15	7.6(20)	
Toluene	49.6	1.3	50	0	99	68	130	45.07	9.6(20)	
1,3-Dichloropropane	52.8	2.5	50	0	106	70	130	47.86	9.8(20)	
2-Hexanone	374	25	500	0	75	20	182	337.9	10.2(20)	
Dibromochloromethane	45.9	2.5	50	0	92	42	155	40.1	13.6(20)	
1,2-Dibromoethane (EDB)	103	5	100	0	103	70	130	92.18	10.8(20)	
Tetrachloroethene	53.3	2.5	50	0	107	65	130	48.7	9.1(20)	
1,1,1,2-Tetrachloroethane	54.4	2.5	50	0	109	70	130	49.49	9.5(20)	
Chlorobenzene	51.4	2.5	50	0	103	70	130	47.7	7.5(20)	
Ethylbenzene	50.5	1.3	50	0	101	68	130	46.35	8.7(20)	
m,p-Xylene	49.4	1.3	50	0	99	68	131	45.87	7.5(20)	
Bromoform	44.1	2.5	50	0	88	65	143	38.43	13.8(20)	
Styrene	45.1	2.5	50	0	90	59	153	41.24	8.9(37)	
o-Xylene	49.3	1.3	50	0	99	70	130	45.44	8.1(20)	
1,1,2,2-Tetrachloroethane	52.4	2.5	50	0	105	67	130	47.91	8.9(20)	
1,2,3-Trichloropropane	108	10	100	0	108	70	130	99.02	8.2(20)	
Isopropylbenzene	51.2	2.5	50	0	102	55	138	46.98	8.5(20)	
Bromobenzene	52.6	2.5	50	0	105	70	130	48.22	8.7(20)	
n-Propylbenzene	53.3	2.5	50	0	107	67	133	49.03	8.3(30)	
4-Chlorotoluene	52.5	2.5	50	0	105	70	130	47.96	9.0(20)	
2-Chlorotoluene	51.8	2.5	50	0	104	70	130	47.4	8.8(20)	
1,3,5-Trimethylbenzene	52.6	2.5	50	0	105	67	134	48.51	8.0(21)	
tert-Butylbenzene	51.6	2.5	50	0	103	55	147	47.85	7.5(20)	
1,2,4-Trimethylbenzene	52.4	2.5	50	0	105	65	135	48.24	8.2(25)	
sec-Butylbenzene	52.7	2.5	50	0	105	68	135	48.84	7.6(20)	
1,3-Dichlorobenzene	49.2	2.5	50	0	98	70	130	45.1	8.7(20)	
1,4-Dichlorobenzene	51.7	2.5	50	0	103	70	130	47.32	8.9(20)	
4-Isopropyltoluene	53.3	2.5	50	0	107	68	132	49.37	7.7(20)	
1,2-Dichlorobenzene	49.4	2.5	50	0	99	70	130	45.45	8.4(20)	
n-Butylbenzene	52.9	2.5	50	0	106	62	134	48.4	8.8(21)	
1,2-Dibromo-3-chloropropane (DBCP)	262	15	250	0	105	64	130	231.4	12.5(20)	
1,2,4-Trichlorobenzene	50.4	10	50	0	101	62	133	44.96	11.4(29)	
Naphthalene	45.1	10	50	0	90	32	166	41.92	7.3(40)	
Hexachlorobutadiene	104	10	100	0	104	63	130	94.15	10.3(21)	
1,2,3-Trichlorobenzene	43.4	10	50	0	87	55	138	38.28	12.6(36)	

Alpha Analytical, Inc.

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Date: *15-May-12*

QC Summary Report

Work Order: 12050301

Surr: 1,2-Dichloroethane-d4	55.3	50	111	70	130
Surr: Toluene-d8	50.2	50	100	70	130
Surr: 4-Bromofluorobenzene	48.7	50	97	70	130

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.
255 Glendale Ave., Ste. 21
Sparks, NV 89431
775-355-1044 1-800-283-1183

Invoice

Customer No.: BMI
Invoice No.: 79503

Bill To:

BATTELLE
ACCOUNTS PAYABLE
505 KING AVE
COLUMBUS, OH 43201

Ship To:

BATTELLE
DAVID CONNER
655 WEST BROADWAY STE 1420
SAN DIEGO, CA 92101

Date	Ship Via	F.O.B.	Terms
05/16/12		Origin	Net 30

Purchase Order Number	Order Date	Sales Person	Our Order Number
287215	05/03/12		BMI12050301-1/7

Quantity Required	Quantity Shipped	Quantity B.O.	Item Number	Description	Unit Price	Amount
				100006114/JPL GROUNWATER MONITORING MW-11-5 ~ TB-7-5/2/12		
7	7		524		70.00	490.00
6	6		TDS		15.00	90.00
6	6		PH		8.00	48.00
6	6		CR		15.00	90.00
6	6		AS,FE		30.00	180.00
6	6		5 METALS		48.00	288.00
6	6		ALKALINITY		15.00	90.00
6	6		PERCHLORAT		50.00	300.00
6	6		ANIONS		55.00	330.00
1	1		EDF/NIRIS		100.00	100.00
				Invoice subtotal		2006.00
				Invoice total		2006.00

Due within terms and not contingent upon third party payment

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12050301

Report Due By : 5:00 PM On : 16-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : Mario Mendoza

PO : 286215

Client's COC # : 53779 Job : 100006114 / JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
0 °C	03-May-12	**03-May-12**

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12050301-01A	MW-11-5	AQ	05/02/12 09:03	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050301-02A	MW-11-4	AQ	05/02/12 09:56	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050301-03A	MW-11-3	AQ	05/02/12 10:34	10	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	MS/MSD
BMI12050301-04A	MW-11-2	AQ	05/02/12 11:34	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050301-05A	MW-11-1	AQ	05/02/12 12:11	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050301-06A	EB-7-5/2/12	AQ	05/02/12 11:53	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050301-07A	TB-7-5/2/12	AQ	05/02/12 00:00	1	0	9							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 4/2/12

Comments: Security seals intact. Frozen Ice. Temp. Blank #6908 received @ 0°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Lotte	Sara Lotte	**Alpha Analytical, Inc.**	5/3/12 9:58

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

53779

Billing Information:
Company Name: BATTELLE
Attn: GERALD TOMPKINS
Address: 505 KING AVE
City, State, Zip: COLUMBUS, OH 43201
Phone Number: _____ Fax: _____

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ____ CA X NV ____ WA ____ DOD Site ____
ID ____ OR ____ OTHER ____ Page # 1 of 1

Consultant / Client Name: BATTELLE / DAVID CONNEN
Address: 3990 OLD TOWN AVE, C-205
City, State, Zip: SAN DIEGO, CA 92110
Job #: 160006114 / PO# 286479
Job Name: SPL GW MON 2012
Report Attention / Project Manager
Name: DAVID CONNEN
Email: Connend@battelle.org
Phone: _____ Mobile: (619) 726-7311

Data Validation Level: (II) or IV
EDD / EDF? YES ____ NO ____
Global ID # ____

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	# Containers**	(524.2) VOCs	(200.8) *	PERCHLORATE (314.0)	(SM2320B SM2540C 150.2) *	(300.0) *			REMARKS
903	5/1/12	AQ	BMI1205030I-01A	MW-11-5	NORM		3V, 2P	X	X	X	X	X			
956			-02A	MW-11-4			3V, 2P	X	X	X	X	X			
1034			-03A	MW-11-3			6V, 4P	X	X	X	X	X			MS/MSD
1134			-04A	MW-11-2			3V, 2P	X	X	X	X	X			
1211			-05A	MW-11-1			3V, 2P	X	X	X	X	X			
1153			-06A	EB-7-5/2/12			3V, 2P	X	X	X	X	X			EQUIP BLANK
	5/2/12	AQ	-07A	TB-7-5/2/12			1V	X							TRIP BLANK

FOR LAB USE ONLY

Analyses Required

ADDITIONAL INSTRUCTIONS: *(200.8)-TOTAL Cr, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320B, SM2540C, 150.2)-CO3, HCO3, TDS, PH, ALK. *(300.0)-CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: MARCO MENDOZA

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:
	/ Alpha Analytical	5/2/12	1240
/ Alpha Analytical	Nerell Apple / alpha	5/3/12	9:55

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *16-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114 / JPL Groundwater Monitoring

Work Order: EMI12050402 **Cooler Temp:** 1 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12050402-01A	MW-20-5	Aqueous
12050402-02A	MW-20-4	Aqueous
12050402-03A	MW-20-3	Aqueous
12050402-04A	MW-20-2	Aqueous
12050402-05A	MW-20-1	Aqueous
12050402-06A	EB-8-5/3/12	Aqueous
12050402-07A	TB-8-5/3/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/04/12

Job: 100006114 / JPL Groundwater Monitoring

Anions by IC
EPA Method 300.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-20-5**					
Lab ID : BMI12050402-01A	Chloride	9.3	0.50 mg/L	05/04/12 12:42	05/04/12 14:34
Date Sampled 05/03/12 08:04	Nitrite (NO2) - N	ND	0.25 mg/L	05/04/12 12:42	05/04/12 14:34
	Nitrate (NO3) - N	ND	0.25 mg/L	05/04/12 12:42	05/04/12 14:34
	Phosphate, ortho - P	ND	0.50 mg/L	05/04/12 12:42	05/04/12 14:34
	Sulfate (SO4)	2.7	0.50 mg/L	05/04/12 12:42	05/04/12 14:34
Client ID: **MW-20-4**					
Lab ID : BMI12050402-02A	Chloride	11	0.50 mg/L	05/04/12 12:42	05/04/12 15:11
Date Sampled 05/03/12 08:43	Nitrite (NO2) - N	ND	0.25 mg/L	05/04/12 12:42	05/04/12 15:11
	Nitrate (NO3) - N	ND	0.25 mg/L	05/04/12 12:42	05/04/12 15:11
	Phosphate, ortho - P	ND	0.50 mg/L	05/04/12 12:42	05/04/12 15:11
	Sulfate (SO4)	12	0.50 mg/L	05/04/12 12:42	05/04/12 15:11
Client ID: **MW-20-3**					
Lab ID : BMI12050402-03A	Chloride	33	0.50 mg/L	05/04/12 12:42	05/04/12 15:30
Date Sampled 05/03/12 09:23	Nitrite (NO2) - N	ND	0.25 mg/L	05/04/12 12:42	05/04/12 15:30
	Nitrate (NO3) - N	ND	0.25 mg/L	05/04/12 12:42	05/04/12 15:30
	Phosphate, ortho - P	ND	0.50 mg/L	05/04/12 12:42	05/04/12 15:30
	Sulfate (SO4)	3.4	0.50 mg/L	05/04/12 12:42	05/04/12 15:30
Client ID: **MW-20-2**					
Lab ID : BMI12050402-04A	Chloride	57	0.50 mg/L	05/04/12 12:42	05/04/12 15:48
Date Sampled 05/03/12 09:53	Nitrite (NO2) - N	ND	0.25 mg/L	05/04/12 12:42	05/04/12 15:48
	Nitrate (NO3) - N	7.7	0.25 mg/L	05/04/12 12:42	05/04/12 15:48
	Phosphate, ortho - P	ND	0.50 mg/L	05/04/12 12:42	05/04/12 15:48
	Sulfate (SO4)	83	0.50 mg/L	05/04/12 12:42	05/04/12 15:48
Client ID: **MW-20-1**					
Lab ID : BMI12050402-05A	Chloride	18	0.50 mg/L	05/04/12 12:42	05/04/12 16:44
Date Sampled 05/03/12 10:55	Nitrite (NO2) - N	ND	0.25 mg/L	05/04/12 12:42	05/04/12 16:44
	Nitrate (NO3) - N	2.0	0.25 mg/L	05/04/12 12:42	05/04/12 16:44
	Phosphate, ortho - P	ND	0.50 mg/L	05/04/12 12:42	05/04/12 16:44
	Sulfate (SO4)	49	0.50 mg/L	05/04/12 12:42	05/04/12 16:44
Client ID: **EB-8-5/3/12**					
Lab ID : BMI12050402-06A	Chloride	ND	0.50 mg/L	05/04/12 12:42	05/04/12 17:02
Date Sampled 05/03/12 10:38	Nitrite (NO2) - N	ND	0.25 mg/L	05/04/12 12:42	05/04/12 17:02
	Nitrate (NO3) - N	ND	0.25 mg/L	05/04/12 12:42	05/04/12 17:02
	Phosphate, ortho - P	ND	0.50 mg/L	05/04/12 12:42	05/04/12 17:02
	Sulfate (SO4)	ND	0.50 mg/L	05/04/12 12:42	05/04/12 17:02

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/16/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/04/12

Job: 100006114 / JPL Groundwater Monitoring

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-20-5**				
Lab ID : BMI12050402-01A Perchlorate	ND	1.00 µg/L	05/10/12 15:50	05/10/12 20:28
Date Sampled 05/03/12 08:04				
Client ID: **MW-20-4**				
Lab ID : BMI12050402-02A Perchlorate	ND	1.00 µg/L	05/10/12 15:50	05/10/12 20:46
Date Sampled 05/03/12 08:43				
Client ID: **MW-20-3**				
Lab ID : BMI12050402-03A Perchlorate	ND	1.00 µg/L	05/10/12 15:50	05/10/12 21:05
Date Sampled 05/03/12 09:23				
Client ID: **MW-20-2**				
Lab ID : BMI12050402-04A Perchlorate	6.36	1.00 µg/L	05/10/12 15:50	05/10/12 21:42
Date Sampled 05/03/12 09:53				
Client ID: **MW-20-1**				
Lab ID : BMI12050402-05A Perchlorate	ND	1.00 µg/L	05/10/12 15:50	05/10/12 22:00
Date Sampled 05/03/12 10:55				
Client ID: **EB-8-5/3/12**				
Lab ID : BMI12050402-06A Perchlorate	ND	1.00 µg/L	05/10/12 15:50	05/10/12 22:18
Date Sampled 05/03/12 10:38				

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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5/16/12
Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/04/12

Job: 100006114 / JPL Groundwater Monitoring

Alkalinity
SM2320B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-20-5**					
Lab ID : BMI12050402-01A	Alkalinity, Bicarbonate (As CaCO3)	83	10 mg/L	05/04/12 13:36	05/04/12 13:36
Date Sampled 05/03/12 08:04	Alkalinity, Carbonate (As CaCO3)	55	10 mg/L	05/04/12 13:36	05/04/12 13:36
	Alkalinity, Total (As CaCO3 at pH 4.5)	140	10 mg/L	05/04/12 13:36	05/04/12 13:36
Client ID: **MW-20-4**					
Lab ID : BMI12050402-02A	Alkalinity, Bicarbonate (As CaCO3)	72	10 mg/L	05/04/12 13:40	05/04/12 13:40
Date Sampled 05/03/12 08:43	Alkalinity, Carbonate (As CaCO3)	73	10 mg/L	05/04/12 13:40	05/04/12 13:40
	Alkalinity, Total (As CaCO3 at pH 4.5)	150	10 mg/L	05/04/12 13:40	05/04/12 13:40
Client ID: **MW-20-3**					
Lab ID : BMI12050402-03A	Alkalinity, Bicarbonate (As CaCO3)	88	10 mg/L	05/04/12 13:45	05/04/12 13:45
Date Sampled 05/03/12 09:23	Alkalinity, Carbonate (As CaCO3)	46	10 mg/L	05/04/12 13:45	05/04/12 13:45
	Alkalinity, Total (As CaCO3 at pH 4.5)	130	10 mg/L	05/04/12 13:45	05/04/12 13:45
Client ID: **MW-20-2**					
Lab ID : BMI12050402-04A	Alkalinity, Bicarbonate (As CaCO3)	210	10 mg/L	05/04/12 14:18	05/04/12 14:18
Date Sampled 05/03/12 09:53	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/04/12 14:18	05/04/12 14:18
	Alkalinity, Total (As CaCO3 at pH 4.5)	210	10 mg/L	05/04/12 14:18	05/04/12 14:18
Client ID: **MW-20-1**					
Lab ID : BMI12050402-05A	Alkalinity, Bicarbonate (As CaCO3)	170	10 mg/L	05/04/12 14:29	05/04/12 14:29
Date Sampled 05/03/12 10:55	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/04/12 14:29	05/04/12 14:29
	Alkalinity, Total (As CaCO3 at pH 4.5)	170	10 mg/L	05/04/12 14:29	05/04/12 14:29
Client ID: **EB-8-5/3/12**					
Lab ID : BMI12050402-06A	Alkalinity, Bicarbonate (As CaCO3)	12	10 mg/L	05/04/12 14:35	05/04/12 14:35
Date Sampled 05/03/12 10:38	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/04/12 14:35	05/04/12 14:35
	Alkalinity, Total (As CaCO3 at pH 4.5)	12	10 mg/L	05/04/12 14:35	05/04/12 14:35

Alpha Analytical, Inc.

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Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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✓

5/16/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/04/12

Job: 100006114 / JPL Groundwater Monitoring

Metals by ICPMS
EPA Method 200.8

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-20-5**				
Lab ID : BMI12050402-01A Sodium (Na)	61	0.50 mg/L	05/09/12 16:37	05/10/12 17:21
Date Sampled 05/03/12 08:04 Magnesium (Mg)	1.6	0.50 mg/L	05/09/12 16:37	05/10/12 17:21
Potassium (K)	1.3	0.50 mg/L	05/09/12 16:37	05/10/12 17:21
Calcium (Ca)	4.4	0.50 mg/L	05/09/12 16:37	05/10/12 17:21
Chromium (Cr)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:21
Iron (Fe)	ND	0.30 mg/L	05/09/12 16:37	05/10/12 17:21
Arsenic (As)	ND	0.0020 mg/L	05/09/12 16:37	05/10/12 17:21
Lead (Pb)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:21
Client ID: **MW-20-4**				
Lab ID : BMI12050402-02A Sodium (Na)	65	0.50 mg/L	05/09/12 16:37	05/10/12 17:27
Date Sampled 05/03/12 08:43 Magnesium (Mg)	2.7	0.50 mg/L	05/09/12 16:37	05/10/12 17:27
Potassium (K)	0.73	0.50 mg/L	05/09/12 16:37	05/10/12 17:27
Calcium (Ca)	7.5	0.50 mg/L	05/09/12 16:37	05/10/12 17:27
Chromium (Cr)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:27
Iron (Fe)	ND	0.30 mg/L	05/09/12 16:37	05/10/12 17:27
Arsenic (As)	ND	0.0020 mg/L	05/09/12 16:37	05/10/12 17:27
Lead (Pb)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:27
Client ID: **MW-20-3**				
Lab ID : BMI12050402-03A Sodium (Na)	55	0.50 mg/L	05/09/12 16:37	05/10/12 17:33
Date Sampled 05/03/12 09:23 Magnesium (Mg)	9.4	0.50 mg/L	05/09/12 16:37	05/10/12 17:33
Potassium (K)	2.1	0.50 mg/L	05/09/12 16:37	05/10/12 17:33
Calcium (Ca)	8.3	0.50 mg/L	05/09/12 16:37	05/10/12 17:33
Chromium (Cr)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:33
Iron (Fe)	ND	0.30 mg/L	05/09/12 16:37	05/10/12 17:33
Arsenic (As)	ND	0.0020 mg/L	05/09/12 16:37	05/10/12 17:33
Lead (Pb)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:33
Client ID: **MW-20-2**				
Lab ID : BMI12050402-04A Sodium (Na)	21	0.50 mg/L	05/09/12 16:37	05/10/12 16:58
Date Sampled 05/03/12 09:53 Magnesium (Mg)	30	0.50 mg/L	05/09/12 16:37	05/10/12 16:58
Potassium (K)	2.9	0.50 mg/L	05/09/12 16:37	05/10/12 16:58
Calcium (Ca)	76	0.50 mg/L	05/09/12 16:37	05/10/12 16:58
Chromium (Cr)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 16:58
Iron (Fe)	1.2	0.30 mg/L	05/09/12 16:37	05/10/12 16:58
Arsenic (As)	ND	0.0020 mg/L	05/09/12 16:37	05/10/12 16:58
Lead (Pb)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 16:58

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Client ID: **MW-20-1**					
Lab ID : BMI12050402-05A	Sodium (Na)	19	0.50 mg/L	05/09/12 16:37	05/10/12 17:39
Date Sampled 05/03/12 10:55	Magnesium (Mg)	21	0.50 mg/L	05/09/12 16:37	05/10/12 17:39
	Potassium (K)	2.7	0.50 mg/L	05/09/12 16:37	05/10/12 17:39
	Calcium (Ca)	60	0.50 mg/L	05/09/12 16:37	05/10/12 17:39
	Chromium (Cr)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:39
	Iron (Fe)	0.83	0.30 mg/L	05/09/12 16:37	05/10/12 17:39
	Arsenic (As)	ND	0.0020 mg/L	05/09/12 16:37	05/10/12 17:39
	Lead (Pb)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:39
Client ID: **EB-8-5/3/12**					
Lab ID : BMI12050402-06A	Sodium (Na)	ND	0.50 mg/L	05/09/12 16:37	05/10/12 17:44
Date Sampled 05/03/12 10:38	Magnesium (Mg)	ND	0.50 mg/L	05/09/12 16:37	05/10/12 17:44
	Potassium (K)	ND	0.50 mg/L	05/09/12 16:37	05/10/12 17:44
	Calcium (Ca)	ND	0.50 mg/L	05/09/12 16:37	05/10/12 17:44
	Chromium (Cr)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:44
	Iron (Fe)	ND	0.30 mg/L	05/09/12 16:37	05/10/12 17:44
	Arsenic (As)	ND	0.0020 mg/L	05/09/12 16:37	05/10/12 17:44
	Lead (Pb)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:44

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/16/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/04/12

Job: 100006114 / JPL Groundwater Monitoring

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-20-5**				
Lab ID : BMI12050402-01A pH	9.0	1.7 pH Units	05/04/12 14:30	05/04/12 14:30
Date Sampled 05/03/12 08:04 pH - Temperature	23	1.0 °C	05/04/12 14:30	05/04/12 14:30
Client ID: **MW-20-4**				
Lab ID : BMI12050402-02A pH	9.2	1.7 pH Units	05/04/12 14:32	05/04/12 14:32
Date Sampled 05/03/12 08:43 pH - Temperature	22	1.0 °C	05/04/12 14:32	05/04/12 14:32
Client ID: **MW-20-3**				
Lab ID : BMI12050402-03A pH	9.0	1.7 pH Units	05/04/12 14:34	05/04/12 14:34
Date Sampled 05/03/12 09:23 pH - Temperature	22	1.0 °C	05/04/12 14:34	05/04/12 14:34
Client ID: **MW-20-2**				
Lab ID : BMI12050402-04A pH	7.6	1.7 pH Units	05/04/12 14:36	05/04/12 14:36
Date Sampled 05/03/12 09:53 pH - Temperature	25	1.0 °C	05/04/12 14:36	05/04/12 14:36
Client ID: **MW-20-1**				
Lab ID : BMI12050402-05A pH	7.6	1.7 pH Units	05/04/12 14:37	05/04/12 14:37
Date Sampled 05/03/12 10:55 pH - Temperature	26	1.0 °C	05/04/12 14:37	05/04/12 14:37
Client ID: **EB-8-5/3/12**				
Lab ID : BMI12050402-06A pH	6.7	1.7 pH Units	05/04/12 14:47	05/04/12 14:47
Date Sampled 05/03/12 10:38 pH - Temperature	25	1.0 °C	05/04/12 14:47	05/04/12 14:47

Information regarding the estimate of the uncertainty of measurement is available upon client request.

The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.
The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/16/12
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/04/12

Job: 100006114 / JPL Groundwater Monitoring

Total Dissolved Solids (TDS)
SM2540C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-20-5**					
Lab ID : BMI12050402-01A	Solids, Total Dissolved (TDS)	170	10 mg/L	05/08/12	05/08/12
Date Sampled 05/03/12 08:04					
Client ID: **MW-20-4**					
Lab ID : BMI12050402-02A	Solids, Total Dissolved (TDS)	120	10 mg/L	05/08/12	05/08/12
Date Sampled 05/03/12 08:43					
Client ID: **MW-20-3**					
Lab ID : BMI12050402-03A	Solids, Total Dissolved (TDS)	200	10 mg/L	05/08/12	05/08/12
Date Sampled 05/03/12 09:23					
Client ID: **MW-20-2**					
Lab ID : BMI12050402-04A	Solids, Total Dissolved (TDS)	250	10 mg/L	05/08/12	05/08/12
Date Sampled 05/03/12 09:53					
Client ID: **MW-20-1**					
Lab ID : BMI12050402-05A	Solids, Total Dissolved (TDS)	310	10 mg/L	05/08/12	05/08/12
Date Sampled 05/03/12 10:55					
Client ID: **EB-8-5/3/12**					
Lab ID : BMI12050402-06A	Solids, Total Dissolved (TDS)	ND	10 mg/L	05/08/12	05/08/12
Date Sampled 05/03/12 10:38					

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/16/12
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/04/12

Job: 100006114 / JPL Groundwater Monitoring

Special BMI TICs
EPA Method SW8260B

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-20-5**				
Lab ID : BMI12050402-01A				
Date Sampled 05/03/12 08:04				
Acrylonitrile	ND	10 µg/L	05/11/12 18:49	05/11/12 18:49
Allyl chloride	ND	2.0 µg/L	05/11/12 18:49	05/11/12 18:49
Carbon disulfide	ND	2.5 µg/L	05/11/12 18:49	05/11/12 18:49
Chloroacetonitrile	ND	10 µg/L	05/11/12 18:49	05/11/12 18:49
1-Chlorobutane	ND	2.0 µg/L	05/11/12 18:49	05/11/12 18:49
1,1-Dichloropropanone	ND	10 µg/L	05/11/12 18:49	05/11/12 18:49
Diethyl ether	ND	2.0 µg/L	05/11/12 18:49	05/11/12 18:49
Ethyl methacrylate	ND	10 µg/L	05/11/12 18:49	05/11/12 18:49
Hexachloroethane	ND	10 µg/L	05/11/12 18:49	05/11/12 18:49
Methacrylonitrile	ND	10 µg/L	05/11/12 18:49	05/11/12 18:49
Methyl acrylate	ND	10 µg/L	05/11/12 18:49	05/11/12 18:49
Methyl iodide	ND	2.0 µg/L	05/11/12 18:49	05/11/12 18:49
Methyl methacrylate	ND	10 µg/L	05/11/12 18:49	05/11/12 18:49
Nitrobenzene	ND	10 µg/L	05/11/12 18:49	05/11/12 18:49
2-Nitropropane	ND	2.0 µg/L	05/11/12 18:49	05/11/12 18:49
Pentachloroethane	ND	2.0 µg/L	05/11/12 18:49	05/11/12 18:49
Propionitrile	ND	50 µg/L	05/11/12 18:49	05/11/12 18:49
Tetrahydrofuran	ND	10 µg/L	05/11/12 18:49	05/11/12 18:49
trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 18:49	05/11/12 18:49
Client ID: **MW-20-4**				
Lab ID : BMI12050402-02A				
Date Sampled 05/03/12 08:43				
Acrylonitrile	ND	10 µg/L	05/11/12 19:10	05/11/12 19:10
Allyl chloride	ND	2.0 µg/L	05/11/12 19:10	05/11/12 19:10
Carbon disulfide	ND	2.5 µg/L	05/11/12 19:10	05/11/12 19:10
Chloroacetonitrile	ND	10 µg/L	05/11/12 19:10	05/11/12 19:10
1-Chlorobutane	ND	2.0 µg/L	05/11/12 19:10	05/11/12 19:10
1,1-Dichloropropanone	ND	10 µg/L	05/11/12 19:10	05/11/12 19:10
Diethyl ether	ND	2.0 µg/L	05/11/12 19:10	05/11/12 19:10
Ethyl methacrylate	ND	10 µg/L	05/11/12 19:10	05/11/12 19:10
Hexachloroethane	ND	10 µg/L	05/11/12 19:10	05/11/12 19:10
Methacrylonitrile	ND	10 µg/L	05/11/12 19:10	05/11/12 19:10
Methyl acrylate	ND	10 µg/L	05/11/12 19:10	05/11/12 19:10
Methyl iodide	ND	2.0 µg/L	05/11/12 19:10	05/11/12 19:10
Methyl methacrylate	ND	10 µg/L	05/11/12 19:10	05/11/12 19:10
Nitrobenzene	ND	10 µg/L	05/11/12 19:10	05/11/12 19:10
2-Nitropropane	ND	2.0 µg/L	05/11/12 19:10	05/11/12 19:10
Pentachloroethane	ND	2.0 µg/L	05/11/12 19:10	05/11/12 19:10
Propionitrile	ND	50 µg/L	05/11/12 19:10	05/11/12 19:10
Tetrahydrofuran	ND	10 µg/L	05/11/12 19:10	05/11/12 19:10
trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 19:10	05/11/12 19:10

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Client ID: **MW-20-3**					
Lab ID : BMI12050402-03A	Acrylonitrile	ND	10 µg/L	05/11/12 19:32	05/11/12 19:32
Date Sampled 05/03/12 09:23	Allyl chloride	ND	2.0 µg/L	05/11/12 19:32	05/11/12 19:32
	Carbon disulfide	ND	2.5 µg/L	05/11/12 19:32	05/11/12 19:32
	Chloroacetonitrile	ND	10 µg/L	05/11/12 19:32	05/11/12 19:32
	1-Chlorobutane	ND	2.0 µg/L	05/11/12 19:32	05/11/12 19:32
	1,1-Dichloropropanone	ND	10 µg/L	05/11/12 19:32	05/11/12 19:32
	Diethyl ether	ND	2.0 µg/L	05/11/12 19:32	05/11/12 19:32
	Ethyl methacrylate	ND	10 µg/L	05/11/12 19:32	05/11/12 19:32
	Hexachloroethane	ND	10 µg/L	05/11/12 19:32	05/11/12 19:32
	Methacrylonitrile	ND	10 µg/L	05/11/12 19:32	05/11/12 19:32
	Methyl acrylate	ND	10 µg/L	05/11/12 19:32	05/11/12 19:32
	Methyl iodide	ND	2.0 µg/L	05/11/12 19:32	05/11/12 19:32
	Methyl methacrylate	ND	10 µg/L	05/11/12 19:32	05/11/12 19:32
	Nitrobenzene	ND	10 µg/L	05/11/12 19:32	05/11/12 19:32
	2-Nitropropane	ND	2.0 µg/L	05/11/12 19:32	05/11/12 19:32
	Pentachloroethane	ND	2.0 µg/L	05/11/12 19:32	05/11/12 19:32
	Propionitrile	ND	50 µg/L	05/11/12 19:32	05/11/12 19:32
	Tetrahydrofuran	ND	10 µg/L	05/11/12 19:32	05/11/12 19:32
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 19:32	05/11/12 19:32
Client ID: **MW-20-2**					
Lab ID : BMI12050402-04A	Acrylonitrile	ND	10 µg/L	05/11/12 19:54	05/11/12 19:54
Date Sampled 05/03/12 09:53	Allyl chloride	ND	2.0 µg/L	05/11/12 19:54	05/11/12 19:54
	Carbon disulfide	ND	2.5 µg/L	05/11/12 19:54	05/11/12 19:54
	Chloroacetonitrile	ND	10 µg/L	05/11/12 19:54	05/11/12 19:54
	1-Chlorobutane	ND	2.0 µg/L	05/11/12 19:54	05/11/12 19:54
	1,1-Dichloropropanone	ND	10 µg/L	05/11/12 19:54	05/11/12 19:54
	Diethyl ether	ND	2.0 µg/L	05/11/12 19:54	05/11/12 19:54
	Ethyl methacrylate	ND	10 µg/L	05/11/12 19:54	05/11/12 19:54
	Hexachloroethane	ND	10 µg/L	05/11/12 19:54	05/11/12 19:54
	Methacrylonitrile	ND	10 µg/L	05/11/12 19:54	05/11/12 19:54
	Methyl acrylate	ND	10 µg/L	05/11/12 19:54	05/11/12 19:54
	Methyl iodide	ND	2.0 µg/L	05/11/12 19:54	05/11/12 19:54
	Methyl methacrylate	ND	10 µg/L	05/11/12 19:54	05/11/12 19:54
	Nitrobenzene	ND	10 µg/L	05/11/12 19:54	05/11/12 19:54
	2-Nitropropane	ND	2.0 µg/L	05/11/12 19:54	05/11/12 19:54
	Pentachloroethane	ND	2.0 µg/L	05/11/12 19:54	05/11/12 19:54
	Propionitrile	ND	50 µg/L	05/11/12 19:54	05/11/12 19:54
	Tetrahydrofuran	ND	10 µg/L	05/11/12 19:54	05/11/12 19:54
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 19:54	05/11/12 19:54

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Client ID: **MW-20-1**					
Lab ID : BMI12050402-05A	Acrylonitrile	ND	10 µg/L	05/11/12 20:15	05/11/12 20:15
Date Sampled 05/03/12 10:55	Allyl chloride	ND	2.0 µg/L	05/11/12 20:15	05/11/12 20:15
	Carbon disulfide	ND	2.5 µg/L	05/11/12 20:15	05/11/12 20:15
	Chloroacetonitrile	ND	10 µg/L	05/11/12 20:15	05/11/12 20:15
	1-Chlorobutane	ND	2.0 µg/L	05/11/12 20:15	05/11/12 20:15
	1,1-Dichloropropanone	ND	10 µg/L	05/11/12 20:15	05/11/12 20:15
	Diethyl ether	ND	2.0 µg/L	05/11/12 20:15	05/11/12 20:15
	Ethyl methacrylate	ND	10 µg/L	05/11/12 20:15	05/11/12 20:15
	Hexachloroethane	ND	10 µg/L	05/11/12 20:15	05/11/12 20:15
	Methacrylonitrile	ND	10 µg/L	05/11/12 20:15	05/11/12 20:15
	Methyl acrylate	ND	10 µg/L	05/11/12 20:15	05/11/12 20:15
	Methyl iodide	ND	2.0 µg/L	05/11/12 20:15	05/11/12 20:15
	Methyl methacrylate	ND	10 µg/L	05/11/12 20:15	05/11/12 20:15
	Nitrobenzene	ND	10 µg/L	05/11/12 20:15	05/11/12 20:15
	2-Nitropropane	ND	2.0 µg/L	05/11/12 20:15	05/11/12 20:15
	Pentachloroethane	ND	2.0 µg/L	05/11/12 20:15	05/11/12 20:15
	Propionitrile	ND	50 µg/L	05/11/12 20:15	05/11/12 20:15
	Tetrahydrofuran	ND	10 µg/L	05/11/12 20:15	05/11/12 20:15
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 20:15	05/11/12 20:15
Client ID: **EB-8-5/3/12**					
Lab ID : BMI12050402-06A	Acrylonitrile	ND	10 µg/L	05/11/12 20:37	05/11/12 20:37
Date Sampled 05/03/12 10:38	Allyl chloride	ND	2.0 µg/L	05/11/12 20:37	05/11/12 20:37
	Carbon disulfide	ND	2.5 µg/L	05/11/12 20:37	05/11/12 20:37
	Chloroacetonitrile	ND	10 µg/L	05/11/12 20:37	05/11/12 20:37
	1-Chlorobutane	ND	2.0 µg/L	05/11/12 20:37	05/11/12 20:37
	1,1-Dichloropropanone	ND	10 µg/L	05/11/12 20:37	05/11/12 20:37
	Diethyl ether	ND	2.0 µg/L	05/11/12 20:37	05/11/12 20:37
	Ethyl methacrylate	ND	10 µg/L	05/11/12 20:37	05/11/12 20:37
	Hexachloroethane	ND	10 µg/L	05/11/12 20:37	05/11/12 20:37
	Methacrylonitrile	ND	10 µg/L	05/11/12 20:37	05/11/12 20:37
	Methyl acrylate	ND	10 µg/L	05/11/12 20:37	05/11/12 20:37
	Methyl iodide	ND	2.0 µg/L	05/11/12 20:37	05/11/12 20:37
	Methyl methacrylate	ND	10 µg/L	05/11/12 20:37	05/11/12 20:37
	Nitrobenzene	ND	10 µg/L	05/11/12 20:37	05/11/12 20:37
	2-Nitropropane	ND	2.0 µg/L	05/11/12 20:37	05/11/12 20:37
	Pentachloroethane	ND	2.0 µg/L	05/11/12 20:37	05/11/12 20:37
	Propionitrile	ND	50 µg/L	05/11/12 20:37	05/11/12 20:37
	Tetrahydrofuran	ND	10 µg/L	05/11/12 20:37	05/11/12 20:37
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 20:37	05/11/12 20:37

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Client ID: **TB-8-5/3/12**
Lab ID : BMI12050402-07A
Date Sampled 05/03/12 00:00

Acrylonitrile	ND	10 µg/L	05/11/12 20:59	05/11/12 20:59
Allyl chloride	ND	2.0 µg/L	05/11/12 20:59	05/11/12 20:59
Carbon disulfide	ND	2.5 µg/L	05/11/12 20:59	05/11/12 20:59
Chloroacetonitrile	ND	10 µg/L	05/11/12 20:59	05/11/12 20:59
1-Chlorobutane	ND	2.0 µg/L	05/11/12 20:59	05/11/12 20:59
1,1-Dichloropropanone	ND	10 µg/L	05/11/12 20:59	05/11/12 20:59
Diethyl ether	ND	2.0 µg/L	05/11/12 20:59	05/11/12 20:59
Ethyl methacrylate	ND	10 µg/L	05/11/12 20:59	05/11/12 20:59
Hexachloroethane	ND	10 µg/L	05/11/12 20:59	05/11/12 20:59
Methacrylonitrile	ND	10 µg/L	05/11/12 20:59	05/11/12 20:59
Methyl acrylate	ND	10 µg/L	05/11/12 20:59	05/11/12 20:59
Methyl iodide	ND	2.0 µg/L	05/11/12 20:59	05/11/12 20:59
Methyl methacrylate	ND	10 µg/L	05/11/12 20:59	05/11/12 20:59
Nitrobenzene	ND	10 µg/L	05/11/12 20:59	05/11/12 20:59
2-Nitropropane	ND	2.0 µg/L	05/11/12 20:59	05/11/12 20:59
Pentachloroethane	ND	2.0 µg/L	05/11/12 20:59	05/11/12 20:59
Propionitrile	ND	50 µg/L	05/11/12 20:59	05/11/12 20:59
Tetrahydrofuran	ND	10 µg/L	05/11/12 20:59	05/11/12 20:59
trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/11/12 20:59	05/11/12 20:59

Information regarding the estimate of the uncertainty of measurement is available upon client request.

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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5/16/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101
Job: 100006114 / JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Alpha Analytical Number: BMI12050402-01A
Client I.D. Number: MW-20-5

Sampled: 05/03/12 08:04
Received: 05/04/12
Extracted: 05/11/12 18:49
Analyzed: 05/11/12 18:49

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	63	Naphthalene	ND	2.0	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
23	Benzene	ND	0.50	µg/L	67	Surr: Toluene-d8	100	(70-130)	%REC
24	Dibromomethane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC
25	1,2-Dichloropropane	ND	0.50	µg/L					
26	Trichloroethene	ND	0.50	µg/L					
27	Bromodichloromethane	ND	0.50	µg/L					
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L					
29	cis-1,3-Dichloropropene	ND	0.50	µg/L					
30	trans-1,3-Dichloropropene	ND	0.50	µg/L					
31	1,1,2-Trichloroethane	ND	0.50	µg/L					
32	Toluene	ND	0.50	µg/L					
33	1,3-Dichloropropane	ND	0.50	µg/L					
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L					
37	Tetrachloroethene	ND	0.50	µg/L					
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L					
39	Chlorobenzene	ND	0.50	µg/L					
40	Ethylbenzene	ND	0.50	µg/L					
41	m,p-Xylene	ND	0.50	µg/L					
42	Bromoform	ND	0.50	µg/L					
43	Styrene	ND	0.50	µg/L					
44	o-Xylene	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101
Job: 100006114 / JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Alpha Analytical Number: BMI12050402-02A
Client I.D. Number: MW-20-4

Sampled: 05/03/12 08:43
Received: 05/04/12
Extracted: 05/11/12 19:10
Analyzed: 05/11/12 19:10

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	63	Naphthalene	ND	2.0	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
23	Benzene	ND	0.50	µg/L	67	Surr: Toluene-d8	100	(70-130)	%REC
24	Dibromomethane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC
25	1,2-Dichloropropane	ND	0.50	µg/L					
26	Trichloroethene	ND	0.50	µg/L					
27	Bromodichloromethane	ND	0.50	µg/L					
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L					
29	cis-1,3-Dichloropropene	ND	0.50	µg/L					
30	trans-1,3-Dichloropropene	ND	0.50	µg/L					
31	1,1,2-Trichloroethane	ND	0.50	µg/L					
32	Toluene	ND	0.50	µg/L					
33	1,3-Dichloropropane	ND	0.50	µg/L					
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L					
37	Tetrachloroethene	ND	0.50	µg/L					
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L					
39	Chlorobenzene	ND	0.50	µg/L					
40	Ethylbenzene	ND	0.50	µg/L					
41	m,p-Xylene	ND	0.50	µg/L					
42	Bromoform	ND	0.50	µg/L					
43	Styrene	ND	0.50	µg/L					
44	o-Xylene	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.
Information regarding the estimate of the uncertainty of measurement is available upon client request.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101
Job: 100006114 / JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Alpha Analytical Number: BMI12050402-03A
Client I.D. Number: MW-20-3

Sampled: 05/03/12 09:23
Received: 05/04/12
Extracted: 05/11/12 19:32
Analyzed: 05/11/12 19:32

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	63	Naphthalene	ND	2.0	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
23	Benzene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
24	Dibromomethane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC
25	1,2-Dichloropropane	ND	0.50	µg/L					
26	Trichloroethene	ND	0.50	µg/L					
27	Bromodichloromethane	ND	0.50	µg/L					
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L					
29	cis-1,3-Dichloropropene	ND	0.50	µg/L					
30	trans-1,3-Dichloropropene	ND	0.50	µg/L					
31	1,1,2-Trichloroethane	ND	0.50	µg/L					
32	Toluene	ND	0.50	µg/L					
33	1,3-Dichloropropane	ND	0.50	µg/L					
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L					
37	Tetrachloroethene	ND	0.50	µg/L					
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L					
39	Chlorobenzene	ND	0.50	µg/L					
40	Ethylbenzene	ND	0.50	µg/L					
41	m,p-Xylene	ND	0.50	µg/L					
42	Bromoform	ND	0.50	µg/L					
43	Styrene	ND	0.50	µg/L					
44	o-Xylene	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101
Job: 100006114 / JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Alpha Analytical Number: BMI12050402-04A
Client I.D. Number: MW-20-2

Sampled: 05/03/12 09:53
Received: 05/04/12
Extracted: 05/11/12 19:54
Analyzed: 05/11/12 19:54

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	46 1,2,3-Trichloropropane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
11	trans-1,2-Dichlorcethene	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	60 n-Butyloenzene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	2.0	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	63 Naphthalene	ND	2.0	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	2.0	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	2.0	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
23	Benzene	ND	0.50	µg/L	67 Surr: Toluene-d8	102	(70-130)	%REC
24	Dibromomethane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	93	(70-130)	%REC
25	1,2-Dichloropropane	ND	0.50	µg/L				
26	Trichloroethene	0.83	0.50	µg/L				
27	Bromodichloromethane	ND	0.50	µg/L				
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L				
29	cis-1,3-Dichloropropene	ND	0.50	µg/L				
30	trans-1,3-Dichloropropene	ND	0.50	µg/L				
31	1,1,2-Trichloroethane	ND	0.50	µg/L				
32	Toluene	ND	0.50	µg/L				
33	1,3-Dichloropropane	ND	0.50	µg/L				
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L				
37	Tetrachloroethene	ND	0.50	µg/L				
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L				
39	Chlorobenzene	ND	0.50	µg/L				
40	Ethylbenzene	ND	0.50	µg/L				
41	m,p-Xylene	ND	0.50	µg/L				
42	Bromoform	ND	0.50	µg/L				
43	Styrene	ND	0.50	µg/L				
44	o-Xylene	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • Randy Gardner, Laboratory Manager • Walter Hinchman, Quality Assurance Officer

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101
Job: 100006114 / JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Alpha Analytical Number: BMI12050402-05A
Client I.D. Number: MW-20-1

Sampled: 05/03/12 10:55
Received: 05/04/12
Extracted: 05/11/12 20:15
Analyzed: 05/11/12 20:15

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	46 1,2,3-Trichloropropane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	2.0	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	63 Naphthalene	ND	2.0	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	2.0	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	2.0	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
23	Benzene	ND	0.50	µg/L	67 Surr: Toluene-d8	100	(70-130)	%REC
24	Dibromomethane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
25	1,2-Dichloropropane	ND	0.50	µg/L				
26	Trichloroethene	ND	0.50	µg/L				
27	Bromodichloromethane	ND	0.50	µg/L				
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L				
29	cis-1,3-Dichloropropene	ND	0.50	µg/L				
30	trans-1,3-Dichloropropene	ND	0.50	µg/L				
31	1,1,2-Trichloroethane	ND	0.50	µg/L				
32	Toluene	ND	0.50	µg/L				
33	1,3-Dichloropropane	ND	0.50	µg/L				
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L				
37	Tetrachloroethene	ND	0.50	µg/L				
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L				
39	Chlorobenzene	ND	0.50	µg/L				
40	Ethylbenzene	ND	0.50	µg/L				
41	m,p-Xylene	ND	0.50	µg/L				
42	Bromoform	ND	0.50	µg/L				
43	Styrene	ND	0.50	µg/L				
44	o-Xylene	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.
Information regarding the estimate of the uncertainty of measurement is available upon client request.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

5/16/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101
Job: 100006114 / JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Alpha Analytical Number: BMI12050402-06A
Client I.D. Number: EB-8-5/3/12

Sampled: 05/03/12 10:38
Received: 05/04/12
Extracted: 05/11/12 20:37
Analyzed: 05/11/12 20:37

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	46 1,2,3-Trichloropropane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	50 4-Chlorctoluene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	51 2-Chlorctoluene	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
9	Dichlorcmethane	ND	2.0	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
18	2,2-Dich'oropropane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	2.0	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	63 Naphthalene	ND	2.0	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	2.0	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	2.0	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
23	Benzene	ND	0.50	µg/L	67 Surr: Toluene-d8	101	(70-130)	%REC
24	Dibromomethane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
25	1,2-Dichloropropane	ND	0.50	µg/L				
26	Trichloroethene	ND	0.50	µg/L				
27	Bromodichloromethane	ND	0.50	µg/L				
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L				
29	cis-1,3-Dichloropropene	ND	0.50	µg/L				
30	trans-1,3-Dichloropropene	ND	0.50	µg/L				
31	1,1,2-Trichloroethane	ND	0.50	µg/L				
32	Toluene	ND	0.50	µg/L				
33	1,3-Dichloropropane	ND	0.50	µg/L				
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L				
37	Tetrachloroethene	ND	0.50	µg/L				
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L				
39	Chlorobenzene	ND	0.50	µg/L				
40	Ethylbenzene	ND	0.50	µg/L				
41	m,p-Xylene	ND	0.50	µg/L				
42	Bromoform	ND	0.50	µg/L				
43	Styrene	ND	0.50	µg/L				
44	o-Xylene	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/16/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101
Job: 100006114 / JPL Groundwater Monitoring

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Alpha Analytical Number: BMI12050402-07A
Client I.D. Number: TB-8-5/3/12

Sampled: 05/03/12 00:00
Received: 05/04/12
Extracted: 05/11/12 20:59
Analyzed: 05/11/12 20:59

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	63	Naphthalene	ND	2.0	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
23	Benzene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
24	Dibromomethane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	99	(70-130)	%REC
25	1,2-Dichloropropane	ND	0.50	µg/L					
26	Trichloroethene	ND	0.50	µg/L					
27	Bromodichloromethane	ND	0.50	µg/L					
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L					
29	cis-1,3-Dichloropropene	ND	0.50	µg/L					
30	trans-1,3-Dichloropropene	ND	0.50	µg/L					
31	1,1,2-Trichloroethane	ND	0.50	µg/L					
32	Toluene	ND	0.50	µg/L					
33	1,3-Dichloropropane	ND	0.50	µg/L					
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L					
37	Tetrachloroethene	ND	0.50	µg/L					
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L					
39	Chlorobenzene	ND	0.50	µg/L					
40	Ethylbenzene	ND	0.50	µg/L					
41	m,p-Xylene	ND	0.50	µg/L					
42	Bromoform	ND	0.50	µg/L					
43	Styrene	ND	0.50	µg/L					
44	o-Xylene	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • Randy Gardner, Laboratory Manager • Walter Hinchman, Quality Assurance Officer

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

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5/16/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *15-May-12*

QC Summary Report

Work Order: 12050402

Method Blank

Type **MBLK** Test Code: **EPA Method 300.0**

File ID: **25** Batch ID: **28673K** Analysis Date: **05/04/2012 13:39**

Sample ID: **MB-28673** Units : **mg/L** Run ID: **IC_1_120504B** Prep Date: **05/04/2012 12:42**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0**

File ID: **26** Batch ID: **28673K** Analysis Date: **05/04/2012 13:57**

Sample ID: **LFB-28673** Units : **mg/L** Run ID: **IC_1_120504B** Prep Date: **05/04/2012 12:42**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	53.6	0.5	50		107	90	110			
Nitrite (NO2) - N	5.31	0.25	5		106	90	110			
Nitrate (NO3) - N	5.23	0.25	5		105	90	110			
Phosphate, ortho - P	5.09	0.5	5		102	90	110			
Sulfate (SO4)	104	0.5	100		104	90	110			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0**

File ID: **33** Batch ID: **28673K** Analysis Date: **05/04/2012 16:07**

Sample ID: **12050402-04ALFM** Units : **mg/L** Run ID: **IC_1_120504B** Prep Date: **05/04/2012 12:42**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	314	1.3	250	56.54	103	90	110			
Nitrite (NO2) - N	26	0.63	25	0	104	90	110			
Nitrate (NO3) - N	31.9	0.63	25	7.714	97	90	110			
Phosphate, ortho - P	27.9	1.3	25	0	112	90	110			M1
Sulfate (SO4)	581	1.3	500	83.34	99.6	90	110			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0**

File ID: **34** Batch ID: **28673K** Analysis Date: **05/04/2012 16:25**

Sample ID: **12050402-04ALFMD** Units : **mg/L** Run ID: **IC_1_120504B** Prep Date: **05/04/2012 12:42**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	316	1.3	250	56.54	104	90	110	313.6	0.7(15)	
Nitrite (NO2) - N	26.7	0.63	25	0	107	90	110	25.99	2.8(15)	
Nitrate (NO3) - N	32.4	0.63	25	7.714	99	90	110	31.94	1.3(15)	
Phosphate, ortho - P	28	1.3	25	0	112	90	110	27.88	0.5(15)	M1
Sulfate (SO4)	584	1.3	500	83.34	100	90	110	581.1	0.4(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *15-May-12*

QC Summary Report

Work Order: 12050402

Method Blank

Type **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **28713K** Analysis Date: **05/10/2012 16:47**

Sample ID: **MB-28713** Units : **µg/L** Run ID: **IC_3_120510A** Prep Date: **05/10/2012 15:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **28713K** Analysis Date: **05/10/2012 17:05**

Sample ID: **LFB-28713** Units : **µg/L** Run ID: **IC_3_120510A** Prep Date: **05/10/2012 15:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.5	2	25		102	85	115			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 314.0**

File ID: **20** Batch ID: **28713K** Analysis Date: **05/10/2012 18:38**

Sample ID: **12050301-03ALFM** Units : **µg/L** Run ID: **IC_3_120510A** Prep Date: **05/10/2012 15:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.1	2	25	0	101	85	115			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 314.0**

File ID: **21** Batch ID: **28713K** Analysis Date: **05/10/2012 18:56**

Sample ID: **12050301-03ALFMD** Units : **µg/L** Run ID: **IC_3_120510A** Prep Date: **05/10/2012 15:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	26.2	2	25	0	105	85	115	25.14	4.3(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *16-May-12*

QC Summary Report

Work Order: 12050402

Laboratory Control Spike Type: **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0504AL** Analysis Date: **05/04/2012 12:55**

Sample ID: **LCS-W0504AL** Units : **mg/L** Run ID: **WETLAB_120504E** Prep Date: **05/04/2012 12:55**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	265.2	10	250		106	80	120			
Alkalinity, Carbonate (As CaCO3)	265.2	10	250		106	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	265	10	250		106	80	120			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *15-May-12*

QC Summary Report

Work Order: 12050402

Method Blank

Type **MBLK** Test Code: **EPA Method 200.8**

File ID: **051012.B\055_M.D** Batch ID: **28704K** Analysis Date: **05/10/2012 16:25**

Sample ID: **MB-28704** Units : **mg/L** Run ID: **ICP/MS_120510B** Prep Date: **05/09/2012 16:37**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type **LCS** Test Code: **EPA Method 200.8**

File ID: **051012.B\056_M.D** Batch ID: **28704K** Analysis Date: **05/10/2012 16:31**

Sample ID: **LCS-28704** Units : **mg/L** Run ID: **ICP/MS_120510B** Prep Date: **05/09/2012 16:37**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	5.55	0.5	5		111	80	120			
Magnesium (Mg)	5.36	0.5	5		107	80	120			
Potassium (K)	5.31	0.5	5		106	80	120			
Calcium (Ca)	5.44	0.5	5		109	80	120			
Chromium (Cr)	0.0508	0.005	0.05		102	80	120			
Iron (Fe)	5.42	0.3	5		108	80	120			
Arsenic (As)	0.0504	0.002	0.05		101	80	120			
Lead (Pb)	0.0511	0.005	0.05		102	80	120			

Sample Matrix Spike

Type **MS** Test Code: **EPA Method 200.8**

File ID: **051012.B\061_M.D** Batch ID: **28704K** Analysis Date: **05/10/2012 17:04**

Sample ID: **12050402-04AMS** Units : **mg/L** Run ID: **ICP/MS_120510B** Prep Date: **05/09/2012 16:37**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	25.9	0.5	5	20.73	103	80	120			
Magnesium (Mg)	35.1	0.5	5	29.85	105	80	120			
Potassium (K)	7.86	0.5	5	2.871	99.8	80	120			
Calcium (Ca)	80.2	0.5	5	75.83	87	80	120			
Chromium (Cr)	0.0545	0.005	0.05	0	109	80	120			
Iron (Fe)	6.55	0.3	5	1.171	108	80	120			
Arsenic (As)	0.0544	0.002	0.05	0	109	80	120			
Lead (Pb)	0.051	0.005	0.05	0	102	80	120			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method 200.8**

File ID: **051012.B\062_M.D** Batch ID: **28704K** Analysis Date: **05/10/2012 17:10**

Sample ID: **12050402-04AMSD** Units : **mg/L** Run ID: **ICP/MS_120510B** Prep Date: **05/09/2012 16:37**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	25.8	0.5	5	20.73	101	80	120	25.87	0.3(20)	
Magnesium (Mg)	35.3	0.5	5	29.85	108	80	120	35.1	0.5(20)	
Potassium (K)	7.95	0.5	5	2.871	102	80	120	7.863	1.2(20)	
Calcium (Ca)	80.4	0.5	5	75.83	92	80	120	80.19	0.3(20)	
Chromium (Cr)	0.0536	0.005	0.05	0	107	80	120	0.0545	1.7(20)	
Iron (Fe)	6.55	0.3	5	1.171	108	80	120	6.553	0.0(20)	
Arsenic (As)	0.0535	0.002	0.05	0	107	80	120	0.05444	1.7(20)	
Lead (Pb)	0.0514	0.005	0.05	0	103	80	120	0.05099	0.8(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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QC Summary Report

Work Order: 12050402

Laboratory Control Spike Type **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0504PH** Analysis Date: **05/04/2012 14:27**

Sample ID: **LCS-W0504PH** Units : **pH Units** Run ID: **WETLAB_120504F** Prep Date: **05/04/2012 14:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5.06	1.7	5		101	90	110			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *15-May-12*

QC Summary Report

Work Order: 12050402

Method Blank

Type **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0507DS** Analysis Date: **05/08/2012 00:00**

Sample ID: **MBLK-W0507DS** Units : **mg/L** Run ID: **WETLAB_120507G** Prep Date: **05/08/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0507DS** Analysis Date: **05/08/2012 00:00**

Sample ID: **LCS-W0507DS** Units : **mg/L** Run ID: **WETLAB_120507G** Prep Date: **05/08/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	88	10	100		88	70	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *16-May-12*

QC Summary Report

Work Order: 12050402

Method Blank Type: **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12051106.D** Batch ID: **MS15W0511M** Analysis Date: **05/11/2012 12:18**

Sample ID: **MBLK MS15W0511M** Units : **µg/L** Run ID: **MSD_15_120511B** Prep Date: **05/11/2012 12:18**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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QC Summary Report

Work Order: 12050402

Surr: 1,2-Dichloroethane-d4	10.4	10	104	70	130
Surr: Toluene-d8	10.2	10	102	70	130
Surr: 4-Bromofluorobenzene	9.17	10	92	70	130

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Date: 21-May-12

QC Summary Report

Work Order: 12050301

Laboratory Control Spike Type **LCS** Test Code: **EPA Method SW8260B**

File ID: **12051104.D** Batch ID: **MS15W0511M** Analysis Date: **05/11/2012 11:21**

Sample ID: **LCS MS15W0511M** Units : **µg/L** Run ID: **MSD_15_120511B** Prep Date: **05/11/2012 11:21**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	8.16	1	10		82	70	130			
Chloromethane	8.1	2	10		81	70	130			
Vinyl chloride	9.92	1	10		99	70	130			
Chloroethane	8.81	1	10		88	70	130			
Bromomethane	8.99	2	10		90	70	130			
Trichlorofluoromethane	9.24	1	10		92	70	130			
Acetone	280	10	200		140	36	171			
1,1-Dichloroethene	9.76	1	10		98	70	130			
Dichloromethane	8.67	2	10		87	70	130			
Freon-113	10.3	1	10		103	70	137			
trans-1,2-Dichloroethene	9.79	1	10		98	70	130			
Methyl tert-butyl ether (MTBE)	8.74	0.5	10		87	70	130			
1,1-Dichloroethane	9.64	1	10		96	70	130			
2-Butanone (MEK)	243	10	200		121	70	130			
cis-1,2-Dichloroethene	9.88	1	10		99	70	130			
Bromochloromethane	9.93	1	10		99	70	130			
Chloroform	8.86	1	10		89	70	130			
2,2-Dichloropropane	9.42	1	10		94	70	130			
1,2-Dichloroethane	9.56	1	10		96	70	130			
1,1,1-Trichloroethane	10.1	1	10		101	70	130			
1,1-Dichloropropene	10.5	1	10		105	70	130			
Carbon tetrachloride	9.07	1	10		91	70	130			
Benzene	9.62	0.5	10		96	70	130			
Dibromomethane	9.55	1	10		96	70	130			
1,2-Dichloropropane	9	1	10		90	70	130			
Trichloroethene	9.9	1	10		99	70	130			
Bromodichloromethane	8.75	1	10		88	70	130			
4-Methyl-2-pentanone (MIBK)	23.2	2.5	25		93	20	182			
cis-1,3-Dichloropropene	8.92	1	10		89	70	130			
trans-1,3-Dichloropropene	8.68	1	10		87	70	130			
1,1,2-Trichloroethane	9.62	1	10		96	70	130			
Toluene	9.44	0.5	10		94	70	130			
1,3-Dichloropropane	9.65	1	10		97	70	130			
2-Hexanone	115	5	100		115	20	182			
Dibromochloromethane	8.59	1	10		86	70	130			
1,2-Dibromoethane (EDB)	18.6	2	20		93	70	130			
Tetrachloroethene	10.1	1	10		101	70	130			
1,1,1,2-Tetrachloroethane	10.4	1	10		104	70	130			
Chlorobenzene	9.89	1	10		99	70	130			
Ethylbenzene	9.67	0.5	10		97	70	130			
m,p-Xylene	9.5	0.5	10		95	70	130			
Bromoform	8.25	1	10		83	70	130			
Styrene	8.51	1	10		85	70	130			
o-Xylene	9.37	0.5	10		94	70	130			
1,1,2,2-Tetrachloroethane	9.38	1	10		94	70	130			
1,2,3-Trichloropropane	19.5	2	20		97	70	130			
Isopropylbenzene	9.7	1	10		97	70	130			
Bromobenzene	9.88	1	10		99	70	130			
n-Propylbenzene	10.1	1	10		101	70	130			
4-Chlorotoluene	9.81	1	10		98	70	130			
2-Chlorotoluene	9.84	1	10		98	70	130			
1,3,5-Trimethylbenzene	10.1	1	10		101	70	130			
tert-Butylbenzene	9.84	1	10		98	70	130			
1,2,4-Trimethylbenzene	10.1	1	10		101	70	130			
sec-Butylbenzene	10	1	10		100	70	130			
1,3-Dichlorobenzene	9.21	1	10		92	70	130			
1,4-Dichlorobenzene	9.73	1	10		97	70	130			
4-Isopropyltoluene	10.2	1	10		102	70	130			
1,2-Dichlorobenzene	9.26	1	10		93	70	130			
n-Butylbenzene	10	1	10		100	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	47.1	3	50		94	67	130			
1,2,4-Trichlorobenzene	9.04	2	10		90	70	130			
Naphthalene	7.72	2	10		77	70	130			
Hexachlorobutadiene	19.7	2	20		98	70	130			
1,2,3-Trichlorobenzene	7.65	2	10		77	70	130			

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QC Summary Report

Work Order: 12050301

Surr: 1,2-Dichloroethane-d4	10	10	100	70	130
Surr: Toluene-d8	9.98	10	99.8	70	130
Surr: 4-Bromofluorobenzene	9.55	10	96	70	130

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Date: *16-May-12*

QC Summary Report

Work Order: 12050402

Sample Matrix Spike Type: **MS** Test Code: **EPA Method SW8260B**

File ID: **12051112.D** Batch ID: **MS15W0511M** Analysis Date: **05/11/2012 14:28**

Sample ID: **12050301-03AMS** Units : **µg/L** Run ID: **MSD_15_120511B** Prep Date: **05/11/2012 14:28**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	52.8	2.5	50	0	106	21	138			
Chloromethane	41.9	10	50	0	84	23	144			
Vinyl chloride	52.8	2.5	50	0	106	49	136			
Chloroethane	44.1	2.5	50	0	88	21	159			
Bromomethane	32.3	10	50	0	65	10	174			
Trichlorofluoromethane	47.3	2.5	50	0	95	32	154			
Acetone	556	50	1000	0	56	10	171			
1,1-Dichloroethene	47.8	2.5	50	0	96	64	130			
Dichloromethane	42.3	10	50	0	85	69	130			
Freon-113	51.9	2.5	50	0	104	55	141			
trans-1,2-Dichloroethene	48	2.5	50	0	96	63	130			
Methyl tert-butyl ether (MTBE)	45.2	1.3	50	0	90	47	150			
1,1-Dichloroethane	47	2.5	50	0	94	66	130			
2-Butanone (MEK)	698	50	1000	0	70	23	182			
cis-1,2-Dichloroethene	47	2.5	50	0	94	70	130			
Bromochloromethane	48.1	2.5	50	0	96	70	132			
Chloroform	42.9	2.5	50	0	86	70	130			
2,2-Dichloropropane	46.2	2.5	50	0	92	38	154			
1,2-Dichloroethane	47.1	2.5	50	0	94	65	134			
1,1,1-Trichloroethane	48.9	2.5	50	0	98	65	136			
1,1-Dichloropropene	51.3	2.5	50	0	103	68	132			
Carbon tetrachloride	43.5	2.5	50	0	87	58	148			
Benzene	47	1.3	50	0	94	59	138			
Dibromomethane	46.6	2.5	50	0	93	70	130			
1,2-Dichloropropane	44.4	2.5	50	0	89	70	131			
Trichloroethene	47.7	2.5	50	0	95	65	144			
Bromodichloromethane	41.6	2.5	50	0	83	50	157			
4-Methyl-2-pentanone (MIBK)	107	13	125	0	86	20	182			
cis-1,3-Dichloropropene	42	2.5	50	0	84	63	131			
trans-1,3-Dichloropropene	42.3	2.5	50	0	85	65	136			
1,1,2-Trichloroethane	48.2	2.5	50	0	96	70	131			
Toluene	45.1	1.3	50	0	90	68	130			
1,3-Dichloropropane	47.9	2.5	50	0	96	70	130			
2-Hexanone	338	25	500	0	68	20	182			
Dibromochloromethane	40.1	2.5	50	0	80	42	155			
1,2-Dibromoethane (EDB)	92.2	5	100	0	92	70	130			
Tetrachloroethene	48.7	2.5	50	0	97	65	130			
1,1,1,2-Tetrachloroethane	49.5	2.5	50	0	99	70	130			
Chlorobenzene	47.7	2.5	50	0	95	70	130			
Ethylbenzene	46.4	1.3	50	0	93	68	130			
m,p-Xylene	45.9	1.3	50	0	92	68	131			
Bromoform	38.4	2.5	50	0	77	65	143			
Styrene	41.2	2.5	50	0	82	59	153			
o-Xylene	45.4	1.3	50	0	91	70	130			
1,1,2,2-Tetrachloroethane	47.9	2.5	50	0	96	67	130			
1,2,3-Trichloropropane	99	10	100	0	99	70	130			
Isopropylbenzene	47	2.5	50	0	94	55	138			
Bromobenzene	48.2	2.5	50	0	96	70	130			
n-Propylbenzene	49	2.5	50	0	98	67	133			
4-Chlorotoluene	48	2.5	50	0	96	70	130			
2-Chlorotoluene	47.4	2.5	50	0	95	70	130			
1,3,5-Trimethylbenzene	48.5	2.5	50	0	97	67	134			
tert-Butylbenzene	47.9	2.5	50	0	96	55	147			
1,2,4-Trimethylbenzene	48.2	2.5	50	0	96	65	135			
sec-Butylbenzene	48.8	2.5	50	0	98	68	135			
1,3-Dichlorobenzene	45.1	2.5	50	0	90	70	130			
1,4-Dichlorobenzene	47.3	2.5	50	0	95	70	130			
4-Isopropyltoluene	49.4	2.5	50	0	99	68	132			
1,2-Dichlorobenzene	45.5	2.5	50	0	91	70	130			
n-Butylbenzene	48.4	2.5	50	0	97	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	231	15	250	0	93	64	130			
1,2,4-Trichlorobenzene	45	10	50	0	90	62	133			
Naphthalene	41.9	10	50	0	84	32	166			
Hexachlorobutadiene	94.2	10	100	0	94	63	130			
1,2,3-Trichlorobenzene	38.3	10	50	0	77	55	138			

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Date: *16-May-12*

QC Summary Report

Work Order: 12050402

Surr: 1,2-Dichloroethane-d4	51	50	102	70	130
Surr: Toluene-d8	49.5	50	99	70	130
Surr: 4-Bromofluorobenzene	48.3	50	97	70	130

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Date: 16-May-12

QC Summary Report

Work Order: 12050402

Sample Matrix Spike Duplicate Type: **MSD** Test Code: **EPA Method SW8260B**

File ID: **12051113.D** Batch ID: **MS15W0511M** Analysis Date: **05/11/2012 14:50**

Sample ID: **12050301-03AMSD** Units : **µg/L** Run ID: **MSD_15_120511B** Prep Date: **05/11/2012 14:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	57	2.5	50	0	114	21	138	52.75	7.8(33)	
Chloromethane	50.2	10	50	0	100	23	144	41.94	17.8(27)	
Vinyl chloride	58.5	2.5	50	0	117	49	136	52.84	10.1(21)	
Chloroethane	48	2.5	50	0	96	21	159	44.11	8.5(40)	
Bromomethane	40.2	10	50	0	80	10	174	32.32	21.8(40)	
Trichlorofluoromethane	52.7	2.5	50	0	105	32	154	47.34	10.8(37)	
Acetone	613	50	1000	0	61	10	171	555.8	9.7(23)	
1,1-Dichloroethene	52.2	2.5	50	0	104	64	130	47.81	8.8(21)	
Dichloromethane	46.2	10	50	0	92	69	130	42.32	8.8(20)	
Freon-113	56	2.5	50	0	112	55	141	51.89	7.6(40)	
trans-1,2-Dichloroethene	52.5	2.5	50	0	105	63	130	48.03	8.8(20)	
Methyl tert-butyl ether (MTBE)	50	1.3	50	0	100	47	150	45.19	10.1(40)	
1,1-Dichloroethane	50.9	2.5	50	0	102	66	130	46.95	8.1(20)	
2-Butanone (MEK)	764	50	1000	0	76	23	182	698	9.0(22)	
cis-1,2-Dichloroethene	52.3	2.5	50	0	105	70	130	46.96	10.8(20)	
Bromochloromethane	53.7	2.5	50	0	107	70	132	48.06	11.1(20)	
Chloroform	45.9	2.5	50	0	92	70	130	42.86	6.8(20)	
2,2-Dichloropropane	51.1	2.5	50	0	102	38	154	46.22	10.0(22)	
1,2-Dichloroethane	51.9	2.5	50	0	104	65	134	47.06	9.8(20)	
1,1,1-Trichloroethane	53.3	2.5	50	0	107	65	136	48.88	8.6(20)	
1,1-Dichloropropene	55.5	2.5	50	0	111	68	132	51.28	7.8(20)	
Carbon tetrachloride	48.9	2.5	50	0	98	58	148	43.5	11.7(20)	
Benzene	50.5	1.3	50	0	101	59	138	47	7.1(21)	
Dibromomethane	51.4	2.5	50	0	103	70	130	46.64	9.8(20)	
1,2-Dichloropropane	47.7	2.5	50	0	95	70	131	44.37	7.2(20)	
Trichloroethene	51.5	2.5	50	0	103	65	144	47.65	7.8(20)	
Bromodichloromethane	46.2	2.5	50	0	92	50	157	41.55	10.5(20)	
4-Methyl-2-pentanone (MIBK)	116	13	125	0	93	20	182	107	8.4(20)	
cis-1,3-Dichloropropene	46.5	2.5	50	0	93	63	131	42.03	10.0(20)	
trans-1,3-Dichloropropene	46.6	2.5	50	0	93	65	136	42.3	9.7(20)	
1,1,2-Trichloroethane	51.9	2.5	50	0	104	70	131	48.15	7.6(20)	
Toluene	49.6	1.3	50	0	99	68	130	45.07	9.6(20)	
1,3-Dichloropropane	52.8	2.5	50	0	106	70	130	47.86	9.8(20)	
2-Hexanone	374	25	500	0	75	20	182	337.9	10.2(20)	
Dibromochloromethane	45.9	2.5	50	0	92	42	155	40.1	13.6(20)	
1,2-Dibromoethane (EDB)	103	5	100	0	103	70	130	92.18	10.8(20)	
Tetrachloroethene	53.3	2.5	50	0	107	65	130	48.7	9.1(20)	
1,1,1,2-Tetrachloroethane	54.4	2.5	50	0	109	70	130	49.49	9.5(20)	
Chlorobenzene	51.4	2.5	50	0	103	70	130	47.7	7.5(20)	
Ethylbenzene	50.5	1.3	50	0	101	68	130	46.35	8.7(20)	
m,p-Xylene	49.4	1.3	50	0	99	68	131	45.87	7.5(20)	
Bromoform	44.1	2.5	50	0	88	65	143	38.43	13.8(20)	
Styrene	45.1	2.5	50	0	90	59	153	41.24	8.9(37)	
o-Xylene	49.3	1.3	50	0	99	70	130	45.44	8.1(20)	
1,1,2,2-Tetrachloroethane	52.4	2.5	50	0	105	67	130	47.91	8.9(20)	
1,2,3-Trichloropropane	108	10	100	0	108	70	130	99.02	8.2(20)	
Isopropylbenzene	51.2	2.5	50	0	102	55	138	46.98	8.5(20)	
Bromobenzene	52.6	2.5	50	0	105	70	130	48.22	8.7(20)	
n-Propylbenzene	53.3	2.5	50	0	107	67	133	49.03	8.3(30)	
4-Chlorotoluene	52.5	2.5	50	0	105	70	130	47.96	9.0(20)	
2-Chlorotoluene	51.8	2.5	50	0	104	70	130	47.4	8.8(20)	
1,3,5-Trimethylbenzene	52.6	2.5	50	0	105	67	134	48.51	8.0(21)	
tert-Butylbenzene	51.6	2.5	50	0	103	55	147	47.85	7.5(20)	
1,2,4-Trimethylbenzene	52.4	2.5	50	0	105	65	135	48.24	8.2(25)	
sec-Butylbenzene	52.7	2.5	50	0	105	68	135	48.84	7.6(20)	
1,3-Dichlorobenzene	49.2	2.5	50	0	98	70	130	45.1	8.7(20)	
1,4-Dichlorobenzene	51.7	2.5	50	0	103	70	130	47.32	8.9(20)	
4-Isopropyltoluene	53.3	2.5	50	0	107	68	132	49.37	7.7(20)	
1,2-Dichlorobenzene	49.4	2.5	50	0	99	70	130	45.45	8.4(20)	
n-Butylbenzene	52.9	2.5	50	0	106	62	134	48.4	8.8(21)	
1,2-Dibromo-3-chloropropane (DBCP)	262	15	250	0	105	64	130	231.4	12.5(20)	
1,2,4-Trichlorobenzene	50.4	10	50	0	101	62	133	44.96	11.4(29)	
Naphthalene	45.1	10	50	0	90	32	166	41.92	7.3(40)	
Hexachlorobutadiene	104	10	100	0	104	63	130	94.15	10.3(21)	
1,2,3-Trichlorobenzene	43.4	10	50	0	87	55	138	38.28	12.6(36)	

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *16-May-12*

QC Summary Report

Work Order: 12050402

Surr: 1,2-Dichloroethane-d4	55.3	50	111	70	130
Surr: Toluene-d8	50.2	50	100	70	130
Surr: 4-Bromofluorobenzene	48.7	50	97	70	130

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

CA

WorkOrder : BMIS12050402

Report Due By : 5:00 PM On : 17-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : Mario Mendoza

PO : 286215

Client's COC # : 53770 Job : 100006114 / JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
1 °C	04-May-12	04-May-12

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12050402-01A	MW-20-5	AQ	05/03/12 08:04	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050402-02A	MW-20-4	AQ	05/03/12 08:43	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050402-03A	MW-20-3	AQ	05/03/12 09:23	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050402-04A	MW-20-2	AQ	05/03/12 09:53	10	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	MS/MSD
BMI12050402-05A	MW-20-1	AQ	05/03/12 10:55	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050402-06A	EB-8-5/3/12	AQ	05/03/12 10:38	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050402-07A	TB-8-5/3/12	AQ	05/03/12 00:00	1	0	9							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 4/2/12

Comments: Security seals intact. Frozen Ice. Temp. Blank #2702 received @ 1°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Coffee	Sara Coffee	Alpha Analytical, Inc.	5/4/12 10:02

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

53770

Billing Information:
Company Name BATTELLE
Attn: GERALD TOMPKINS
Address 505 KING AVE
City, State, Zip COLUMBUS, OH 43201
Phone Number _____ Fax _____

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ___ CA ✓ NV ___ WA ___ DOD Site ___
ID ___ OR ___ OTHER ___ Page # 1 of 1

Consultant / Client Name: BATTELLE/DAVID CONNER
Address: 3990 OLD TOWN AVE, C-205
City, State, Zip: SAN DIEGO, CA 92110
P.O.# ~~286479~~ 286215
Job # 100006114/~~P.O.#~~ 286479
Job Name: JPL GW MON. 2012
Report Attention / Project Manager
Name: DAVID CONNER
Email: connerd@battelle.org
Phone: _____ Mobile: (619) 726-7311

Analyses Required

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	# Containers**	(624.2) VOCs	(200.8) *	(314.0) Perchlorate	(SM2320B, SM2540C, 150.2) *	(300.0) *			REMARKS
804	5/3/12	AQ	BMI1205402-01A	MW-20-5	Nonm	n/a	3v, 2p								
843			-02A	MW-20-4			3v, 2p								
923			-03A	MW-20-3			3v, 2p								
953			-04A	MW-20-2			6v, 4p	X	X	X	X	X			MS/MSD
1055			-05A	MW-20-1			3v, 2p								
1038			-06A	EB- 8-5/3/12			3v, 2p	X	X	X	X	X			EQUIP BLANK
—		AQ	-07A	TB- 8-5/3/12			4v	X							TRIP BLANK

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: *(200.8) - TOTAL Cr, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320B, SM2540C, 150.2) - CO_3, HCO_3, TDS, PH, ALK. *(300.0) - CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: MARCO MENDOZA

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date	Time
	/Alpha Analyst	5.3.12	1245
/Alpha Analyst		5/4/12	9:53

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *18-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Work Order: BMI12050803 **Cooler Temp:** 0 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12050803-01A	MW-21-5	Aqueous
12050803-02A	MW-21-4	Aqueous
12050803-03A	MW-21-3	Aqueous
12050803-04A	MW-21-2	Aqueous
12050803-05A	MW-21-1	Aqueous
12050803-06A	EB-9-5/7/12	Aqueous
12050803-07A	TB-9-5/7/12	Aqueous
12050803-08A	SB-1-5/7/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/08/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-21-5**					
Lab ID : BMI12050803-01A	Chloride	79	50 mg/L	05/08/12 10:44	05/08/12 12:22
Date Sampled 05/07/12 07:55	Nitrite (NO2) - N	ND	0.25 mg/L	05/08/12 10:44	05/08/12 12:22
	Nitrate (NO3) - N	7.1	0.25 mg/L	05/08/12 10:44	05/08/12 12:22
	Phosphate, ortho - P	ND	0.50 mg/L	05/08/12 10:44	05/08/12 12:22
	Sulfate (SO4)	150	0.50 mg/L	05/08/12 10:44	05/08/12 12:22
Client ID: **MW-21-4**					
Lab ID : BMI12050803-02A	Chloride	78	50 mg/L	05/08/12 10:44	05/08/12 12:40
Date Sampled 05/07/12 08:35	Nitrite (NO2) - N	ND	0.25 mg/L	05/08/12 10:44	05/08/12 12:40
	Nitrate (NO3) - N	5.2	0.25 mg/L	05/08/12 10:44	05/08/12 12:40
	Phosphate, ortho - P	ND	0.50 mg/L	05/08/12 10:44	05/08/12 12:40
	Sulfate (SO4)	140	0.50 mg/L	05/08/12 10:44	05/08/12 12:40
Client ID: **MW-21-3**					
Lab ID : BMI12050803-03A	Chloride	100	50 mg/L	05/08/12 10:44	05/08/12 13:36
Date Sampled 05/07/12 09:38	Nitrite (NO2) - N	ND	0.25 mg/L	05/08/12 10:44	05/08/12 13:36
	Nitrate (NO3) - N	9.7	0.25 mg/L	05/08/12 10:44	05/08/12 13:36
	Phosphate, ortho - P	ND	0.50 mg/L	05/08/12 10:44	05/08/12 13:36
	Sulfate (SO4)	170	75 mg/L	05/08/12 10:44	05/08/12 13:36
Client ID: **MW-21-2**					
Lab ID : BMI12050803-04A	Chloride	120	0.50 mg/L	05/08/12 10:44	05/08/12 13:54
Date Sampled 05/07/12 10:17	Nitrite (NO2) - N	ND	0.25 mg/L	05/08/12 10:44	05/08/12 13:54
	Nitrate (NO3) - N	9.8	0.25 mg/L	05/08/12 10:44	05/08/12 13:54
	Phosphate, ortho - P	ND	0.50 mg/L	05/08/12 10:44	05/08/12 13:54
	Sulfate (SO4)	180	75 mg/L	05/08/12 10:44	05/08/12 13:54
Client ID: **MW-21-1**					
Lab ID : BMI12050803-05A	Chloride	130	50 mg/L	05/08/12 10:44	05/08/12 14:13
Date Sampled 05/07/12 10:50	Nitrite (NO2) - N	0.37	0.25 mg/L	05/08/12 10:44	05/08/12 14:13
	Nitrate (NO3) - N	14	0.25 mg/L	05/08/12 10:44	05/08/12 14:13
	Phosphate, ortho - P	ND	0.50 mg/L	05/08/12 10:44	05/08/12 14:13
	Sulfate (SO4)	220	75 mg/L	05/08/12 10:44	05/08/12 14:13
Client ID: **EB-9-5/7/12**					
Lab ID : BMI12050803-06A	Chloride	ND	0.50 mg/L	05/08/12 10:44	05/08/12 14:31
Date Sampled 05/07/12 10:38	Nitrite (NO2) - N	ND	0.25 mg/L	05/08/12 10:44	05/08/12 14:31
	Nitrate (NO3) - N	ND	0.25 mg/L	05/08/12 10:44	05/08/12 14:31
	Phosphate, ortho - P	ND	0.50 mg/L	05/08/12 10:44	05/08/12 14:31
	Sulfate (SO4)	ND	0.50 mg/L	05/08/12 10:44	05/08/12 14:31

Alpha Analytical, Inc.

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Client ID: **SB-1-5/7/12**

Lab ID : BMI12050803-08A	Chloride	ND	0.50 mg/L	05/08/12 10:44	05/08/12 14:50
Date Sampled 05/07/12 09:10	Nitrite (NO2) - N	ND	0.25 mg/L	05/08/12 10:44	05/08/12 14:50
	Nitrate (NO3) - N	ND	0.25 mg/L	05/08/12 10:44	05/08/12 14:50
	Phosphate, ortho - P	ND	0.50 mg/L	05/08/12 10:44	05/08/12 14:50
	Sulfate (SO4)	ND	0.50 mg/L	05/08/12 10:44	05/08/12 14:50

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/18/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/08/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-21-5**				
Lab ID : BMI12050803-01A Perchlorate	2.62	1.00 µg/L	05/10/12 15:50	05/10/12 22:37
Date Sampled 05/07/12 07:55				
Client ID: **MW-21-4**				
Lab ID : BMI12050803-02A Perchlorate	2.40	1.00 µg/L	05/10/12 15:50	05/10/12 22:55
Date Sampled 05/07/12 08:35				
Client ID: **MW-21-3**				
Lab ID : BMI12050803-03A Perchlorate	3.49	1.00 µg/L	05/10/12 15:50	05/10/12 23:14
Date Sampled 05/07/12 09:38				
Client ID: **MW-21-2**				
Lab ID : BMI12050803-04A Perchlorate	2.75	1.00 µg/L	05/10/12 15:50	05/10/12 23:32
Date Sampled 05/07/12 10:17				
Client ID: **MW-21-1**				
Lab ID : BMI12050803-05A Perchlorate	2.79	1.00 µg/L	05/10/12 15:50	05/10/12 23:50
Date Sampled 05/07/12 10:50				
Client ID: **EB-9-5/7/12**				
Lab ID : BMI12050803-06A Perchlorate	ND	1.00 µg/L	05/10/12 15:50	05/11/12 00:09
Date Sampled 05/07/12 10:38				
Client ID: **SB-1-5/7/12**				
Lab ID : BMI12050803-08A Perchlorate	ND	1.00 µg/L	05/10/12 15:50	05/11/12 00:27
Date Sampled 05/07/12 09:10				

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ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/18/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/08/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-21-5**					
Lab ID : BMI12050803-01A	Alkalinity, Bicarbonate (As CaCO3)	210	10 mg/L	05/10/12 12:33	05/10/12 12:33
Date Sampled 05/07/12 07:55	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 12:33	05/10/12 12:33
	Alkalinity, Total (As CaCO3 at pH 4.5)	210	10 mg/L	05/10/12 12:33	05/10/12 12:33
Client ID: **MW-21-4**					
Lab ID : BMI12050803-02A	Alkalinity, Bicarbonate (As CaCO3)	170	10 mg/L	05/10/12 12:44	05/10/12 12:44
Date Sampled 05/07/12 08:35	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 12:44	05/10/12 12:44
	Alkalinity, Total (As CaCO3 at pH 4.5)	170	10 mg/L	05/10/12 12:44	05/10/12 12:44
Client ID: **MW-21-3**					
Lab ID : BMI12050803-03A	Alkalinity, Bicarbonate (As CaCO3)	250	10 mg/L	05/10/12 12:49	05/10/12 12:49
Date Sampled 05/07/12 09:38	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 12:49	05/10/12 12:49
	Alkalinity, Total (As CaCO3 at pH 4.5)	250	10 mg/L	05/10/12 12:49	05/10/12 12:49
Client ID: **MW-21-2**					
Lab ID : BMI12050803-04A	Alkalinity, Bicarbonate (As CaCO3)	240	10 mg/L	05/10/12 12:54	05/10/12 12:54
Date Sampled 05/07/12 10:17	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 12:54	05/10/12 12:54
	Alkalinity, Total (As CaCO3 at pH 4.5)	240	10 mg/L	05/10/12 12:54	05/10/12 12:54
Client ID: **MW-21-1**					
Lab ID : BMI12050803-05A	Alkalinity, Bicarbonate (As CaCO3)	250	10 mg/L	05/10/12 13:00	05/10/12 13:00
Date Sampled 05/07/12 10:50	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 13:00	05/10/12 13:00
	Alkalinity, Total (As CaCO3 at pH 4.5)	250	10 mg/L	05/10/12 13:00	05/10/12 13:00
Client ID: **EB-9-5/7/12**					
Lab ID : BMI12050803-06A	Alkalinity, Bicarbonate (As CaCO3)	ND	10 mg/L	05/10/12 13:04	05/10/12 13:04
Date Sampled 05/07/12 10:38	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 13:04	05/10/12 13:04
	Alkalinity, Total (As CaCO3 at pH 4.5)	ND	10 mg/L	05/10/12 13:04	05/10/12 13:04
Client ID: **SB-1-5/7/12**					
Lab ID : BMI12050803-08A	Alkalinity, Bicarbonate (As CaCO3)	ND	10 mg/L	05/10/12 13:06	05/10/12 13:06
Date Sampled 05/07/12 09:10	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 13:06	05/10/12 13:06
	Alkalinity, Total (As CaCO3 at pH 4.5)	ND	10 mg/L	05/10/12 13:06	05/10/12 13:06

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ND = Not Detected

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/08/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-21-5**					
Lab ID : BMI12050803-01A	Sodium (Na)	40	0.50 mg/L	05/09/12 16:37	05/10/12 17:50
Date Sampled 05/07/12 07:55	Magnesium (Mg)	34	0.50 mg/L	05/09/12 16:37	05/10/12 17:50
	Potassium (K)	2.7	0.50 mg/L	05/09/12 16:37	05/10/12 17:50
	Calcium (Ca)	100	0.50 mg/L	05/09/12 16:37	05/10/12 17:50
	Chromium (Cr)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:50
	Iron (Fe)	1.3	0.30 mg/L	05/09/12 16:37	05/10/12 17:50
	Arsenic (As)	ND	0.0020 mg/L	05/09/12 16:37	05/10/12 17:50
	Lead (Pb)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:50
Client ID: **MW-21-4**					
Lab ID : BMI12050803-02A	Sodium (Na)	33	0.50 mg/L	05/09/12 16:37	05/10/12 17:56
Date Sampled 05/07/12 08:35	Magnesium (Mg)	29	0.50 mg/L	05/09/12 16:37	05/10/12 17:56
	Potassium (K)	2.4	0.50 mg/L	05/09/12 16:37	05/10/12 17:56
	Calcium (Ca)	90	0.50 mg/L	05/09/12 16:37	05/10/12 17:56
	Chromium (Cr)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:56
	Iron (Fe)	1.3	0.30 mg/L	05/09/12 16:37	05/10/12 17:56
	Arsenic (As)	ND	0.0020 mg/L	05/09/12 16:37	05/10/12 17:56
	Lead (Pb)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 17:56
Client ID: **MW-21-3**					
Lab ID : BMI12050803-03A	Sodium (Na)	50	0.50 mg/L	05/09/12 16:37	05/10/12 18:02
Date Sampled 05/07/12 09:38	Magnesium (Mg)	42	0.50 mg/L	05/09/12 16:37	05/10/12 18:02
	Potassium (K)	3.2	0.50 mg/L	05/09/12 16:37	05/10/12 18:02
	Calcium (Ca)	130	0.50 mg/L	05/09/12 16:37	05/10/12 18:02
	Chromium (Cr)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 18:02
	Iron (Fe)	1.8	0.30 mg/L	05/09/12 16:37	05/10/12 18:02
	Arsenic (As)	ND	0.0020 mg/L	05/09/12 16:37	05/10/12 18:02
	Lead (Pb)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 18:02
Client ID: **MW-21-2**					
Lab ID : BMI12050803-04A	Sodium (Na)	59	0.50 mg/L	05/09/12 16:37	05/10/12 18:31
Date Sampled 05/07/12 10:17	Magnesium (Mg)	42	0.50 mg/L	05/09/12 16:37	05/10/12 18:31
	Potassium (K)	3.0	0.50 mg/L	05/09/12 16:37	05/10/12 18:31
	Calcium (Ca)	130	0.50 mg/L	05/09/12 16:37	05/10/12 18:31
	Chromium (Cr)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 18:31
	Iron (Fe)	2.3	0.30 mg/L	05/09/12 16:37	05/10/12 18:31
	Arsenic (As)	ND	0.0020 mg/L	05/09/12 16:37	05/10/12 18:31
	Lead (Pb)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 18:31

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Client ID: **MW-21-1**					
Lab ID : BMI12050803-05A	Sodium (Na)	40	0.50 mg/L	05/09/12 16:37	05/10/12 18:36
Date Sampled 05/07/12 10:50	Magnesium (Mg)	53	0.50 mg/L	05/09/12 16:37	05/10/12 18:36
	Potassium (K)	2.8	0.50 mg/L	05/09/12 16:37	05/10/12 18:36
	Calcium (Ca)	160	0.50 mg/L	05/09/12 16:37	05/10/12 18:36
	Chromium (Cr)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 18:36
	Iron (Fe)	3.1	0.30 mg/L	05/09/12 16:37	05/10/12 18:36
	Arsenic (As)	ND	0.0020 mg/L	05/09/12 16:37	05/10/12 18:36
	Lead (Pb)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 18:36
Client ID: **EB-9-5/7/12**					
Lab ID : BMI12050803-06A	Sodium (Na)	ND	0.50 mg/L	05/09/12 16:37	05/10/12 18:42
Date Sampled 05/07/12 10:38	Magnesium (Mg)	ND	0.50 mg/L	05/09/12 16:37	05/10/12 18:42
	Potassium (K)	ND	0.50 mg/L	05/09/12 16:37	05/10/12 18:42
	Calcium (Ca)	ND	0.50 mg/L	05/09/12 16:37	05/10/12 18:42
	Chromium (Cr)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 18:42
	Iron (Fe)	0.34	0.30 mg/L	05/09/12 16:37	05/10/12 18:42
	Arsenic (As)	ND	0.0020 mg/L	05/09/12 16:37	05/10/12 23:15
	Lead (Pb)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 18:42
Client ID: **SB-1-5/7/12**					
Lab ID : BMI12050803-08A	Sodium (Na)	ND	0.50 mg/L	05/09/12 16:37	05/10/12 18:48
Date Sampled 05/07/12 09:10	Magnesium (Mg)	ND	0.50 mg/L	05/09/12 16:37	05/10/12 18:48
	Potassium (K)	ND	0.50 mg/L	05/09/12 16:37	05/10/12 18:48
	Calcium (Ca)	ND	0.50 mg/L	05/09/12 16:37	05/10/12 18:48
	Chromium (Cr)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 18:48
	Iron (Fe)	ND	0.30 mg/L	05/09/12 16:37	05/12/12 10:56
	Arsenic (As)	ND	0.0020 mg/L	05/09/12 16:37	05/10/12 18:48
	Lead (Pb)	ND	0.0050 mg/L	05/09/12 16:37	05/10/12 18:48

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/08/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-21-5**					
Lab ID : BMI12050803-01A	pH	7.7	1.7 pH Units	05/08/12 14:12	05/08/12 14:12
Date Sampled 05/07/12 07:55	pH - Temperature	23	1.0 °C	05/08/12 14:12	05/08/12 14:12
Client ID: **MW-21-4**					
Lab ID : BMI12050803-02A	pH	7.5	1.7 pH Units	05/08/12 14:15	05/08/12 14:15
Date Sampled 05/07/12 08:35	pH - Temperature	23	1.0 °C	05/08/12 14:15	05/08/12 14:15
Client ID: **MW-21-3**					
Lab ID : BMI12050803-03A	pH	7.6	1.7 pH Units	05/08/12 14:17	05/08/12 14:17
Date Sampled 05/07/12 09:38	pH - Temperature	22	1.0 °C	05/08/12 14:17	05/08/12 14:17
Client ID: **MW-21-2**					
Lab ID : BMI12050803-04A	pH	7.6	1.7 pH Units	05/08/12 14:18	05/08/12 14:18
Date Sampled 05/07/12 10:17	pH - Temperature	22	1.0 °C	05/08/12 14:18	05/08/12 14:18
Client ID: **MW-21-1**					
Lab ID : BMI12050803-05A	pH	7.1	1.7 pH Units	05/08/12 14:20	05/08/12 14:20
Date Sampled 05/07/12 10:50	pH - Temperature	22	1.0 °C	05/08/12 14:20	05/08/12 14:20
Client ID: **EB-9-5/7/12**					
Lab ID : BMI12050803-06A	pH	6.6	1.7 pH Units	05/08/12 14:31	05/08/12 14:31
Date Sampled 05/07/12 10:38	pH - Temperature	22	1.0 °C	05/08/12 14:31	05/08/12 14:31
Client ID: **SB-1-5/7/12**					
Lab ID : BMI12050803-08A	pH	6.5	1.7 pH Units	05/08/12 14:34	05/08/12 14:34
Date Sampled 05/07/12 09:10	pH - Temperature	23	1.0 °C	05/08/12 14:34	05/08/12 14:34

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The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.

The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

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Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/08/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-21-5**					
Lab ID : BMI12050803-01A	Solids, Total Dissolved (TDS)	560	10 mg/L	05/10/12	05/10/12
Date Sampled 05/07/12 07:55					
Client ID: **MW-21-4**					
Lab ID : BMI12050803-02A	Solids, Total Dissolved (TDS)	490	10 mg/L	05/10/12	05/10/12
Date Sampled 05/07/12 08:35					
Client ID: **MW-21-3**					
Lab ID : BMI12050803-03A	Solids, Total Dissolved (TDS)	720	10 mg/L	05/10/12	05/10/12
Date Sampled 05/07/12 09:38					
Client ID: **MW-21-2**					
Lab ID : BMI12050803-04A	Solids, Total Dissolved (TDS)	760	10 mg/L	05/10/12	05/10/12
Date Sampled 05/07/12 10:17					
Client ID: **MW-21-1**					
Lab ID : BMI12050803-05A	Solids, Total Dissolved (TDS)	860	10 mg/L	05/10/12	05/10/12
Date Sampled 05/07/12 10:50					
Client ID: **EB-9-5/7/12**					
Lab ID : BMI12050803-06A	Solids, Total Dissolved (TDS)	ND	10 mg/L	05/10/12	05/10/12
Date Sampled 05/07/12 10:38					
Client ID: **SB-1-5/7/12**					
Lab ID : BMI12050803-08A	Solids, Total Dissolved (TDS)	ND	10 mg/L	05/10/12	05/10/12
Date Sampled 05/07/12 09:10					

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ND = Not Detected

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Fax: (614) 458-6641
Date Received : 05/08/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-21-5**					
Lab ID : BMI12050803-01A	Acrylonitrile	ND	10 µg/L	05/15/12 14:35	05/15/12 14:35
Date Sampled 05/07/12 07:55	Allyl chloride	ND	2.0 µg/L	05/15/12 14:35	05/15/12 14:35
	Carbon disulfide	ND	2.5 µg/L	05/15/12 14:35	05/15/12 14:35
	Chloroacetonitrile	ND	10 µg/L	05/15/12 14:35	05/15/12 14:35
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 14:35	05/15/12 14:35
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 14:35	05/15/12 14:35
	Diethyl ether	ND	2.0 µg/L	05/15/12 14:35	05/15/12 14:35
	Ethyl methacrylate	ND	10 µg/L	05/15/12 14:35	05/15/12 14:35
	Hexachloroethane	ND	10 µg/L	05/15/12 14:35	05/15/12 14:35
	Methacrylonitrile	ND	10 µg/L	05/15/12 14:35	05/15/12 14:35
	Methyl acrylate	ND	10 µg/L	05/15/12 14:35	05/15/12 14:35
	Methyl iodide	ND	2.0 µg/L	05/15/12 14:35	05/15/12 14:35
	Methyl methacrylate	ND	10 µg/L	05/15/12 14:35	05/15/12 14:35
	Nitrobenzene	ND	10 µg/L	05/15/12 14:35	05/15/12 14:35
	2-Nitropropane	ND	2.0 µg/L	05/15/12 14:35	05/15/12 14:35
	Pentachloroethane	ND	2.0 µg/L	05/15/12 14:35	05/15/12 14:35
	Propionitrile	ND	50 µg/L	05/15/12 14:35	05/15/12 14:35
	Tetrahydrofuran	ND	10 µg/L	05/15/12 14:35	05/15/12 14:35
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 14:35	05/15/12 14:35
Client ID: **MW-21-4**					
Lab ID : BMI12050803-02A	Acrylonitrile	ND	10 µg/L	05/15/12 14:57	05/15/12 14:57
Date Sampled 05/07/12 08:35	Allyl chloride	ND	2.0 µg/L	05/15/12 14:57	05/15/12 14:57
	Carbon disulfide	ND	2.5 µg/L	05/15/12 14:57	05/15/12 14:57
	Chloroacetonitrile	ND	10 µg/L	05/15/12 14:57	05/15/12 14:57
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 14:57	05/15/12 14:57
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 14:57	05/15/12 14:57
	Diethyl ether	ND	2.0 µg/L	05/15/12 14:57	05/15/12 14:57
	Ethyl methacrylate	ND	10 µg/L	05/15/12 14:57	05/15/12 14:57
	Hexachloroethane	ND	10 µg/L	05/15/12 14:57	05/15/12 14:57
	Methacrylonitrile	ND	10 µg/L	05/15/12 14:57	05/15/12 14:57
	Methyl acrylate	ND	10 µg/L	05/15/12 14:57	05/15/12 14:57
	Methyl iodide	ND	2.0 µg/L	05/15/12 14:57	05/15/12 14:57
	Methyl methacrylate	ND	10 µg/L	05/15/12 14:57	05/15/12 14:57
	Nitrobenzene	ND	10 µg/L	05/15/12 14:57	05/15/12 14:57
	2-Nitropropane	ND	2.0 µg/L	05/15/12 14:57	05/15/12 14:57
	Pentachloroethane	ND	2.0 µg/L	05/15/12 14:57	05/15/12 14:57
	Propionitrile	ND	50 µg/L	05/15/12 14:57	05/15/12 14:57
	Tetrahydrofuran	ND	10 µg/L	05/15/12 14:57	05/15/12 14:57
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 14:57	05/15/12 14:57

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Client ID: **MW-21-3**					
Lab ID : BMI12050803-03A	Acrylonitrile	ND	10 µg/L	05/15/12 15:18	05/15/12 15:18
Date Sampled 05/07/12 09:38	Allyl chloride	ND	2.0 µg/L	05/15/12 15:18	05/15/12 15:18
	Carbon disulfide	ND	2.5 µg/L	05/15/12 15:18	05/15/12 15:18
	Chloroacetonitrile	ND	10 µg/L	05/15/12 15:18	05/15/12 15:18
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 15:18	05/15/12 15:18
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 15:18	05/15/12 15:18
	Diethyl ether	ND	2.0 µg/L	05/15/12 15:18	05/15/12 15:18
	Ethyl methacrylate	ND	10 µg/L	05/15/12 15:18	05/15/12 15:18
	Hexachloroethane	ND	10 µg/L	05/15/12 15:18	05/15/12 15:18
	Methacrylonitrile	ND	10 µg/L	05/15/12 15:18	05/15/12 15:18
	Methyl acrylate	ND	10 µg/L	05/15/12 15:18	05/15/12 15:18
	Methyl iodide	ND	2.0 µg/L	05/15/12 15:18	05/15/12 15:18
	Methyl methacrylate	ND	10 µg/L	05/15/12 15:18	05/15/12 15:18
	Nitrobenzene	ND	10 µg/L	05/15/12 15:18	05/15/12 15:18
	2-Nitropropane	ND	2.0 µg/L	05/15/12 15:18	05/15/12 15:18
	Pentachloroethane	ND	2.0 µg/L	05/15/12 15:18	05/15/12 15:18
	Propionitrile	ND	50 µg/L	05/15/12 15:18	05/15/12 15:18
	Tetrahydrofuran	ND	10 µg/L	05/15/12 15:18	05/15/12 15:18
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 15:18	05/15/12 15:18
Client ID: **MW-21-2**					
Lab ID : BMI12050803-04A	Acrylonitrile	ND	10 µg/L	05/15/12 15:40	05/15/12 15:40
Date Sampled 05/07/12 10:17	Allyl chloride	ND	2.0 µg/L	05/15/12 15:40	05/15/12 15:40
	Carbon disulfide	ND	2.5 µg/L	05/15/12 15:40	05/15/12 15:40
	Chloroacetonitrile	ND	10 µg/L	05/15/12 15:40	05/15/12 15:40
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 15:40	05/15/12 15:40
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 15:40	05/15/12 15:40
	Diethyl ether	ND	2.0 µg/L	05/15/12 15:40	05/15/12 15:40
	Ethyl methacrylate	ND	10 µg/L	05/15/12 15:40	05/15/12 15:40
	Hexachloroethane	ND	10 µg/L	05/15/12 15:40	05/15/12 15:40
	Methacrylonitrile	ND	10 µg/L	05/15/12 15:40	05/15/12 15:40
	Methyl acrylate	ND	10 µg/L	05/15/12 15:40	05/15/12 15:40
	Methyl iodide	ND	2.0 µg/L	05/15/12 15:40	05/15/12 15:40
	Methyl methacrylate	ND	10 µg/L	05/15/12 15:40	05/15/12 15:40
	Nitrobenzene	ND	10 µg/L	05/15/12 15:40	05/15/12 15:40
	2-Nitropropane	ND	2.0 µg/L	05/15/12 15:40	05/15/12 15:40
	Pentachloroethane	ND	2.0 µg/L	05/15/12 15:40	05/15/12 15:40
	Propionitrile	ND	50 µg/L	05/15/12 15:40	05/15/12 15:40
	Tetrahydrofuran	ND	10 µg/L	05/15/12 15:40	05/15/12 15:40
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 15:40	05/15/12 15:40

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Client ID: **MW-21-1**					
Lab ID : BMI12050803-05A	Acrylonitrile	ND	10 µg/L	05/15/12 16:02	05/15/12 16:02
Date Sampled 05/07/12 10:50	Allyl chloride	ND	2.0 µg/L	05/15/12 16:02	05/15/12 16:02
	Carbon disulfide	ND	2.5 µg/L	05/15/12 16:02	05/15/12 16:02
	Chloroacetonitrile	ND	10 µg/L	05/15/12 16:02	05/15/12 16:02
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 16:02	05/15/12 16:02
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 16:02	05/15/12 16:02
	Diethyl ether	ND	2.0 µg/L	05/15/12 16:02	05/15/12 16:02
	Ethyl methacrylate	ND	10 µg/L	05/15/12 16:02	05/15/12 16:02
	Hexachloroethane	ND	10 µg/L	05/15/12 16:02	05/15/12 16:02
	Methacrylonitrile	ND	10 µg/L	05/15/12 16:02	05/15/12 16:02
	Methyl acrylate	ND	10 µg/L	05/15/12 16:02	05/15/12 16:02
	Methyl iodide	ND	2.0 µg/L	05/15/12 16:02	05/15/12 16:02
	Methyl methacrylate	ND	10 µg/L	05/15/12 16:02	05/15/12 16:02
	Nitrobenzene	ND	10 µg/L	05/15/12 16:02	05/15/12 16:02
	2-Nitropropane	ND	2.0 µg/L	05/15/12 16:02	05/15/12 16:02
	Pentachloroethane	ND	2.0 µg/L	05/15/12 16:02	05/15/12 16:02
	Propionitrile	ND	50 µg/L	05/15/12 16:02	05/15/12 16:02
	Tetrahydrofuran	ND	10 µg/L	05/15/12 16:02	05/15/12 16:02
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 16:02	05/15/12 16:02
Client ID: **EB-9-5/7/12**					
Lab ID : BMI12050803-06A	Acrylonitrile	ND	10 µg/L	05/15/12 16:24	05/15/12 16:24
Date Sampled 05/07/12 10:38	Allyl chloride	ND	2.0 µg/L	05/15/12 16:24	05/15/12 16:24
	Carbon disulfide	ND	2.5 µg/L	05/15/12 16:24	05/15/12 16:24
	Chloroacetonitrile	ND	10 µg/L	05/15/12 16:24	05/15/12 16:24
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 16:24	05/15/12 16:24
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 16:24	05/15/12 16:24
	Diethyl ether	ND	2.0 µg/L	05/15/12 16:24	05/15/12 16:24
	Ethyl methacrylate	ND	10 µg/L	05/15/12 16:24	05/15/12 16:24
	Hexachloroethane	ND	10 µg/L	05/15/12 16:24	05/15/12 16:24
	Methacrylonitrile	ND	10 µg/L	05/15/12 16:24	05/15/12 16:24
	Methyl acrylate	ND	10 µg/L	05/15/12 16:24	05/15/12 16:24
	Methyl iodide	ND	2.0 µg/L	05/15/12 16:24	05/15/12 16:24
	Methyl methacrylate	ND	10 µg/L	05/15/12 16:24	05/15/12 16:24
	Nitrobenzene	ND	10 µg/L	05/15/12 16:24	05/15/12 16:24
	2-Nitropropane	ND	2.0 µg/L	05/15/12 16:24	05/15/12 16:24
	Pentachloroethane	ND	2.0 µg/L	05/15/12 16:24	05/15/12 16:24
	Propionitrile	ND	50 µg/L	05/15/12 16:24	05/15/12 16:24
	Tetrahydrofuran	ND	10 µg/L	05/15/12 16:24	05/15/12 16:24
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 16:24	05/15/12 16:24

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Client ID: **TB-9-5/7/12**					
Lab ID : BMI12050803-07A	Acrylonitrile	ND	10 µg/L	05/15/12 16:45	05/15/12 16:45
Date Sampled 05/07/12 00:00	Allyl chloride	ND	2.0 µg/L	05/15/12 16:45	05/15/12 16:45
	Carbon disulfide	ND	2.5 µg/L	05/15/12 16:45	05/15/12 16:45
	Chloroacetonitrile	ND	10 µg/L	05/15/12 16:45	05/15/12 16:45
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 16:45	05/15/12 16:45
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 16:45	05/15/12 16:45
	Diethyl ether	ND	2.0 µg/L	05/15/12 16:45	05/15/12 16:45
	Ethyl methacrylate	ND	10 µg/L	05/15/12 16:45	05/15/12 16:45
	Hexachloroethane	ND	10 µg/L	05/15/12 16:45	05/15/12 16:45
	Methacrylonitrile	ND	10 µg/L	05/15/12 16:45	05/15/12 16:45
	Methyl acrylate	ND	10 µg/L	05/15/12 16:45	05/15/12 16:45
	Methyl iodide	ND	2.0 µg/L	05/15/12 16:45	05/15/12 16:45
	Methyl methacrylate	ND	10 µg/L	05/15/12 16:45	05/15/12 16:45
	Nitrobenzene	ND	10 µg/L	05/15/12 16:45	05/15/12 16:45
	2-Nitropropane	ND	2.0 µg/L	05/15/12 16:45	05/15/12 16:45
	Pentachloroethane	ND	2.0 µg/L	05/15/12 16:45	05/15/12 16:45
	Propionitrile	ND	50 µg/L	05/15/12 16:45	05/15/12 16:45
	Tetrahydrofuran	ND	10 µg/L	05/15/12 16:45	05/15/12 16:45
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 16:45	05/15/12 16:45
Client ID: **SB-1-5/7/12**					
Lab ID : BMI12050803-08A	Acrylonitrile	ND	10 µg/L	05/15/12 17:07	05/15/12 17:07
Date Sampled 05/07/12 09:10	Allyl chloride	ND	2.0 µg/L	05/15/12 17:07	05/15/12 17:07
	Carbon disulfide	ND	2.5 µg/L	05/15/12 17:07	05/15/12 17:07
	Chloroacetonitrile	ND	10 µg/L	05/15/12 17:07	05/15/12 17:07
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 17:07	05/15/12 17:07
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 17:07	05/15/12 17:07
	Diethyl ether	ND	2.0 µg/L	05/15/12 17:07	05/15/12 17:07
	Ethyl methacrylate	ND	10 µg/L	05/15/12 17:07	05/15/12 17:07
	Hexachloroethane	ND	10 µg/L	05/15/12 17:07	05/15/12 17:07
	Methacrylonitrile	ND	10 µg/L	05/15/12 17:07	05/15/12 17:07
	Methyl acrylate	ND	10 µg/L	05/15/12 17:07	05/15/12 17:07
	Methyl iodide	ND	2.0 µg/L	05/15/12 17:07	05/15/12 17:07
	Methyl methacrylate	ND	10 µg/L	05/15/12 17:07	05/15/12 17:07
	Nitrobenzene	ND	10 µg/L	05/15/12 17:07	05/15/12 17:07
	2-Nitropropane	ND	2.0 µg/L	05/15/12 17:07	05/15/12 17:07
	Pentachloroethane	ND	2.0 µg/L	05/15/12 17:07	05/15/12 17:07
	Propionitrile	ND	50 µg/L	05/15/12 17:07	05/15/12 17:07
	Tetrahydrofuran	ND	10 µg/L	05/15/12 17:07	05/15/12 17:07
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 17:07	05/15/12 17:07

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Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/18/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050803-01A
Client I.D. Number: MW-21-5

Sampled: 05/07/12 07:55
Received: 05/08/12
Extracted: 05/15/12 14:35
Analyzed: 05/15/12 14:35

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37 Tetrachloroethene	0.69	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	3.7	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	101	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	100	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/18/12
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050803-02A
Client I.D. Number: MW-21-4

Sampled: 05/07/12 08:35
Received: 05/08/12
Extracted: 05/15/12 14:57
Analyzed: 05/15/12 14:57

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	4.9	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	0.57	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
67	Surr: Toluene-d8	102	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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5/18/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050803-03A
Client I.D. Number: MW-21-3

Sampled: 05/07/12 09:38
Received: 05/08/12
Extracted: 05/15/12 15:18
Analyzed: 05/15/12 15:18

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	2.3	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	3.9	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	107	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/18/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050803-04A
Client I.D. Number: MW-21-2

Sampled: 05/07/12 10:17
Received: 05/08/12
Extracted: 05/15/12 15:40
Analyzed: 05/15/12 15:40

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	2.9	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	3.5	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/18/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050803-05A
Client I.D. Number: MW-21-1

Sampled: 05/07/12 10:50
Received: 05/08/12
Extracted: 05/15/12 16:02
Analyzed: 05/15/12 16:02

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L
7	Acetone	ND	10	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L
10	Freon-113	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L
17	Chloroform	1.8	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L
27	Bromodichloromethane	ND	0.50	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L
32	Toluene	ND	0.50	µg/L
33	1,3-Dichloropropane	ND	0.50	µg/L
34	2-Hexanone	ND	5.0	µg/L
35	Dibromochloromethane	ND	0.50	µg/L
36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
37	Tetrachloroethene	ND	0.50	µg/L
38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
39	Chlorobenzene	ND	0.50	µg/L
40	Ethylbenzene	ND	0.50	µg/L
41	m,p-Xylene	ND	0.50	µg/L
42	Bromoform	ND	0.50	µg/L
43	Styrene	ND	0.50	µg/L
44	o-Xylene	ND	0.50	µg/L
45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
46	1,2,3-Trichloropropane	ND	2.0	µg/L
47	Isopropylbenzene	ND	0.50	µg/L
48	Bromobenzene	ND	0.50	µg/L
49	n-Propylbenzene	ND	0.50	µg/L
50	4-Chlorotoluene	ND	0.50	µg/L
51	2-Chlorotoluene	ND	0.50	µg/L
52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
53	tert-Butylbenzene	ND	0.50	µg/L
54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
55	sec-Butylbenzene	ND	0.50	µg/L
56	1,3-Dichlorobenzene	ND	0.50	µg/L
57	1,4-Dichlorobenzene	ND	0.50	µg/L
58	4-Isopropyltoluene	ND	0.50	µg/L
59	1,2-Dichlorobenzene	ND	0.50	µg/L
60	n-Butylbenzene	ND	0.50	µg/L
61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
63	Naphthalene	ND	2.0	µg/L
64	Hexachlorobutadiene	ND	2.0	µg/L
65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
67	Surr: Toluene-d8	102	(70-130)	%REC
68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/18/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050803-06A
Client I.D. Number: EB-9-5/7/12

Sampled: 05/07/12 10:38
Received: 05/08/12
Extracted: 05/15/12 16:24
Analyzed: 05/15/12 16:24

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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5/18/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050803-07A
Client I.D. Number: TB-9-5/7/12

Sampled: 05/07/12 00:00
Received: 05/08/12
Extracted: 05/15/12 16:45
Analyzed: 05/15/12 16:45

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	103	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050803-08A
Client I.D. Number: SB-1-5/7/12

Sampled: 05/07/12 09:10
Received: 05/08/12
Extracted: 05/15/12 17:07
Analyzed: 05/15/12 17:07

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	104	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

VOC Sample Preservation Report

Work Order: BMI12050803 **Job:** 100006114 / JPL Groundwater Monitoring

Alpha's Sample ID	Client's Sample ID	Matrix	pH
12050803-01A	MW-21-5	Aqueous	2
12050803-02A	MW-21-4	Aqueous	2
12050803-03A	MW-21-3	Aqueous	2
12050803-04A	MW-21-2	Aqueous	2
12050803-05A	MW-21-1	Aqueous	2
12050803-06A	EB-9-5/7/12	Aqueous	2
12050803-07A	TB-9-5/7/12	Aqueous	2
12050803-08A	SB-1-5/7/12	Aqueous	2

5/18/12

Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *17-May-12*

QC Summary Report

Work Order: 12050803

Method Blank

Type **MBLK** Test Code: **EPA Method 300.0**

File ID: **25** Batch ID: **28692K** Analysis Date: **05/08/2012 10:59**

Sample ID: **MB-28692** Units : **mg/L** Run ID: **IC_1_120508B** Prep Date: **05/08/2012 10:44**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0**

File ID: **26** Batch ID: **28692K** Analysis Date: **05/08/2012 11:45**

Sample ID: **LFB-28692** Units : **mg/L** Run ID: **IC_1_120508B** Prep Date: **05/08/2012 10:44**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	46.2	0.5	50		92	90	110			
Nitrite (NO2) - N	5.11	0.25	5		102	90	110			
Nitrate (NO3) - N	5.25	0.25	5		105	90	110			
Phosphate, ortho - P	5.13	0.5	5		103	90	110			
Sulfate (SO4)	97.5	0.5	100		98	90	110			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0**

File ID: **30** Batch ID: **28692K** Analysis Date: **05/08/2012 12:59**

Sample ID: **12050803-02ALFM** Units : **mg/L** Run ID: **IC_1_120508B** Prep Date: **05/08/2012 10:44**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	281	1.3	250	78.43	81	90	110			M2
Nitrite (NO2) - N	23.5	0.63	25	0	94	90	110			
Nitrate (NO3) - N	27.8	0.63	25	5.187	90	90	110			
Phosphate, ortho - P	26.3	1.3	25	0	105	90	110			
Sulfate (SO4)	550	1.3	500	142.1	82	90	110			M2

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0**

File ID: **31** Batch ID: **28692K** Analysis Date: **05/08/2012 13:17**

Sample ID: **12050803-02ALFMD** Units : **mg/L** Run ID: **IC_1_120508B** Prep Date: **05/08/2012 10:44**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	280	1.3	250	78.43	81	90	110	281.2	0.5(15)	M2
Nitrite (NO2) - N	23.5	0.63	25	0	94	90	110	23.52	0.1(15)	
Nitrate (NO3) - N	27.7	0.63	25	5.187	90	90	110	27.79	0.2(15)	
Phosphate, ortho - P	26.5	1.3	25	0	106	90	110	26.35	0.5(15)	
Sulfate (SO4)	547	1.3	500	142.1	81	90	110	550.2	0.5(15)	M2

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M2 = Matrix spike recovery was low, the method control sample recovery was acceptable.

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *17-May-12*

QC Summary Report

Work Order: 12050803

Method Blank

Type **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **28713K** Analysis Date: **05/10/2012 16:47**

Sample ID: **MB-28713** Units : **µg/L** Run ID: **IC_3_120510A** Prep Date: **05/10/2012 15:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **28713K** Analysis Date: **05/10/2012 17:05**

Sample ID: **LFB-28713** Units : **µg/L** Run ID: **IC_3_120510A** Prep Date: **05/10/2012 15:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.5	2	25		102	85	115			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 314.0**

File ID: **20** Batch ID: **28713K** Analysis Date: **05/10/2012 18:38**

Sample ID: **12050301-03ALFM** Units : **µg/L** Run ID: **IC_3_120510A** Prep Date: **05/10/2012 15:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.1	2	25	0	101	85	115			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 314.0**

File ID: **21** Batch ID: **28713K** Analysis Date: **05/10/2012 18:56**

Sample ID: **12050301-03ALFMD** Units : **µg/L** Run ID: **IC_3_120510A** Prep Date: **05/10/2012 15:50**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	26.2	2	25	0	105	85	115	25.14	4.3(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *17-May-12*

QC Summary Report

Work Order: 12050803

Laboratory Control Spike Type **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0510AL** Analysis Date: **05/10/2012 12:28**

Sample ID: **LCS-W0510AL** Units : **mg/L** Run ID: **WETLAB_120510B** Prep Date: **05/10/2012 12:28**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	261.5	10	250		105	80	120			
Alkalinity, Carbonate (As CaCO3)	261.5	10	250		105	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	262	10	250		105	80	120			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *17-May-12*

QC Summary Report

Work Order: 12050803

Method Blank

Type **MBLK** Test Code: **EPA Method 200.8**

File ID: **051012.B\055_M.D** Batch ID: **28704K** Analysis Date: **05/10/2012 16:25**

Sample ID: **MB-28704** Units : **mg/L** Run ID: **ICP/MS_120510B** Prep Date: **05/09/2012 16:37**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type **LCS** Test Code: **EPA Method 200.8**

File ID: **051012.B\056_M.D** Batch ID: **28704K** Analysis Date: **05/10/2012 16:31**

Sample ID: **LCS-28704** Units : **mg/L** Run ID: **ICP/MS_120510B** Prep Date: **05/09/2012 16:37**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	5.55	0.5	5		111	80	120			
Magnesium (Mg)	5.36	0.5	5		107	80	120			
Potassium (K)	5.31	0.5	5		106	80	120			
Calcium (Ca)	5.44	0.5	5		109	80	120			
Chromium (Cr)	0.0508	0.005	0.05		102	80	120			
Iron (Fe)	5.42	0.3	5		108	80	120			
Arsenic (As)	0.0504	0.002	0.05		101	80	120			
Lead (Pb)	0.0511	0.005	0.05		102	80	120			

Sample Matrix Spike

Type **MS** Test Code: **EPA Method 200.8**

File ID: **051012.B\061_M.D** Batch ID: **28704K** Analysis Date: **05/10/2012 17:04**

Sample ID: **12050402-04AMS** Units : **mg/L** Run ID: **ICP/MS_120510B** Prep Date: **05/09/2012 16:37**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	25.9	0.5	5	20.73	103	80	120			
Magnesium (Mg)	35.1	0.5	5	29.85	105	80	120			
Potassium (K)	7.86	0.5	5	2.871	99.8	80	120			
Calcium (Ca)	80.2	0.5	5	75.83	87	80	120			
Chromium (Cr)	0.0545	0.005	0.05	0	109	80	120			
Iron (Fe)	6.55	0.3	5	1.171	108	80	120			
Arsenic (As)	0.0544	0.002	0.05	0	109	80	120			
Lead (Pb)	0.051	0.005	0.05	0	102	80	120			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method 200.8**

File ID: **051012.B\062_M.D** Batch ID: **28704K** Analysis Date: **05/10/2012 17:10**

Sample ID: **12050402-04AMSD** Units : **mg/L** Run ID: **ICP/MS_120510B** Prep Date: **05/09/2012 16:37**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	25.8	0.5	5	20.73	101	80	120	25.87	0.3(20)	
Magnesium (Mg)	35.3	0.5	5	29.85	108	80	120	35.1	0.5(20)	
Potassium (K)	7.95	0.5	5	2.871	102	80	120	7.863	1.2(20)	
Calcium (Ca)	80.4	0.5	5	75.83	92	80	120	80.19	0.3(20)	
Chromium (Cr)	0.0536	0.005	0.05	0	107	80	120	0.0545	1.7(20)	
Iron (Fe)	6.55	0.3	5	1.171	108	80	120	6.553	0.0(20)	
Arsenic (As)	0.0535	0.002	0.05	0	107	80	120	0.05444	1.7(20)	
Lead (Pb)	0.0514	0.005	0.05	0	103	80	120	0.05099	0.8(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *17-May-12*

QC Summary Report

Work Order: 12050803

Laboratory Control Spike Type **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0508PH** Analysis Date: **05/08/2012 14:08**

Sample ID: **LCS-W0508PH** Units : **pH Units** Run ID: **WETLAB_120508B** Prep Date: **05/08/2012 14:08**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5.02	1.7	5		100	90	110			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *17-May-12*

QC Summary Report

Work Order: 12050803

Method Blank

Type **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0509DS** Analysis Date: **05/10/2012 00:00**

Sample ID: **MBLK-W0509DS** Units : **mg/L** Run ID: **WETLAB_120509A** Prep Date: **05/10/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0509DS** Analysis Date: **05/10/2012 00:00**

Sample ID: **LCS-W0509DS** Units : **mg/L** Run ID: **WETLAB_120509A** Prep Date: **05/10/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	99	10	100		99	70	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *18-May-12*

QC Summary Report

Work Order: 12050803

Method Blank Type **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12051508.D** Batch ID: **MS15W0515M** Analysis Date: **05/15/2012 13:30**

Sample ID: **MBLK MS15W0515A** Units : **µg/L** Run ID: **MSD_15_120515A** Prep Date: **05/15/2012 13:30**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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Date: *18-May-12*

QC Summary Report

Work Order: 12050803

Surr: 1,2-Dichloroethane-d4	10.6	10	106	70	130
Surr: Toluene-d8	10.2	10	102	70	130
Surr: 4-Bromofluorobenzene	9.1	10	91	70	130

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Date: 18-May-12

QC Summary Report

Work Order: 12050803

Laboratory Control Spike Type **LCS** Test Code: **EPA Method SW8260B**

File ID: **12051504.D** Batch ID: **MS15W0515M** Analysis Date: **05/15/2012 11:34**

Sample ID: **LCS MS15W0515A** Units : **µg/L** Run ID: **MSD_15_120515A** Prep Date: **05/15/2012 11:34**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	13.6	1	10		136	70	130(130)			L51
Chloromethane	9.61	2	10		96	70	130			
Vinyl chloride	10.9	1	10		109	70	130			
Chloroethane	9.61	1	10		96	70	130			
Bromomethane	8.61	2	10		86	70	130			
Trichlorofluoromethane	9.84	1	10		98	70	130			
Acetone	287	10	200		144	36	171			
1,1-Dichloroethene	10.5	1	10		105	70	130			
Dichloromethane	9.12	2	10		91	70	130			
Freon-113	11.3	1	10		113	70	137			
trans-1,2-Dichloroethene	10.4	1	10		104	70	130			
Methyl tert-butyl ether (MTBE)	9.42	0.5	10		94	70	130			
1,1-Dichloroethane	10.1	1	10		101	70	130			
2-Butanone (MEK)	269	10	200		135	70	130(130)			L51
cis-1,2-Dichloroethene	10.3	1	10		103	70	130			
Bromochloromethane	10.2	1	10		102	70	130			
Chloroform	9.05	1	10		91	70	130			
2,2-Dichloropropane	10.2	1	10		102	70	130			
1,2-Dichloroethane	9.91	1	10		99	70	130			
1,1,1-Trichloroethane	10.5	1	10		105	70	130			
1,1-Dichloropropene	10.8	1	10		108	70	130			
Carbon tetrachloride	9.29	1	10		93	70	130			
Benzene	9.98	0.5	10		99.8	70	130			
Dibromomethane	9.85	1	10		99	70	130			
1,2-Dichloropropane	9.31	1	10		93	70	130			
Trichloroethene	10.4	1	10		104	70	130			
Bromodichloromethane	8.86	1	10		89	70	130			
4-Methyl-2-pentanone (MIBK)	25.7	2.5	25		103	20	182			
cis-1,3-Dichloropropene	9.16	1	10		92	70	130			
trans-1,3-Dichloropropene	9.01	1	10		90	70	130			
1,1,2-Trichloroethane	9.93	1	10		99	70	130			
Toluene	10.1	0.5	10		101	70	130			
1,3-Dichloropropane	10.2	1	10		102	70	130			
2-Hexanone	137	5	100		137	20	182			
Dibromochloromethane	8.78	1	10		88	70	130			
1,2-Dibromoethane (EDB)	19.7	2	20		99	70	130			
Tetrachloroethene	10.7	1	10		107	70	130			
1,1,1,2-Tetrachloroethane	10.7	1	10		107	70	130			
Chlorobenzene	10.1	1	10		101	70	130			
Ethylbenzene	9.94	0.5	10		99	70	130			
m,p-Xylene	10.1	0.5	10		101	70	130			
Bromoform	8.18	1	10		82	70	130			
Styrene	8.78	1	10		88	70	130			
o-Xylene	9.72	0.5	10		97	70	130			
1,1,2,2-Tetrachloroethane	9.65	1	10		97	70	130			
1,2,3-Trichloropropane	20.5	2	20		103	70	130			
Isopropylbenzene	9.97	1	10		99.7	70	130			
Bromobenzene	10.2	1	10		102	70	130			
n-Propylbenzene	10.4	1	10		104	70	130			
4-Chlorotoluene	10.4	1	10		104	70	130			
2-Chlorotoluene	10	1	10		100	70	130			
1,3,5-Trimethylbenzene	10.3	1	10		103	70	130			
tert-Butylbenzene	10.1	1	10		101	70	130			
1,2,4-Trimethylbenzene	10.4	1	10		104	70	130			
sec-Butylbenzene	10.3	1	10		103	70	130			
1,3-Dichlorobenzene	9.6	1	10		96	70	130			
1,4-Dichlorobenzene	10.1	1	10		101	70	130			
4-Isopropyltoluene	10.5	1	10		105	70	130			
1,2-Dichlorobenzene	9.61	1	10		96	70	130			
n-Butylbenzene	10.4	1	10		104	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	47.7	3	50		95	67	130			
1,2,4-Trichlorobenzene	9.82	2	10		98	70	130			
Naphthalene	8.54	2	10		85	70	130			
Hexachlorobutadiene	21.1	2	20		105	70	130			

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Date: *18-May-12*

QC Summary Report

Work Order: 12050803

1,2,3-Trichlorobenzene	8.52	2	10	85	70	130
Surr: 1,2-Dichloroethane-d4	10.9		10	109	70	130
Surr: Toluene-d8	10.2		10	102	70	130
Surr: 4-Bromofluorobenzene	9.65		10	97	70	130

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Date: 18-May-12

QC Summary Report

Work Order: 12050803

Sample Matrix Spike Type **MS** Test Code: **EPA Method SW8260B**

File ID: **12051530.D** Batch ID: **MS15W0515M** Analysis Date: **05/15/2012 21:28**

Sample ID: **12050803-02AMS** Units : **µg/L** Run ID: **MSD_15_120515A** Prep Date: **05/15/2012 21:28**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	68.5	2.5	50	0	137	21	138			
Chloromethane	44.4	10	50	0	89	23	144			
Vinyl chloride	63.6	2.5	50	0	127	49	136			
Chloroethane	51.6	2.5	50	0	103	21	159			
Bromomethane	35.6	10	50	0	71	10	174			
Trichlorofluoromethane	63.8	2.5	50	0	128	32	154			
Acetone	616	50	1000	0	62	10	171			
1,1-Dichloroethene	55.7	2.5	50	0	111	64	130			
Dichloromethane	47.7	10	50	0	95	69	130			
Freon-113	60.5	2.5	50	0	121	55	141			
trans-1,2-Dichloroethene	53.8	2.5	50	0	108	63	130			
Methyl tert-butyl ether (MTBE)	48.8	1.3	50	0	98	47	150			
1,1-Dichloroethane	53	2.5	50	0	106	66	130			
2-Butanone (MEK)	787	50	1000	0	79	23	182			
cis-1,2-Dichloroethene	54.1	2.5	50	0	108	70	130			
Bromochloromethane	54.6	2.5	50	0	109	70	132			
Chloroform	53.1	2.5	50	4.89	96	70	130			
2,2-Dichloropropane	44.8	2.5	50	0	90	38	154			
1,2-Dichloroethane	54.1	2.5	50	0	108	65	134			
1,1,1-Trichloroethane	54.6	2.5	50	0	109	65	136			
1,1-Dichloropropene	58.2	2.5	50	0	116	68	132			
Carbon tetrachloride	49.7	2.5	50	0	99	58	148			
Benzene	52.4	1.3	50	0	105	59	138			
Dibromomethane	53.8	2.5	50	0	108	70	130			
1,2-Dichloropropane	49.5	2.5	50	0	99	70	131			
Trichloroethene	53.4	2.5	50	0	107	65	144			
Bromodichloromethane	48	2.5	50	0	96	50	157			
4-Methyl-2-pentanone (MIBK)	120	13	125	0	96	20	182			
cis-1,3-Dichloropropene	45.8	2.5	50	0	92	63	131			
trans-1,3-Dichloropropene	46.9	2.5	50	0	94	65	136			
1,1,2-Trichloroethane	55	2.5	50	0	110	70	131			
Toluene	49.5	1.3	50	0	99	68	130			
1,3-Dichloropropane	52.4	2.5	50	0	105	70	130			
2-Hexanone	372	25	500	0	74	20	182			
Dibromochloromethane	46.4	2.5	50	0	93	42	155			
1,2-Dibromoethane (EDB)	102	5	100	0	102	70	130			
Tetrachloroethene	54	2.5	50	0.57	107	65	130			
1,1,1,2-Tetrachloroethane	55.6	2.5	50	0	111	70	130			
Chlorobenzene	53	2.5	50	0	106	70	130			
Ethylbenzene	51.3	1.3	50	0	103	68	130			
m,p-Xylene	50	1.3	50	0	100	68	131			
Bromoform	44.7	2.5	50	0	89	65	143			
Styrene	45.7	2.5	50	0	91	59	153			
o-Xylene	49.9	1.3	50	0	99.8	70	130			
1,1,2,2-Tetrachloroethane	54.1	2.5	50	0	108	67	130			
1,2,3-Trichloropropane	113	10	100	0	113	70	130			
Isopropylbenzene	49.9	2.5	50	0	99.7	55	138			
Bromobenzene	52	2.5	50	0	104	70	130			
n-Propylbenzene	52	2.5	50	0	104	67	133			
4-Chlorotoluene	51.4	2.5	50	0	103	70	130			
2-Chlorotoluene	50.8	2.5	50	0	102	70	130			
1,3,5-Trimethylbenzene	52.4	2.5	50	0	105	67	134			
tert-Butylbenzene	51.2	2.5	50	0	102	55	147			
1,2,4-Trimethylbenzene	51.6	2.5	50	0	103	65	135			
sec-Butylbenzene	51.9	2.5	50	0	104	68	135			
1,3-Dichlorobenzene	48.7	2.5	50	0	97	70	130			
1,4-Dichlorobenzene	51.7	2.5	50	0	103	70	130			
4-Isopropyltoluene	52.9	2.5	50	0	106	68	132			
1,2-Dichlorobenzene	49.5	2.5	50	0	99	70	130			
n-Butylbenzene	52	2.5	50	0	104	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	256	15	250	0	102	64	130			
1,2,4-Trichlorobenzene	47.3	10	50	0	95	62	133			
Naphthalene	41.6	10	50	0	83	32	166			
Hexachlorobutadiene	100	10	100	0	100	63	130			
1,2,3-Trichlorobenzene	40	10	50	0	80	55	138			

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Date: *18-May-12*

QC Summary Report

Work Order: 12050803

Surr: 1,2-Dichloroethane-d4	52.9	50	106	70	130
Surr: Toluene-d8	48.7	50	97	70	130
Surr: 4-Bromofluorobenzene	46.4	50	93	70	130

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

CA

WorkOrder : BMIS12050803

Report Due By : 5:00 PM On : 21-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : Mario Mendoza

PO : 286215

Client's COC # : 53773

Job : 100006114 / JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
0 °C	08-May-12	**08-May-12**

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12050803-01A	MW-21-5	AQ	05/07/12 07:55	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050803-02A	MW-21-4	AQ	05/07/12 08:35	10	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	MS/MSD
BMI12050803-03A	MW-21-3	AQ	05/07/12 09:38	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050803-04A	MW-21-2	AQ	05/07/12 10:17	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050803-05A	MW-21-1	AQ	05/07/12 10:50	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050803-06A	EB-9-5/7/12	AQ	05/07/12 10:38	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050803-07A	TB-9-5/7/12	AQ	05/07/12 00:00	1	0	9							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 3/2/12
BMI12050803-08A	SB-1-5/7/12	AQ	05/07/12 09:10	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	

Comments: Security seals intact. Frozen Ice. Temp. Blank #8908 received @ 0°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Coffee	Sara Coffee	**Alpha Analytical, Inc.**	5/8/12 9:38

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

53773

Billing Information:
Company Name: BATTELLE
Attn: GERALD TOMPKINS
Address: 505 KING AVE.
City, State, Zip: COLUMBUS, OH 43201
Phone Number: _____ Fax: _____

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ___ CA X NV ___ WA ___ DOD Site ___
ID ___ OR ___ OTHER ___ Page # 1 of 1

Consultant / Client Name: BATTELLE/DAVID CONNELL
Address: 3990 OLD TOWN AVE, C-205
City, State, Zip: SAN DIEGO, CA 92110
Job #: 100006114/PO# 286479
Job Name: SPL GWMON. 2012
Report Attention / Project Manager
Name: DAVID CONNELL
Email: connelld@battelle.org
Phone: _____ Mobile: (619) 726-7311
P.O. #: 286215 (Office Use Only)

Analyses Required: (524.2) LOCs; (200.8) * PENTACHLORATE (314.0); (SM2320B, SM2540C, 150.2) *; (300.0) *

Data Validation Level: III or IV

EDD / EDF? YES ___ NO ___
Global ID # ___

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number	Sample Description	TAT	Field Filtered	# Containers**	REMARKS
755	5/7/12	AQ	BMI12050803-01A	MW-21-5			3v, 2p	
835			-02A	MW-21-4			6v, 4p	MS/MSD
938			-03A	MW-21-3			3v, 2p	
1017			-04A	MW-21-2			3v, 2p	
1050		AQ	-05A	MW-21-1			3v, 2p	
1038		AQ	-06A	EB-9-5/7/12			3v, 2p	EQUIP BLANK
—	5/7/12	AQ	-07A	TB-9-5/7/12			1v	TRIP BLANK
910	5/7/12	AQ	-08A	SB-1-5/7/12			3v, 2p	SOURCE BLANK

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: *(200.8) - TOTAL Cr, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320B, SM2540C, 150.2) - CO_3, HCO_3, TDS, PH, ALK. *(300.0) - CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: MARK MONDO

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation) / Alpha Analytical	Date: 5/7/12	Time: 1234
Relinquished by: (Signature/Affiliation) / Alpha Analytical	Received by: (Signature/Affiliation) Jennifer Lopez/Alpha	Date: 5/8/12	Time: 9:30
Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *22-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Work Order: BMI12050904 **Cooler Temp:** 1 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12050904-01A	MW-3-5	Aqueous
12050904-02A	MW-3-4	Aqueous
12050904-03A	MW-3-3	Aqueous
12050904-04A	MW-3-2	Aqueous
12050904-05A	MW-3-1	Aqueous
12050904-06A	DUPE-4-2Q12	Aqueous
12050904-07A	EB-10-5/8/2012	Aqueous
12050904-08A	TB-10-5/8/2012	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-3-5**				
Lab ID : BMI12050904-01A Chloride	11	0.50 mg/L	05/10/12 13:41	05/10/12 14:58
Date Sampled 05/08/12 08:08 Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 14:58
Nitrate (NO3) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 14:58
Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 14:58
Sulfate (SO4)	ND	0.50 mg/L	05/10/12 13:41	05/10/12 14:58
Client ID: **MW-3-4**				
Lab ID : BMI12050904-02A Chloride	12	0.50 mg/L	05/10/12 13:41	05/10/12 15:16
Date Sampled 05/08/12 08:41 Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 15:16
Nitrate (NO3) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 15:16
Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 15:16
Sulfate (SO4)	6.0	0.50 mg/L	05/10/12 13:41	05/10/12 15:16
Client ID: **MW-3-3**				
Lab ID : BMI12050904-03A Chloride	20	0.50 mg/L	05/10/12 13:41	05/10/12 15:35
Date Sampled 05/08/12 09:12 Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 15:35
Nitrate (NO3) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 15:35
Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 15:35
Sulfate (SO4)	ND	0.50 mg/L	05/10/12 13:41	05/10/12 15:35
Client ID: **MW-3-2**				
Lab ID : BMI12050904-04A Chloride	9.5	0.50 mg/L	05/10/12 13:41	05/10/12 15:54
Date Sampled 05/08/12 09:45 Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 15:54
Nitrate (NO3) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 15:54
Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 15:54
Sulfate (SO4)	19	0.50 mg/L	05/10/12 13:41	05/10/12 15:54
Client ID: **MW-3-1**				
Lab ID : BMI12050904-05A Chloride	6.9	0.50 mg/L	05/10/12 13:41	05/10/12 16:12
Date Sampled 05/08/12 11:51 Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 16:12
Nitrate (NO3) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 16:12
Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 16:12
Sulfate (SO4)	20	0.50 mg/L	05/10/12 13:41	05/10/12 16:12
Client ID: **DUPE-4-2Q12**				
Lab ID : BMI12050904-06A Chloride	6.9	0.50 mg/L	05/10/12 13:41	05/10/12 16:31
Date Sampled 05/08/12 00:00 Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 16:31
Nitrate (NO3) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 16:31
Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 16:31
Sulfate (SO4)	20	0.50 mg/L	05/10/12 13:41	05/10/12 16:31

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Client ID: **EB-10-5/8/2012**

Lab ID : BMI12050904-07A

Date Sampled 05/08/12 11:40

Chloride	ND	0.50 mg/L	05/10/12 13:41	05/10/12 16:49
Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 16:49
Nitrate (NO3) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 16:49
Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 16:49
Sulfate (SO4)	ND	0.50 mg/L	05/10/12 13:41	05/10/12 16:49

Information regarding the estimate of the uncertainty of measurement is available upon client request.

Note: NO2/NO3 were received 48 hours into the 48 hour holding time. Samples were analyzed, per client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/22/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-3-5**				
Lab ID : BMI12050904-01A Perchlorate	ND	1.00 µg/L	05/10/12 17:30	05/14/12 18:02
Date Sampled 05/08/12 08:08				
Client ID: **MW-3-4**				
Lab ID : BMI12050904-02A Perchlorate	ND	1.00 µg/L	05/10/12 17:30	05/14/12 18:57
Date Sampled 05/08/12 08:41				
Client ID: **MW-3-3**				
Lab ID : BMI12050904-03A Perchlorate	ND	1.00 µg/L	05/10/12 17:30	05/14/12 19:16
Date Sampled 05/08/12 09:12				
Client ID: **MW-3-2**				
Lab ID : BMI12050904-04A Perchlorate	1.31	1.00 µg/L	05/10/12 17:30	05/14/12 19:34
Date Sampled 05/08/12 09:45				
Client ID: **MW-3-1**				
Lab ID : BMI12050904-05A Perchlorate	ND	1.00 µg/L	05/10/12 17:30	05/14/12 19:53
Date Sampled 05/08/12 11:51				
Client ID: **DUPE-4-2Q12**				
Lab ID : BMI12050904-06A Perchlorate	ND	1.00 µg/L	05/10/12 17:30	05/14/12 20:11
Date Sampled 05/08/12 00:00				
Client ID: **EB-10-5/8/2012**				
Lab ID : BMI12050904-07A Perchlorate	ND	1.00 µg/L	05/10/12 17:30	05/14/12 21:06
Date Sampled 05/08/12 11:40				

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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5/22/12
Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-3-5**					
Lab ID : BMI12050904-01A	Alkalinity, Bicarbonate (As CaCO3)	170	10 mg/L	05/10/12 13:15	05/10/12 13:15
Date Sampled 05/08/12 08:08	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 13:15	05/10/12 13:15
	Alkalinity, Total (As CaCO3 at pH 4.5)	170	10 mg/L	05/10/12 13:15	05/10/12 13:15
Client ID: **MW-3-4**					
Lab ID : BMI12050904-02A	Alkalinity, Bicarbonate (As CaCO3)	180	10 mg/L	05/10/12 13:20	05/10/12 13:20
Date Sampled 05/08/12 08:41	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 13:20	05/10/12 13:20
	Alkalinity, Total (As CaCO3 at pH 4.5)	180	10 mg/L	05/10/12 13:20	05/10/12 13:20
Client ID: **MW-3-3**					
Lab ID : BMI12050904-03A	Alkalinity, Bicarbonate (As CaCO3)	210	10 mg/L	05/10/12 13:42	05/10/12 13:42
Date Sampled 05/08/12 09:12	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 13:42	05/10/12 13:42
	Alkalinity, Total (As CaCO3 at pH 4.5)	210	10 mg/L	05/10/12 13:42	05/10/12 13:42
Client ID: **MW-3-2**					
Lab ID : BMI12050904-04A	Alkalinity, Bicarbonate (As CaCO3)	220	10 mg/L	05/10/12 13:54	05/10/12 13:54
Date Sampled 05/08/12 09:45	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 13:54	05/10/12 13:54
	Alkalinity, Total (As CaCO3 at pH 4.5)	220	10 mg/L	05/10/12 13:54	05/10/12 13:54
Client ID: **MW-3-1**					
Lab ID : BMI12050904-05A	Alkalinity, Bicarbonate (As CaCO3)	180	10 mg/L	05/10/12 14:00	05/10/12 14:00
Date Sampled 05/08/12 11:51	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 14:00	05/10/12 14:00
	Alkalinity, Total (As CaCO3 at pH 4.5)	180	10 mg/L	05/10/12 14:00	05/10/12 14:00
Client ID: **DUPE-4-2Q12**					
Lab ID : BMI12050904-06A	Alkalinity, Bicarbonate (As CaCO3)	180	10 mg/L	05/10/12 14:05	05/10/12 14:05
Date Sampled 05/08/12 00:00	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 14:05	05/10/12 14:05
	Alkalinity, Total (As CaCO3 at pH 4.5)	180	10 mg/L	05/10/12 14:05	05/10/12 14:05
Client ID: **EB-10-5/8/2012**					
Lab ID : BMI12050904-07A	Alkalinity, Bicarbonate (As CaCO3)	ND	10 mg/L	05/10/12 14:08	05/10/12 14:08
Date Sampled 05/08/12 11:40	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/10/12 14:08	05/10/12 14:08
	Alkalinity, Total (As CaCO3 at pH 4.5)	ND	10 mg/L	05/10/12 14:08	05/10/12 14:08

Alpha Analytical, Inc.

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/22/12

Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-3-5**					
Lab ID : BMI12050904-01A	Sodium (Na)	63	0.50 mg/L	05/10/12 13:18	05/10/12 19:52
Date Sampled 05/08/12 08:08	Magnesium (Mg)	4.6	0.50 mg/L	05/10/12 13:18	05/10/12 19:52
	Potassium (K)	1.5	0.50 mg/L	05/10/12 13:18	05/10/12 19:52
	Calcium (Ca)	16	0.50 mg/L	05/10/12 13:18	05/10/12 19:52
	Chromium (Cr)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 19:52
	Iron (Fe)	0.85	0.30 mg/L	05/10/12 13:18	05/10/12 19:52
	Arsenic (As)	0.0039	0.0020 mg/L	05/10/12 13:18	05/10/12 19:52
	Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 19:52
Client ID: **MW-3-4**					
Lab ID : BMI12050904-02A	Sodium (Na)	64	0.50 mg/L	05/10/12 13:18	05/10/12 20:15
Date Sampled 05/08/12 08:41	Magnesium (Mg)	6.5	0.50 mg/L	05/10/12 13:18	05/10/12 20:15
	Potassium (K)	1.6	0.50 mg/L	05/10/12 13:18	05/10/12 20:15
	Calcium (Ca)	25	0.50 mg/L	05/10/12 13:18	05/10/12 20:15
	Chromium (Cr)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 20:15
	Iron (Fe)	1.8	0.30 mg/L	05/10/12 13:18	05/10/12 20:15
	Arsenic (As)	0.0063	0.0020 mg/L	05/10/12 13:18	05/10/12 20:15
	Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 20:15
Client ID: **MW-3-3**					
Lab ID : BMI12050904-03A	Sodium (Na)	44	0.50 mg/L	05/10/12 13:18	05/10/12 20:21
Date Sampled 05/08/12 09:12	Magnesium (Mg)	17	0.50 mg/L	05/10/12 13:18	05/10/12 20:21
	Potassium (K)	3.0	0.50 mg/L	05/10/12 13:18	05/10/12 20:21
	Calcium (Ca)	36	0.50 mg/L	05/10/12 13:18	05/10/12 20:21
	Chromium (Cr)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 20:21
	Iron (Fe)	1.6	0.30 mg/L	05/10/12 13:18	05/10/12 20:21
	Arsenic (As)	ND	0.0020 mg/L	05/10/12 13:18	05/10/12 20:21
	Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 20:21
Client ID: **MW-3-2**					
Lab ID : BMI12050904-04A	Sodium (Na)	21	0.50 mg/L	05/10/12 13:18	05/10/12 20:27
Date Sampled 05/08/12 09:45	Magnesium (Mg)	17	0.50 mg/L	05/10/12 13:18	05/10/12 20:27
	Potassium (K)	2.8	0.50 mg/L	05/10/12 13:18	05/10/12 20:27
	Calcium (Ca)	52	0.50 mg/L	05/10/12 13:18	05/10/12 20:27
	Chromium (Cr)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 20:27
	Iron (Fe)	1.4	0.30 mg/L	05/10/12 13:18	05/10/12 20:27
	Arsenic (As)	ND	0.0020 mg/L	05/10/12 13:18	05/10/12 20:27
	Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 20:27

Alpha Analytical, Inc.

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Client ID: **MW-3-1**					
Lab ID : BMI12050904-05A	Sodium (Na)	23	0.50 mg/L	05/10/12 13:18	05/10/12 20:32
Date Sampled 05/08/12 11:51	Magnesium (Mg)	14	0.50 mg/L	05/10/12 13:18	05/10/12 20:32
	Potassium (K)	2.7	0.50 mg/L	05/10/12 13:18	05/10/12 20:32
	Calcium (Ca)	43	0.50 mg/L	05/10/12 13:18	05/10/12 20:32
	Chromium (Cr)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 20:32
	Iron (Fe)	1.5	0.30 mg/L	05/10/12 13:18	05/10/12 20:32
	Arsenic (As)	ND	0.0020 mg/L	05/10/12 13:18	05/10/12 20:32
	Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 20:32
Client ID: **DUPE-4-2Q12**					
Lab ID : BMI12050904-06A	Sodium (Na)	23	0.50 mg/L	05/10/12 13:18	05/10/12 20:38
Date Sampled 05/08/12 00:00	Magnesium (Mg)	14	0.50 mg/L	05/10/12 13:18	05/10/12 20:38
	Potassium (K)	2.7	0.50 mg/L	05/10/12 13:18	05/10/12 20:38
	Calcium (Ca)	43	0.50 mg/L	05/10/12 13:18	05/10/12 20:38
	Chromium (Cr)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 20:38
	Iron (Fe)	1.6	0.30 mg/L	05/10/12 13:18	05/10/12 20:38
	Arsenic (As)	ND	0.0020 mg/L	05/10/12 13:18	05/10/12 20:38
	Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 20:38
Client ID: **EB-10-5/8/2012**					
Lab ID : BMI12050904-07A	Sodium (Na)	ND	0.50 mg/L	05/10/12 13:18	05/10/12 20:44
Date Sampled 05/08/12 11:40	Magnesium (Mg)	ND	0.50 mg/L	05/10/12 13:18	05/10/12 20:44
	Potassium (K)	ND	0.50 mg/L	05/10/12 13:18	05/10/12 20:44
	Calcium (Ca)	ND	0.50 mg/L	05/10/12 13:18	05/10/12 20:44
	Chromium (Cr)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 20:44
	Iron (Fe)	ND	0.30 mg/L	05/10/12 13:18	05/10/12 20:44
	Arsenic (As)	ND	0.0020 mg/L	05/10/12 13:18	05/10/12 20:44
	Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 20:44

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/22/12

Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-3-5**				
Lab ID : BMI12050904-01A pH	8.3	1.7 pH Units	05/10/12 15:49	05/10/12 15:49
Date Sampled 05/08/12 08:08 pH - Temperature	21	1.0 °C	05/10/12 15:49	05/10/12 15:49
Client ID: **MW-3-4**				
Lab ID : BMI12050904-02A pH	7.9	1.7 pH Units	05/10/12 15:51	05/10/12 15:51
Date Sampled 05/08/12 08:41 pH - Temperature	20	1.0 °C	05/10/12 15:51	05/10/12 15:51
Client ID: **MW-3-3**				
Lab ID : BMI12050904-03A pH	8.1	1.7 pH Units	05/10/12 15:53	05/10/12 15:53
Date Sampled 05/08/12 09:12 pH - Temperature	20	1.0 °C	05/10/12 15:53	05/10/12 15:53
Client ID: **MW-3-2**				
Lab ID : BMI12050904-04A pH	7.5	1.7 pH Units	05/10/12 15:53	05/10/12 15:53
Date Sampled 05/08/12 09:45 pH - Temperature	20	1.0 °C	05/10/12 15:53	05/10/12 15:53
Client ID: **MW-3-1**				
Lab ID : BMI12050904-05A pH	7.8	1.7 pH Units	05/10/12 15:57	05/10/12 15:57
Date Sampled 05/08/12 11:51 pH - Temperature	21	1.0 °C	05/10/12 15:57	05/10/12 15:57
Client ID: **DUPE-4-2Q12**				
Lab ID : BMI12050904-06A pH	7.7	1.7 pH Units	05/10/12 15:59	05/10/12 15:59
Date Sampled 05/08/12 00:00 pH - Temperature	21	1.0 °C	05/10/12 15:59	05/10/12 15:59
Client ID: **EB-10-5/8/2012**				
Lab ID : BMI12050904-07A pH	6.9	1.7 pH Units	05/10/12 16:09	05/10/12 16:09
Date Sampled 05/08/12 11:40 pH - Temperature	21	1.0 °C	05/10/12 16:09	05/10/12 16:09

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The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.

The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-3-5**					
Lab ID : BMI12050904-01A	Solids, Total Dissolved (TDS)	200	10 mg/L	05/11/12	05/11/12
Date Sampled 05/08/12 08:08					
Client ID: **MW-3-4**					
Lab ID : BMI12050904-02A	Solids, Total Dissolved (TDS)	220	10 mg/L	05/11/12	05/11/12
Date Sampled 05/08/12 08:41					
Client ID: **MW-3-3**					
Lab ID : BMI12050904-03A	Solids, Total Dissolved (TDS)	260	10 mg/L	05/11/12	05/11/12
Date Sampled 05/08/12 09:12					
Client ID: **MW-3-2**					
Lab ID : BMI12050904-04A	Solids, Total Dissolved (TDS)	240	10 mg/L	05/11/12	05/11/12
Date Sampled 05/08/12 09:45					
Client ID: **MW-3-1**					
Lab ID : BMI12050904-05A	Solids, Total Dissolved (TDS)	220	10 mg/L	05/11/12	05/11/12
Date Sampled 05/08/12 11:51					
Client ID: **DUPE-4-2Q12**					
Lab ID : BMI12050904-06A	Solids, Total Dissolved (TDS)	220	10 mg/L	05/11/12	05/11/12
Date Sampled 05/08/12 00:00					
Client ID: **EB-10-5/8/2012**					
Lab ID : BMI12050904-07A	Solids, Total Dissolved (TDS)	ND	10 mg/L	05/11/12	05/11/12
Date Sampled 05/08/12 11:40					

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/22/12
Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-3-5**					
Lab ID : BMI12050904-01A	Acrylonitrile	ND	10 µg/L	05/15/12 17:29	05/15/12 17:29
Date Sampled 05/08/12 08:08	Allyl chloride	ND	2.0 µg/L	05/15/12 17:29	05/15/12 17:29
	Carbon disulfide	ND	2.5 µg/L	05/15/12 17:29	05/15/12 17:29
	Chloroacetonitrile	ND	10 µg/L	05/15/12 17:29	05/15/12 17:29
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 17:29	05/15/12 17:29
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 17:29	05/15/12 17:29
	Diethyl ether	ND	2.0 µg/L	05/15/12 17:29	05/15/12 17:29
	Ethyl methacrylate	ND	10 µg/L	05/15/12 17:29	05/15/12 17:29
	Hexachloroethane	ND	10 µg/L	05/15/12 17:29	05/15/12 17:29
	Methacrylonitrile	ND	10 µg/L	05/15/12 17:29	05/15/12 17:29
	Methyl acrylate	ND	10 µg/L	05/15/12 17:29	05/15/12 17:29
	Methyl iodide	ND	2.0 µg/L	05/15/12 17:29	05/15/12 17:29
	Methyl methacrylate	ND	10 µg/L	05/15/12 17:29	05/15/12 17:29
	Nitrobenzene	ND	10 µg/L	05/15/12 17:29	05/15/12 17:29
	2-Nitropropane	ND	2.0 µg/L	05/15/12 17:29	05/15/12 17:29
	Pentachloroethane	ND	2.0 µg/L	05/15/12 17:29	05/15/12 17:29
	Propionitrile	ND	50 µg/L	05/15/12 17:29	05/15/12 17:29
	Tetrahydrofuran	ND	10 µg/L	05/15/12 17:29	05/15/12 17:29
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 17:29	05/15/12 17:29
Client ID: **MW-3-4**					
Lab ID : BMI12050904-02A	Acrylonitrile	ND	10 µg/L	05/15/12 17:51	05/15/12 17:51
Date Sampled 05/08/12 08:41	Allyl chloride	ND	2.0 µg/L	05/15/12 17:51	05/15/12 17:51
	Carbon disulfide	ND	2.5 µg/L	05/15/12 17:51	05/15/12 17:51
	Chloroacetonitrile	ND	10 µg/L	05/15/12 17:51	05/15/12 17:51
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 17:51	05/15/12 17:51
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 17:51	05/15/12 17:51
	Diethyl ether	ND	2.0 µg/L	05/15/12 17:51	05/15/12 17:51
	Ethyl methacrylate	ND	10 µg/L	05/15/12 17:51	05/15/12 17:51
	Hexachloroethane	ND	10 µg/L	05/15/12 17:51	05/15/12 17:51
	Methacrylonitrile	ND	10 µg/L	05/15/12 17:51	05/15/12 17:51
	Methyl acrylate	ND	10 µg/L	05/15/12 17:51	05/15/12 17:51
	Methyl iodide	ND	2.0 µg/L	05/15/12 17:51	05/15/12 17:51
	Methyl methacrylate	ND	10 µg/L	05/15/12 17:51	05/15/12 17:51
	Nitrobenzene	ND	10 µg/L	05/15/12 17:51	05/15/12 17:51
	2-Nitropropane	ND	2.0 µg/L	05/15/12 17:51	05/15/12 17:51
	Pentachloroethane	ND	2.0 µg/L	05/15/12 17:51	05/15/12 17:51
	Propionitrile	ND	50 µg/L	05/15/12 17:51	05/15/12 17:51
	Tetrahydrofuran	ND	10 µg/L	05/15/12 17:51	05/15/12 17:51
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 17:51	05/15/12 17:51

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Client ID: **MW-3-3**					
Lab ID : BMI12050904-03A	Acrylonitrile	ND	10 µg/L	05/15/12 18:12	05/15/12 18:12
Date Sampled 05/08/12 09:12	Allyl chloride	ND	2.0 µg/L	05/15/12 18:12	05/15/12 18:12
	Carbon disulfide	ND	2.5 µg/L	05/15/12 18:12	05/15/12 18:12
	Chloroacetonitrile	ND	10 µg/L	05/15/12 18:12	05/15/12 18:12
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 18:12	05/15/12 18:12
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 18:12	05/15/12 18:12
	Diethyl ether	ND	2.0 µg/L	05/15/12 18:12	05/15/12 18:12
	Ethyl methacrylate	ND	10 µg/L	05/15/12 18:12	05/15/12 18:12
	Hexachloroethane	ND	10 µg/L	05/15/12 18:12	05/15/12 18:12
	Methacrylonitrile	ND	10 µg/L	05/15/12 18:12	05/15/12 18:12
	Methyl acrylate	ND	10 µg/L	05/15/12 18:12	05/15/12 18:12
	Methyl iodide	ND	2.0 µg/L	05/15/12 18:12	05/15/12 18:12
	Methyl methacrylate	ND	10 µg/L	05/15/12 18:12	05/15/12 18:12
	Nitrobenzene	ND	10 µg/L	05/15/12 18:12	05/15/12 18:12
	2-Nitropropane	ND	2.0 µg/L	05/15/12 18:12	05/15/12 18:12
	Pentachloroethane	ND	2.0 µg/L	05/15/12 18:12	05/15/12 18:12
	Propionitrile	ND	50 µg/L	05/15/12 18:12	05/15/12 18:12
	Tetrahydrofuran	ND	10 µg/L	05/15/12 18:12	05/15/12 18:12
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 18:12	05/15/12 18:12
Client ID: **MW-3-2**					
Lab ID : BMI12050904-04A	Acrylonitrile	ND	10 µg/L	05/15/12 18:34	05/15/12 18:34
Date Sampled 05/08/12 09:45	Allyl chloride	ND	2.0 µg/L	05/15/12 18:34	05/15/12 18:34
	Carbon disulfide	ND	2.5 µg/L	05/15/12 18:34	05/15/12 18:34
	Chloroacetonitrile	ND	10 µg/L	05/15/12 18:34	05/15/12 18:34
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 18:34	05/15/12 18:34
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 18:34	05/15/12 18:34
	Diethyl ether	ND	2.0 µg/L	05/15/12 18:34	05/15/12 18:34
	Ethyl methacrylate	ND	10 µg/L	05/15/12 18:34	05/15/12 18:34
	Hexachloroethane	ND	10 µg/L	05/15/12 18:34	05/15/12 18:34
	Methacrylonitrile	ND	10 µg/L	05/15/12 18:34	05/15/12 18:34
	Methyl acrylate	ND	10 µg/L	05/15/12 18:34	05/15/12 18:34
	Methyl iodide	ND	2.0 µg/L	05/15/12 18:34	05/15/12 18:34
	Methyl methacrylate	ND	10 µg/L	05/15/12 18:34	05/15/12 18:34
	Nitrobenzene	ND	10 µg/L	05/15/12 18:34	05/15/12 18:34
	2-Nitropropane	ND	2.0 µg/L	05/15/12 18:34	05/15/12 18:34
	Pentachloroethane	ND	2.0 µg/L	05/15/12 18:34	05/15/12 18:34
	Propionitrile	ND	50 µg/L	05/15/12 18:34	05/15/12 18:34
	Tetrahydrofuran	ND	10 µg/L	05/15/12 18:34	05/15/12 18:34
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 18:34	05/15/12 18:34

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Client ID: **MW-3-1**					
Lab ID : BMI12050904-05A	Acrylonitrile	ND	10 µg/L	05/15/12 18:56	05/15/12 18:56
Date Sampled 05/08/12 11:51	Allyl chloride	ND	2.0 µg/L	05/15/12 18:56	05/15/12 18:56
	Carbon disulfide	ND	2.5 µg/L	05/15/12 18:56	05/15/12 18:56
	Chloroacetonitrile	ND	10 µg/L	05/15/12 18:56	05/15/12 18:56
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 18:56	05/15/12 18:56
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 18:56	05/15/12 18:56
	Diethyl ether	ND	2.0 µg/L	05/15/12 18:56	05/15/12 18:56
	Ethyl methacrylate	ND	10 µg/L	05/15/12 18:56	05/15/12 18:56
	Hexachloroethane	ND	10 µg/L	05/15/12 18:56	05/15/12 18:56
	Methacrylonitrile	ND	10 µg/L	05/15/12 18:56	05/15/12 18:56
	Methyl acrylate	ND	10 µg/L	05/15/12 18:56	05/15/12 18:56
	Methyl iodide	ND	2.0 µg/L	05/15/12 18:56	05/15/12 18:56
	Methyl methacrylate	ND	10 µg/L	05/15/12 18:56	05/15/12 18:56
	Nitrobenzene	ND	10 µg/L	05/15/12 18:56	05/15/12 18:56
	2-Nitropropane	ND	2.0 µg/L	05/15/12 18:56	05/15/12 18:56
	Pentachloroethane	ND	2.0 µg/L	05/15/12 18:56	05/15/12 18:56
	Propionitrile	ND	50 µg/L	05/15/12 18:56	05/15/12 18:56
	Tetrahydrofuran	ND	10 µg/L	05/15/12 18:56	05/15/12 18:56
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 18:56	05/15/12 18:56
Client ID: **DUPE-4-2Q12**					
Lab ID : BMI12050904-06A	Acrylonitrile	ND	10 µg/L	05/15/12 19:17	05/15/12 19:17
Date Sampled 05/08/12 00:00	Allyl chloride	ND	2.0 µg/L	05/15/12 19:17	05/15/12 19:17
	Carbon disulfide	ND	2.5 µg/L	05/15/12 19:17	05/15/12 19:17
	Chloroacetonitrile	ND	10 µg/L	05/15/12 19:17	05/15/12 19:17
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 19:17	05/15/12 19:17
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 19:17	05/15/12 19:17
	Diethyl ether	ND	2.0 µg/L	05/15/12 19:17	05/15/12 19:17
	Ethyl methacrylate	ND	10 µg/L	05/15/12 19:17	05/15/12 19:17
	Hexachloroethane	ND	10 µg/L	05/15/12 19:17	05/15/12 19:17
	Methacrylonitrile	ND	10 µg/L	05/15/12 19:17	05/15/12 19:17
	Methyl acrylate	ND	10 µg/L	05/15/12 19:17	05/15/12 19:17
	Methyl iodide	ND	2.0 µg/L	05/15/12 19:17	05/15/12 19:17
	Methyl methacrylate	ND	10 µg/L	05/15/12 19:17	05/15/12 19:17
	Nitrobenzene	ND	10 µg/L	05/15/12 19:17	05/15/12 19:17
	2-Nitropropane	ND	2.0 µg/L	05/15/12 19:17	05/15/12 19:17
	Pentachloroethane	ND	2.0 µg/L	05/15/12 19:17	05/15/12 19:17
	Propionitrile	ND	50 µg/L	05/15/12 19:17	05/15/12 19:17
	Tetrahydrofuran	ND	10 µg/L	05/15/12 19:17	05/15/12 19:17
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 19:17	05/15/12 19:17

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Client ID: **EB-10-5/8/2012**					
Lab ID : BMI12050904-07A	Acrylonitrile	ND	10 µg/L	05/15/12 19:39	05/15/12 19:39
Date Sampled 05/08/12 11:40	Allyl chloride	ND	2.0 µg/L	05/15/12 19:39	05/15/12 19:39
	Carbon disulfide	ND	2.5 µg/L	05/15/12 19:39	05/15/12 19:39
	Chloroacetonitrile	ND	10 µg/L	05/15/12 19:39	05/15/12 19:39
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 19:39	05/15/12 19:39
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 19:39	05/15/12 19:39
	Diethyl ether	ND	2.0 µg/L	05/15/12 19:39	05/15/12 19:39
	Ethyl methacrylate	ND	10 µg/L	05/15/12 19:39	05/15/12 19:39
	Hexachloroethane	ND	10 µg/L	05/15/12 19:39	05/15/12 19:39
	Methacrylonitrile	ND	10 µg/L	05/15/12 19:39	05/15/12 19:39
	Methyl acrylate	ND	10 µg/L	05/15/12 19:39	05/15/12 19:39
	Methyl iodide	ND	2.0 µg/L	05/15/12 19:39	05/15/12 19:39
	Methyl methacrylate	ND	10 µg/L	05/15/12 19:39	05/15/12 19:39
	Nitrobenzene	ND	10 µg/L	05/15/12 19:39	05/15/12 19:39
	2-Nitropropane	ND	2.0 µg/L	05/15/12 19:39	05/15/12 19:39
	Pentachloroethane	ND	2.0 µg/L	05/15/12 19:39	05/15/12 19:39
	Propionitrile	ND	50 µg/L	05/15/12 19:39	05/15/12 19:39
	Tetrahydrofuran	ND	10 µg/L	05/15/12 19:39	05/15/12 19:39
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 19:39	05/15/12 19:39
Client ID: **TB-10-5/8/2012**					
Lab ID : BMI12050904-08A	Acrylonitrile	ND	10 µg/L	05/15/12 20:01	05/15/12 20:01
Date Sampled 05/08/12 07:00	Allyl chloride	ND	2.0 µg/L	05/15/12 20:01	05/15/12 20:01
	Carbon disulfide	ND	2.5 µg/L	05/15/12 20:01	05/15/12 20:01
	Chloroacetonitrile	ND	10 µg/L	05/15/12 20:01	05/15/12 20:01
	1-Chlorobutane	ND	2.0 µg/L	05/15/12 20:01	05/15/12 20:01
	1,1-Dichloropropanone	ND	10 µg/L	05/15/12 20:01	05/15/12 20:01
	Diethyl ether	ND	2.0 µg/L	05/15/12 20:01	05/15/12 20:01
	Ethyl methacrylate	ND	10 µg/L	05/15/12 20:01	05/15/12 20:01
	Hexachloroethane	ND	10 µg/L	05/15/12 20:01	05/15/12 20:01
	Methacrylonitrile	ND	10 µg/L	05/15/12 20:01	05/15/12 20:01
	Methyl acrylate	ND	10 µg/L	05/15/12 20:01	05/15/12 20:01
	Methyl iodide	ND	2.0 µg/L	05/15/12 20:01	05/15/12 20:01
	Methyl methacrylate	ND	10 µg/L	05/15/12 20:01	05/15/12 20:01
	Nitrobenzene	ND	10 µg/L	05/15/12 20:01	05/15/12 20:01
	2-Nitropropane	ND	2.0 µg/L	05/15/12 20:01	05/15/12 20:01
	Pentachloroethane	ND	2.0 µg/L	05/15/12 20:01	05/15/12 20:01
	Propionitrile	ND	50 µg/L	05/15/12 20:01	05/15/12 20:01
	Tetrahydrofuran	ND	10 µg/L	05/15/12 20:01	05/15/12 20:01
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/15/12 20:01	05/15/12 20:01

Alpha Analytical, Inc.

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Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/22/12

Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050904-01A
Client I.D. Number: MW-3-5

Sampled: 05/08/12 08:08
Received: 05/10/12
Extracted: 05/15/12 17:29
Analyzed: 05/15/12 17:29

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.
Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/22/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050904-02A
Client I.D. Number: MW-3-4

Sampled: 05/08/12 08:41
Received: 05/10/12
Extracted: 05/15/12 17:51
Analyzed: 05/15/12 17:51

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/22/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050904-03A
Client I.D. Number: MW-3-3

Sampled: 05/08/12 09:12
Received: 05/10/12
Extracted: 05/15/12 18:12
Analyzed: 05/15/12 18:12

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	1.0	µg/L	36 1,2-Dibromoethane (EDB)	ND	2.0	µg/L
2	Chloromethane	ND	4.0	µg/L	37 Tetrachloroethene	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38 1,1,1,2-Tetrachloroethane	ND	1.0	µg/L
4	Chloroethane	ND	1.0	µg/L	39 Chlorobenzene	ND	1.0	µg/L
5	Bromomethane	ND	4.0	µg/L	40 Ethylbenzene	0.94	0.50	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	20	µg/L	42 Bromoform	ND	1.0	µg/L
8	1,1-Dichloroethene	ND	1.0	µg/L	43 Styrene	ND	1.0	µg/L
9	Dichloromethane	ND	4.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	1.0	µg/L	45 1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
11	trans-1,2-Dichloroethene	ND	1.0	µg/L	46 1,2,3-Trichloropropane	ND	4.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	1.0	µg/L
13	1,1-Dichloroethane	ND	1.0	µg/L	48 Bromobenzene	ND	1.0	µg/L
14	2-Butanone (MEK)	ND	20	µg/L	49 n-Propylbenzene	ND	1.0	µg/L
15	cis-1,2-Dichloroethene	ND	1.0	µg/L	50 4-Chlorotoluene	ND	1.0	µg/L
16	Bromochloromethane	ND	1.0	µg/L	51 2-Chlorotoluene	ND	1.0	µg/L
17	Chloroform	ND	1.0	µg/L	52 1,3,5-Trimethylbenzene	ND	1.0	µg/L
18	2,2-Dichloropropane	ND	1.0	µg/L	53 tert-Butylbenzene	ND	1.0	µg/L
19	1,2-Dichloroethane	ND	1.0	µg/L	54 1,2,4-Trimethylbenzene	ND	1.0	µg/L
20	1,1,1-Trichloroethane	ND	1.0	µg/L	55 sec-Butylbenzene	ND	1.0	µg/L
21	1,1-Dichloropropene	ND	1.0	µg/L	56 1,3-Dichlorobenzene	ND	1.0	µg/L
22	Carbon tetrachloride	ND	1.0	µg/L	57 1,4-Dichlorobenzene	ND	1.0	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	1.0	µg/L
24	Dibromomethane	ND	1.0	µg/L	59 1,2-Dichlorobenzene	ND	1.0	µg/L
25	1,2-Dichloropropane	ND	1.0	µg/L	60 n-Butylbenzene	ND	1.0	µg/L
26	Trichloroethene	ND	1.0	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	6.0	µg/L
27	Bromodichloromethane	ND	1.0	µg/L	62 1,2,4-Trichlorobenzene	ND	4.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	5.0	µg/L	63 Naphthalene	ND	4.0	µg/L
29	cis-1,3-Dichloropropene	ND	1.0	µg/L	64 Hexachlorobutadiene	ND	4.0	µg/L
30	trans-1,3-Dichloropropene	ND	1.0	µg/L	65 1,2,3-Trichlorobenzene	ND	4.0	µg/L
31	1,1,2-Trichloroethane	ND	1.0	µg/L	66 Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	100	(70-130)	%REC
33	1,3-Dichloropropane	ND	1.0	µg/L	68 Surr: 4-Bromofluorobenzene	93	(70-130)	%REC
34	2-Hexanone	ND	10	µg/L				
35	Dibromochloromethane	ND	1.0	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.
Some Reporting Limits were increased due to sample foaming.
Information regarding the estimate of the uncertainty of measurement is available upon client request.
ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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5/22/12
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050904-04A
Client I.D. Number: MW-3-2

Sampled: 05/08/12 09:45
Received: 05/10/12
Extracted: 05/15/12 18:34
Analyzed: 05/15/12 18:34

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	100	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/22/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050904-05A
Client I.D. Number: MW-3-1

Sampled: 05/08/12 11:51
Received: 05/10/12
Extracted: 05/15/12 18:56
Analyzed: 05/15/12 18:56

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37 Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/22/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050904-06A
Client I.D. Number: DUPE-4-2Q12

Sampled: 05/08/12 00:00
Received: 05/10/12
Extracted: 05/15/12 19:17
Analyzed: 05/15/12 19:17

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37 Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	102	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	103	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/22/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050904-07A
Client I.D. Number: EB-10-5/8/2012

Sampled: 05/08/12 11:40
Received: 05/10/12
Extracted: 05/15/12 19:39
Analyzed: 05/15/12 19:39

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12050904-08A
Client I.D. Number: TB-10-5/8/2012

Sampled: 05/08/12 07:00
Received: 05/10/12
Extracted: 05/15/12 20:01
Analyzed: 05/15/12 20:01

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/22/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

VOC Sample Preservation Report

Work Order: BMI12050904 **Job:** 100006114 / JPL Groundwater Monitoring

Alpha's Sample ID	Client's Sample ID	Matrix	pH
12050904-01A	MW-3-5	Aqueous	2
12050904-02A	MW-3-4	Aqueous	2
12050904-03A	MW-3-3	Aqueous	2
12050904-04A	MW-3-2	Aqueous	2
12050904-05A	MW-3-1	Aqueous	2
12050904-06A	DUPE-4-2Q12	Aqueous	2
12050904-07A	EB-10-5/8/2012	Aqueous	2
12050904-08A	TB-10-5/8/2012	Aqueous	2

5/22/12

Report Date

Alpha Analytical, Inc.

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Date: 21-May-12

QC Summary Report

Work Order: 12050904

Method Blank

Type: **MBLK** Test Code: **EPA Method 300.0**

File ID: **24** Batch ID: **28710** Analysis Date: **05/10/2012 13:44**

Sample ID: **MB-28710** Units : **mg/L** Run ID: **IC_1_120510A** Prep Date: **05/10/2012 13:41**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 300.0**

File ID: **25** Batch ID: **28710** Analysis Date: **05/10/2012 14:02**

Sample ID: **LFB-28710** Units : **mg/L** Run ID: **IC_1_120510A** Prep Date: **05/10/2012 13:41**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	48.9	0.5	50		98	90	110			
Nitrite (NO2) - N	5	0.25	5		99.9	90	110			
Nitrate (NO3) - N	5.3	0.25	5		106	90	110			
Phosphate, ortho - P	5.12	0.5	5		102	90	110			
Sulfate (SO4)	99.3	0.5	100		99	90	110			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 300.0**

File ID: **36** Batch ID: **28710** Analysis Date: **05/10/2012 17:26**

Sample ID: **12051001-01ALFM** Units : **mg/L** Run ID: **IC_1_120510A** Prep Date: **05/10/2012 13:41**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	293	1.3	250	54.43	95	80	120			
Nitrite (NO2) - N	25.2	0.63	25	0	101	80	120			
Nitrate (NO3) - N	31.9	0.63	25	6.787	101	80	120			
Phosphate, ortho - P	29.3	1.3	25	0	117	80	120			
Sulfate (SO4)	551	1.3	500	61.8	98	80	120			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 300.0**

File ID: **37** Batch ID: **28710** Analysis Date: **05/10/2012 17:45**

Sample ID: **12051001-01ALFMD** Units : **mg/L** Run ID: **IC_1_120510A** Prep Date: **05/10/2012 13:41**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	296	1.3	250	54.43	97	80	120	293.1	0.9(15)	
Nitrite (NO2) - N	25.3	0.63	25	0	101	80	120	25.21	0.4(15)	
Nitrate (NO3) - N	32.2	0.63	25	6.787	102	80	120	31.95	0.8(15)	
Phosphate, ortho - P	29.7	1.3	25	0	119	80	120	29.25	1.6(15)	
Sulfate (SO4)	557	1.3	500	61.8	99	80	120	551.4	1.0(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: 21-May-12

QC Summary Report

Work Order: 12050904

Method Blank

Type: **MBLK** Test Code: **EPA Method 314.0**

File ID: **31** Batch ID: **28715K** Analysis Date: **05/14/2012 15:53**

Sample ID: **MB-28715** Units : **µg/L** Run ID: **IC_3_120514C** Prep Date: **05/10/2012 17:30**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 314.0**

File ID: **32** Batch ID: **28715K** Analysis Date: **05/14/2012 16:12**

Sample ID: **LFB-28715** Units : **µg/L** Run ID: **IC_3_120514C** Prep Date: **05/10/2012 17:30**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	24.9	2	25		99.7	85	115			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 314.0**

File ID: **39** Batch ID: **28715K** Analysis Date: **05/14/2012 18:21**

Sample ID: **12050904-01ALFM** Units : **µg/L** Run ID: **IC_3_120514C** Prep Date: **05/10/2012 17:30**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	27	2	25	0	108	85	115			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 314.0**

File ID: **40** Batch ID: **28715K** Analysis Date: **05/14/2012 18:39**

Sample ID: **12050904-01ALFMD** Units : **µg/L** Run ID: **IC_3_120514C** Prep Date: **05/10/2012 17:30**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	27.7	2	25	0	111	85	115	26.95	2.8(15)	

Comments:

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Date: *21-May-12*

QC Summary Report

Work Order: 12050904

Laboratory Control Spike Type: **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0510AL** Analysis Date: **05/10/2012 12:28**

Sample ID: **LCS-W0510AL** Units : **mg/L** Run ID: **WETLAB_120510B** Prep Date: **05/10/2012 12:28**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	261.5	10	250		105	80	120			
Alkalinity, Carbonate (As CaCO3)	261.5	10	250		105	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	262	10	250		105	80	120			

Comments:

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Date: *22-May-12*

QC Summary Report

Work Order: 12050904

Method Blank

Type: **MBLK** Test Code: **EPA Method 200.8**

File ID: **051012.B\084_M.D** Batch ID: **28708K** Analysis Date: **05/10/2012 19:23**

Sample ID: **MB-28708** Units : **mg/L** Run ID: **ICP/MS_120510C** Prep Date: **05/10/2012 13:18**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 200.8**

File ID: **051012.B\085_M.D** Batch ID: **28708K** Analysis Date: **05/10/2012 19:29**

Sample ID: **LCS-28708** Units : **mg/L** Run ID: **ICP/MS_120510C** Prep Date: **05/10/2012 13:18**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	5.6	0.5	5		112	80	120			
Magnesium (Mg)	5.19	0.5	5		104	80	120			
Potassium (K)	5.31	0.5	5		106	80	120			
Calcium (Ca)	5.37	0.5	5		107	80	120			
Chromium (Cr)	0.0505	0.005	0.05		101	80	120			
Iron (Fe)	5.35	0.3	5		107	80	120			
Arsenic (As)	0.0509	0.002	0.05		102	80	120			
Lead (Pb)	0.0503	0.005	0.05		101	80	120			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method 200.8**

File ID: **051012.B\090_M.D** Batch ID: **28708K** Analysis Date: **05/10/2012 19:57**

Sample ID: **12050904-01AMS** Units : **mg/L** Run ID: **ICP/MS_120510C** Prep Date: **05/10/2012 13:18**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	68.3	0.5	5	63.03	106	80	120			
Magnesium (Mg)	9.9	0.5	5	4.645	105	80	120			
Potassium (K)	6.81	0.5	5	1.535	106	80	120			
Calcium (Ca)	20.6	0.5	5	15.83	96	80	120			
Chromium (Cr)	0.0545	0.005	0.05	0	109	80	120			
Iron (Fe)	6.27	0.3	5	0.8512	108	80	120			
Arsenic (As)	0.0534	0.002	0.05	0.003936	99	80	120			
Lead (Pb)	0.0501	0.005	0.05	0	100	80	120			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method 200.8**

File ID: **051012.B\091_M.D** Batch ID: **28708K** Analysis Date: **05/10/2012 20:03**

Sample ID: **12050904-01AMSD** Units : **mg/L** Run ID: **ICP/MS_120510C** Prep Date: **05/10/2012 13:18**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	67.3	0.5	5	63.03	86	80	120	68.31	1.5(20)	
Magnesium (Mg)	9.99	0.5	5	4.645	107	80	120	9.898	0.9(20)	
Potassium (K)	6.99	0.5	5	1.535	109	80	120	6.811	2.5(20)	
Calcium (Ca)	20.7	0.5	5	15.83	97	80	120	20.64	0.1(20)	
Chromium (Cr)	0.0546	0.005	0.05	0	109	80	120	0.05452	0.1(20)	
Iron (Fe)	6.33	0.3	5	0.8512	110	80	120	6.27	0.9(20)	
Arsenic (As)	0.0583	0.002	0.05	0.003936	109	80	120	0.05341	8.7(20)	
Lead (Pb)	0.0515	0.005	0.05	0	103	80	120	0.05013	2.7(20)	

Comments:

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Date: *21-May-12*

QC Summary Report

Work Order: 12050904

Laboratory Control Spike Type **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0510PH** Analysis Date: **05/10/2012 15:41**

Sample ID: **LCS-W0510PH** Units : **pH Units** Run ID: **WETLAB_120510A** Prep Date: **05/10/2012 15:41**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5.03	1.7	5		101	90	110			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *21-May-12*

QC Summary Report

Work Order: 12050904

Method Blank

Type: **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0509DS** Analysis Date: **05/10/2012 00:00**

Sample ID: **MBLK-W0509DS** Units : **mg/L** Run ID: **WETLAB_120509A** Prep Date: **05/10/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type: **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0509DS** Analysis Date: **05/10/2012 00:00**

Sample ID: **LCS-W0509DS** Units : **mg/L** Run ID: **WETLAB_120509A** Prep Date: **05/10/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	99	10	100		99	70	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: 22-May-12

QC Summary Report

Work Order: 12050904

Method Blank Type **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12051508.D** Batch ID: **MS15W0515M** Analysis Date: **05/15/2012 13:30**

Sample ID: **MBLK MS15W0515A** Units : **µg/L** Run ID: **MSD_15_120515A** Prep Date: **05/15/2012 13:30**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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Date: *22-May-12*

QC Summary Report

Work Order: 12050904

Surr: 1,2-Dichloroethane-d4	10.6	10	106	70	130
Surr: Toluene-d8	10.2	10	102	70	130
Surr: 4-Bromofluorobenzene	9.1	10	91	70	130

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Date: 22-May-12

QC Summary Report

Work Order: 12050904

Laboratory Control Spike Type **LCS** Test Code: **EPA Method SW8260B**

File ID: **12051504.D** Batch ID: **MS15W0515M** Analysis Date: **05/15/2012 11:34**

Sample ID: **LCS MS15W0515A** Units : **µg/L** Run ID: **MSD_15_120515A** Prep Date: **05/15/2012 11:34**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	13.6	1	10		136	70	130(130)			L51
Chloromethane	9.61	2	10		96	70	130			
Vinyl chloride	10.9	1	10		109	70	130			
Chloroethane	9.61	1	10		96	70	130			
Bromomethane	8.61	2	10		86	70	130			
Trichlorofluoromethane	9.84	1	10		98	70	130			
Acetone	287	10	200		144	36	171			
1,1-Dichloroethene	10.5	1	10		105	70	130			
Dichloromethane	9.12	2	10		91	70	130			
Freon-113	11.3	1	10		113	70	137			
trans-1,2-Dichloroethene	10.4	1	10		104	70	130			
Methyl tert-butyl ether (MTBE)	9.42	0.5	10		94	70	130			
1,1-Dichloroethane	10.1	1	10		101	70	130			
2-Butanone (MEK)	269	10	200		135	70	130(130)			L51
cis-1,2-Dichloroethene	10.3	1	10		103	70	130			
Bromochloromethane	10.2	1	10		102	70	130			
Chloroform	9.05	1	10		91	70	130			
2,2-Dichloropropane	10.2	1	10		102	70	130			
1,2-Dichloroethane	9.91	1	10		99	70	130			
1,1,1-Trichloroethane	10.5	1	10		105	70	130			
1,1-Dichloropropene	10.8	1	10		108	70	130			
Carbon tetrachloride	9.29	1	10		93	70	130			
Benzene	9.98	0.5	10		99.8	70	130			
Dibromomethane	9.85	1	10		99	70	130			
1,2-Dichloropropane	9.31	1	10		93	70	130			
Trichloroethene	10.4	1	10		104	70	130			
Bromodichloromethane	8.86	1	10		89	70	130			
4-Methyl-2-pentanone (MIBK)	25.7	2.5	25		103	20	182			
cis-1,3-Dichloropropene	9.16	1	10		92	70	130			
trans-1,3-Dichloropropene	9.01	1	10		90	70	130			
1,1,2-Trichloroethane	9.93	1	10		99	70	130			
Toluene	10.1	0.5	10		101	70	130			
1,3-Dichloropropane	10.2	1	10		102	70	130			
2-Hexanone	137	5	100		137	20	182			
Dibromochloromethane	8.78	1	10		88	70	130			
1,2-Dibromoethane (EDB)	19.7	2	20		99	70	130			
Tetrachloroethene	10.7	1	10		107	70	130			
1,1,1,2-Tetrachloroethane	10.7	1	10		107	70	130			
Chlorobenzene	10.1	1	10		101	70	130			
Ethylbenzene	9.94	0.5	10		99	70	130			
m,p-Xylene	10.1	0.5	10		101	70	130			
Bromoform	8.18	1	10		82	70	130			
Styrene	8.78	1	10		88	70	130			
o-Xylene	9.72	0.5	10		97	70	130			
1,1,2,2-Tetrachloroethane	9.65	1	10		97	70	130			
1,2,3-Trichloropropane	20.5	2	20		103	70	130			
Isopropylbenzene	9.97	1	10		99.7	70	130			
Bromobenzene	10.2	1	10		102	70	130			
n-Propylbenzene	10.4	1	10		104	70	130			
4-Chlorotoluene	10.4	1	10		104	70	130			
2-Chlorotoluene	10	1	10		100	70	130			
1,3,5-Trimethylbenzene	10.3	1	10		103	70	130			
tert-Butylbenzene	10.1	1	10		101	70	130			
1,2,4-Trimethylbenzene	10.4	1	10		104	70	130			
sec-Butylbenzene	10.3	1	10		103	70	130			
1,3-Dichlorobenzene	9.6	1	10		96	70	130			
1,4-Dichlorobenzene	10.1	1	10		101	70	130			
4-Isopropyltoluene	10.5	1	10		105	70	130			
1,2-Dichlorobenzene	9.61	1	10		96	70	130			
n-Butylbenzene	10.4	1	10		104	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	47.7	3	50		95	67	130			
1,2,4-Trichlorobenzene	9.82	2	10		98	70	130			
Naphthalene	8.54	2	10		85	70	130			
Hexachlorobutadiene	21.1	2	20		105	70	130			

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *22-May-12*

QC Summary Report

Work Order: 12050904

1,2,3-Trichlorobenzene	8.52	2	10	85	70	130
Surr: 1,2-Dichloroethane-d4	10.9		10	109	70	130
Surr: Toluene-d8	10.2		10	102	70	130
Surr: 4-Bromofluorobenzene	9.65		10	97	70	130

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Date: 22-May-12

QC Summary Report

Work Order: 12050904

Sample Matrix Spike Type **MS** Test Code: **EPA Method SW8260B**

File ID: **12051530.D** Batch ID: **MS15W0515M** Analysis Date: **05/15/2012 21:28**

Sample ID: **12050803-02AMS** Units : **µg/L** Run ID: **MSD_15_120515A** Prep Date: **05/15/2012 21:28**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	68.5	2.5	50	0	137	21	138			
Chloromethane	44.4	10	50	0	89	23	144			
Vinyl chloride	63.6	2.5	50	0	127	49	136			
Chloroethane	51.6	2.5	50	0	103	21	159			
Bromomethane	35.6	10	50	0	71	10	174			
Trichlorofluoromethane	63.8	2.5	50	0	128	32	154			
Acetone	616	50	1000	0	62	10	171			
1,1-Dichloroethene	55.7	2.5	50	0	111	64	130			
Dichloromethane	47.7	10	50	0	95	69	130			
Freon-113	60.5	2.5	50	0	121	55	141			
trans-1,2-Dichloroethene	53.8	2.5	50	0	108	63	130			
Methyl tert-butyl ether (MTBE)	48.8	1.3	50	0	98	47	150			
1,1-Dichloroethane	53	2.5	50	0	106	66	130			
2-Butanone (MEK)	787	50	1000	0	79	23	182			
cis-1,2-Dichloroethene	54.1	2.5	50	0	108	70	130			
Bromochloromethane	54.6	2.5	50	0	109	70	132			
Chloroform	53.1	2.5	50	4.89	96	70	130			
2,2-Dichloropropane	44.8	2.5	50	0	90	38	154			
1,2-Dichloroethane	54.1	2.5	50	0	108	65	134			
1,1,1-Trichloroethane	54.6	2.5	50	0	109	65	136			
1,1-Dichloropropene	58.2	2.5	50	0	116	68	132			
Carbon tetrachloride	49.7	2.5	50	0	99	58	148			
Benzene	52.4	1.3	50	0	105	59	138			
Dibromomethane	53.8	2.5	50	0	108	70	130			
1,2-Dichloropropane	49.5	2.5	50	0	99	70	131			
Trichloroethene	53.4	2.5	50	0	107	65	144			
Bromodichloromethane	48	2.5	50	0	96	50	157			
4-Methyl-2-pentanone (MIBK)	120	13	125	0	96	20	182			
cis-1,3-Dichloropropene	45.8	2.5	50	0	92	63	131			
trans-1,3-Dichloropropene	46.9	2.5	50	0	94	65	136			
1,1,2-Trichloroethane	55	2.5	50	0	110	70	131			
Toluene	49.5	1.3	50	0	99	68	130			
1,3-Dichloropropane	52.4	2.5	50	0	105	70	130			
2-Hexanone	372	25	500	0	74	20	182			
Dibromochloromethane	46.4	2.5	50	0	93	42	155			
1,2-Dibromoethane (EDB)	102	5	100	0	102	70	130			
Tetrachloroethene	54	2.5	50	0.57	107	65	130			
1,1,1,2-Tetrachloroethane	55.6	2.5	50	0	111	70	130			
Chlorobenzene	53	2.5	50	0	106	70	130			
Ethylbenzene	51.3	1.3	50	0	103	68	130			
m,p-Xylene	50	1.3	50	0	100	68	131			
Bromoform	44.7	2.5	50	0	89	65	143			
Styrene	45.7	2.5	50	0	91	59	153			
o-Xylene	49.9	1.3	50	0	99.8	70	130			
1,1,2,2-Tetrachloroethane	54.1	2.5	50	0	108	67	130			
1,2,3-Trichloropropane	113	10	100	0	113	70	130			
Isopropylbenzene	49.9	2.5	50	0	99.7	55	138			
Bromobenzene	52	2.5	50	0	104	70	130			
n-Propylbenzene	52	2.5	50	0	104	67	133			
4-Chlorotoluene	51.4	2.5	50	0	103	70	130			
2-Chlorotoluene	50.8	2.5	50	0	102	70	130			
1,3,5-Trimethylbenzene	52.4	2.5	50	0	105	67	134			
tert-Butylbenzene	51.2	2.5	50	0	102	55	147			
1,2,4-Trimethylbenzene	51.6	2.5	50	0	103	65	135			
sec-Butylbenzene	51.9	2.5	50	0	104	68	135			
1,3-Dichlorobenzene	48.7	2.5	50	0	97	70	130			
1,4-Dichlorobenzene	51.7	2.5	50	0	103	70	130			
4-Isopropyltoluene	52.9	2.5	50	0	106	68	132			
1,2-Dichlorobenzene	49.5	2.5	50	0	99	70	130			
n-Butylbenzene	52	2.5	50	0	104	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	256	15	250	0	102	64	130			
1,2,4-Trichlorobenzene	47.3	10	50	0	95	62	133			
Naphthalene	41.6	10	50	0	83	32	166			
Hexachlorobutadiene	100	10	100	0	100	63	130			
1,2,3-Trichlorobenzene	40	10	50	0	80	55	138			

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *22-May-12*

QC Summary Report

Work Order: 12050904

Surr: 1,2-Dichloroethane-d4	52.9	50	106	70	130
Surr: Toluene-d8	48.7	50	97	70	130
Surr: 4-Bromofluorobenzene	46.4	50	93	70	130

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Date: 22-May-12

QC Summary Report

Work Order: 12050904

Sample Matrix Spike Duplicate Type **MSD** Test Code: **EPA Method SW8260B**

File ID: **12051531.D** Batch ID: **MS15W0515M** Analysis Date: **05/15/2012 21:49**

Sample ID: **12050803-02AMSD** Units : **µg/L** Run ID: **MSD_15_120515A** Prep Date: **05/15/2012 21:49**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	68.8	2.5	50	0	138	21	138	68.53	0.4(33)	
Chloromethane	49.8	10	50	0	99.5	23	144	44.4	11.4(27)	
Vinyl chloride	64.4	2.5	50	0	129	49	136	63.57	1.3(21)	
Chloroethane	51.4	2.5	50	0	103	21	159	51.62	0.4(40)	
Bromomethane	41.7	10	50	0	83	10	174	35.57	16.0(40)	
Trichlorofluoromethane	61.2	2.5	50	0	122	32	154	63.84	4.2(37)	
Acetone	595	50	1000	0	60	10	171	616.1	3.4(23)	
1,1-Dichloroethene	55.5	2.5	50	0	111	64	130	55.74	0.4(21)	
Dichloromethane	47.1	10	50	0	94	69	130	47.74	1.4(20)	
Freon-113	59.5	2.5	50	0	119	55	141	60.47	1.6(40)	
trans-1,2-Dichloroethene	54.1	2.5	50	0	108	63	130	53.79	0.6(20)	
Methyl tert-butyl ether (MTBE)	48.5	1.3	50	0	97	47	150	48.82	0.7(40)	
1,1-Dichloroethane	52.5	2.5	50	0	105	66	130	52.98	0.8(20)	
2-Butanone (MEK)	749	50	1000	0	75	23	182	786.6	4.8(22)	
cis-1,2-Dichloroethene	54	2.5	50	0	108	70	130	54.1	0.2(20)	
Bromochloromethane	55.1	2.5	50	0	110	70	132	54.62	0.8(20)	
Chloroform	52.5	2.5	50	4.89	95	70	130	53.11	1.1(20)	
2,2-Dichloropropane	46.1	2.5	50	0	92	38	154	44.8	2.8(22)	
1,2-Dichloroethane	52.8	2.5	50	0	106	65	134	54.08	2.4(20)	
1,1,1-Trichloroethane	54.6	2.5	50	0	109	65	136	54.56	0.0(20)	
1,1-Dichloropropene	57.5	2.5	50	0	115	68	132	58.24	1.4(20)	
Carbon tetrachloride	50.3	2.5	50	0	101	58	148	49.65	1.2(20)	
Benzene	51.8	1.3	50	0	104	59	138	52.38	1.0(21)	
Dibromomethane	52.3	2.5	50	0	105	70	130	53.81	2.9(20)	
1,2-Dichloropropane	48.7	2.5	50	0	97	70	131	49.47	1.5(20)	
Trichloroethene	53.1	2.5	50	0	106	65	144	53.43	0.6(20)	
Bromodichloromethane	47.3	2.5	50	0	95	50	157	48.01	1.5(20)	
4-Methyl-2-pentanone (MIBK)	112	13	125	0	89	20	182	119.7	7.0(20)	
cis-1,3-Dichloropropene	45.5	2.5	50	0	91	63	131	45.8	0.7(20)	
trans-1,3-Dichloropropene	46.1	2.5	50	0	92	65	136	46.92	1.7(20)	
1,1,2-Trichloroethane	51.8	2.5	50	0	104	70	131	54.96	6.0(20)	
Toluene	49.8	1.3	50	0	99.6	68	130	49.47	0.7(20)	
1,3-Dichloropropane	52.4	2.5	50	0	105	70	130	52.43	0.0(20)	
2-Hexanone	359	25	500	0	72	20	182	371.8	3.4(20)	
Dibromochloromethane	46.4	2.5	50	0	93	42	155	46.43	0.2(20)	
1,2-Dibromoethane (EDB)	102	5	100	0	102	70	130	102.4	0.9(20)	
Tetrachloroethene	54.9	2.5	50	0.57	109	65	130	54.03	1.6(20)	
1,1,1,2-Tetrachloroethane	55.5	2.5	50	0	111	70	130	55.56	0.1(20)	
Chlorobenzene	52.8	2.5	50	0	106	70	130	52.99	0.4(20)	
Ethylbenzene	51.2	1.3	50	0	102	68	130	51.29	0.1(20)	
m,p-Xylene	50	1.3	50	0	100	68	131	50.02	0.0(20)	
Bromoform	44.6	2.5	50	0	89	65	143	44.73	0.3(20)	
Styrene	45.5	2.5	50	0	91	59	153	45.74	0.5(37)	
o-Xylene	49.4	1.3	50	0	99	70	130	49.89	1.0(20)	
1,1,2,2-Tetrachloroethane	52.3	2.5	50	0	105	67	130	54.14	3.5(20)	
1,2,3-Trichloropropane	109	10	100	0	109	70	130	113.2	4.1(20)	
Isopropylbenzene	50.8	2.5	50	0	102	55	138	49.87	1.8(20)	
Bromobenzene	52	2.5	50	0	104	70	130	51.96	0.2(20)	
n-Propylbenzene	52.8	2.5	50	0	106	67	133	52.03	1.4(30)	
4-Chlorotoluene	52.5	2.5	50	0	105	70	130	51.36	2.2(20)	
2-Chlorotoluene	51.4	2.5	50	0	103	70	130	50.79	1.3(20)	
1,3,5-Trimethylbenzene	52.5	2.5	50	0	105	67	134	52.35	0.3(21)	
tert-Butylbenzene	51.7	2.5	50	0	103	55	147	51.16	1.1(20)	
1,2,4-Trimethylbenzene	52.3	2.5	50	0	105	65	135	51.62	1.3(25)	
sec-Butylbenzene	52.7	2.5	50	0	105	68	135	51.9	1.5(20)	
1,3-Dichlorobenzene	49.1	2.5	50	0	98	70	130	48.69	0.9(20)	
1,4-Dichlorobenzene	51.7	2.5	50	0	103	70	130	51.72	0.0(20)	
4-Isopropyltoluene	53.2	2.5	50	0	106	68	132	52.9	0.5(20)	
1,2-Dichlorobenzene	49.5	2.5	50	0	99	70	130	49.5	0.0(20)	
n-Butylbenzene	53	2.5	50	0	106	62	134	51.96	2.0(21)	
1,2-Dibromo-3-chloropropane (DBCP)	255	15	250	0	102	64	130	255.5	0.1(20)	
1,2,4-Trichlorobenzene	50.7	10	50	0	101	62	133	47.29	7.0(29)	
Naphthalene	46	10	50	0	92	32	166	41.57	10.0(40)	
Hexachlorobutadiene	104	10	100	0	104	63	130	100.2	3.8(21)	
1,2,3-Trichlorobenzene	45.4	10	50	0	91	55	138	39.96	12.8(36)	

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Date: *22-May-12*

QC Summary Report

Work Order: 12050904

Surr: 1,2-Dichloroethane-d4	55.7	50	111	70	130
Surr: Toluene-d8	49.8	50	99.5	70	130
Surr: 4-Bromofluorobenzene	47.2	50	94	70	130

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

L51 = Analyte recovery was above acceptance limits for the LCS, but was acceptable in the MS/MSD.

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

CA

WorkOrder : BMIS12050904

Report Due By : 5:00 PM On : 23-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : Client

PO : 286215

Client's COC # : 28887 Job : 100006114 / JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
1 °C	10-May-12	**10-May-12**

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12050904-01A	MW-3-5	AQ	05/08/12 08:08	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	Level IV QC
BMI12050904-02A	MW-3-4	AQ	05/08/12 08:41	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050904-03A	MW-3-3	AQ	05/08/12 09:12	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050904-04A	MW-3-2	AQ	05/08/12 09:45	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050904-05A	MW-3-1	AQ	05/08/12 11:51	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050904-06A	DUPE-4-2Q12	AQ	05/08/12 00:00	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050904-07A	EB-10-5/8/2012	AQ	05/08/12 11:40	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12050904-08A	TB-10-5/8/2012	AQ	05/08/12 07:00	1	0	9							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 3/2/12

Comments: Security seals intact. Frozen Ice. Temp. Blank #7730 received @ 1°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -01A. Samples received 5/10/12 due to FedEx delay. : Samples -01A, -02A, -03A received outside of 48hr hold time for NO3, NO2 anlalysis. No preserved sample provided. Okay to run outside of hold time, per phone conversation with David.

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Loftee	Sara Loftee	**Alpha Analytical, Inc.**	5/10/12 9:15

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information:
Name BATTELLE / ATTN: GERALD TOMPKINS
Address 505 KING AVE.
City, State, Zip COLUMBUS, OH 43201
Phone Number _____ Fax _____

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State? AZ ___ CA X NV ___ WA ___ ID ___ OR ___ OTHER ___

28887

Page # 1 of 1

Client Name: BATTELLE / DAVID CONNEN
Address: 3970 OLD TOWN AVE, C-205
City, State, Zip: SAN DIEGO, CA 92110

P.O. # ~~28677~~ 286215
EMail Address: connerd@battelle.org
Phone # MOBILE (619) 726-7311
Fax #

Job # 100006114 / ~~PO# 28677~~

Report Attention: DAVID CONNEN

Required QC Level? I II III IV

EDD / EDF? YES ___ NO ___

Global ID # _____

Time Sampled	Date Sampled	Matrix* See Key Below	Sampled by / Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	Total and type of containers ** See below	(524.2) VOCs	(200.8) *	(Perchlorate) (314.0)	(SM2320B, SM2540C, 150.2) *	(300.0) *	REMARKS
0808	5/8/12	AQ	BMI1205090 4-01A	MW-3-5			3V/2P	X	X	X	X	X	QC IV
0841			-02A	MW-3-4				X	X	X	X	X	
0912			-03A	MW-3-3				X	X	X	X	X	
0945			-04A	MW-3-2				X	X	X	X	X	
1151			-05A	MW-3-1				X	X	X	X	X	
~~11~~	5/8/12		-06A	DUPE-4-2012			3V/2P	X	X	X	X	X	DUPLICATE
1140			-07A	EB-10-5/8/2012			3V/2P	X	X	X	X	X	EQUIP. BLANK
0700	5/8/12	AQ	-08A	TB-10-5/8/12			1V	X					TRIP BLANK

ADDITIONAL INSTRUCTIONS: *(200.8)-TOTAL Cr, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320B, SM2540C, 150.2)-CO3, HCO3, TDS, PH, ALK. *(300.0)-CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

	Signature	Print Name	Company	Date	Time
Relinquished by		CHASE BROGDON	INSIGHT REC, INC.	5/8/12	1403
Received by		Anthony Stark	Alpha Analytical	5/8/12	1403
Relinquished by		" "	" "	5/8/12	1403
Received by		Sara Loftee	alpha analytical	5/10/12	9:05
Relinquished by					
Received by					

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *22-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)
Work Order: BMI12051001 **Cooler Temp:** 0 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12051001-01A	MW-19-5	Aqueous
12051001-02A	MW-19-4	Aqueous
12051001-03A	MW-19-3	Aqueous
12051001-04A	MW-19-2	Aqueous
12051001-05A	MW-19-1	Aqueous
12051001-06A	DUPE-5-2Q12	Aqueous
12051001-07A	EB-11-5/9/12	Aqueous
12051001-08A	TB-11-5/9/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-19-5**					
Lab ID : BMI12051001-01A	Chloride	54	0.50 mg/L	05/10/12 13:41	05/10/12 17:08
Date Sampled 05/09/12 08:27	Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 17:08
	Nitrate (NO3) - N	6.8	0.25 mg/L	05/10/12 13:41	05/10/12 17:08
	Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 17:08
	Sulfate (SO4)	62	0.50 mg/L	05/10/12 13:41	05/10/12 17:08
Client ID: **MW-19-4**					
Lab ID : BMI12051001-02A	Chloride	57	0.50 mg/L	05/10/12 13:41	05/10/12 18:03
Date Sampled 05/09/12 08:55	Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 18:03
	Nitrate (NO3) - N	9.4	0.25 mg/L	05/10/12 13:41	05/10/12 18:03
	Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 18:03
	Sulfate (SO4)	55	0.50 mg/L	05/10/12 13:41	05/10/12 18:03
Client ID: **MW-19-3**					
Lab ID : BMI12051001-03A	Chloride	47	0.50 mg/L	05/10/12 13:41	05/10/12 19:17
Date Sampled 05/09/12 09:20	Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 19:17
	Nitrate (NO3) - N	10	0.25 mg/L	05/10/12 13:41	05/10/12 19:17
	Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 19:17
	Sulfate (SO4)	48	0.50 mg/L	05/10/12 13:41	05/10/12 19:17
Client ID: **MW-19-2**					
Lab ID : BMI12051001-04A	Chloride	97	50 mg/L	05/10/12 13:41	05/10/12 19:36
Date Sampled 05/09/12 09:54	Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 19:36
	Nitrate (NO3) - N	17	0.25 mg/L	05/10/12 13:41	05/10/12 19:36
	Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 19:36
	Sulfate (SO4)	140	75 mg/L	05/10/12 13:41	05/10/12 19:36
Client ID: **MW-19-1**					
Lab ID : BMI12051001-05A	Chloride	17	0.50 mg/L	05/10/12 13:41	05/10/12 19:54
Date Sampled 05/09/12 12:20	Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 19:54
	Nitrate (NO3) - N	0.64	0.25 mg/L	05/10/12 13:41	05/10/12 19:54
	Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 19:54
	Sulfate (SO4)	28	0.50 mg/L	05/10/12 13:41	05/10/12 19:54
Client ID: **DUPE-5-2Q12**					
Lab ID : BMI12051001-06A	Chloride	97	50 mg/L	05/10/12 13:41	05/10/12 20:13
Date Sampled 05/09/12 00:00	Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 20:13
	Nitrate (NO3) - N	16	0.25 mg/L	05/10/12 13:41	05/10/12 20:13
	Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 20:13
	Sulfate (SO4)	140	75 mg/L	05/10/12 13:41	05/10/12 20:13

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Client ID: **EB-11-5/9/12**

Lab ID : BMI12051001-07A

Date Sampled 05/09/12 12:07

Chloride	ND	0.50 mg/L	05/10/12 13:41	05/10/12 20:31
Nitrite (NO2) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 20:31
Nitrate (NO3) - N	ND	0.25 mg/L	05/10/12 13:41	05/10/12 20:31
Phosphate, ortho - P	ND	0.50 mg/L	05/10/12 13:41	05/10/12 20:31
Sulfate (SO4)	ND	0.50 mg/L	05/10/12 13:41	05/10/12 20:31

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/22/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-19-5**				
Lab ID : BMI12051001-01A Perchlorate	3.02	1.00 µg/L	05/10/12 17:30	05/14/12 21:25
Date Sampled 05/09/12 08:27				
Client ID: **MW-19-4**				
Lab ID : BMI12051001-02A Perchlorate	3.91	1.00 µg/L	05/10/12 17:30	05/14/12 21:43
Date Sampled 05/09/12 08:55				
Client ID: **MW-19-3**				
Lab ID : BMI12051001-03A Perchlorate	3.74	1.00 µg/L	05/10/12 17:30	05/14/12 22:01
Date Sampled 05/09/12 09:20				
Client ID: **MW-19-2**				
Lab ID : BMI12051001-04A Perchlorate	7.09	1.00 µg/L	05/10/12 17:30	05/14/12 22:20
Date Sampled 05/09/12 09:54				
Client ID: **MW-19-1**				
Lab ID : BMI12051001-05A Perchlorate	ND	1.00 µg/L	05/10/12 17:30	05/14/12 22:38
Date Sampled 05/09/12 12:20				
Client ID: **DUPE-5-2Q12**				
Lab ID : BMI12051001-06A Perchlorate	7.10	1.00 µg/L	05/10/12 17:30	05/14/12 22:57
Date Sampled 05/09/12 00:00				
Client ID: **EB-11-5/9/12**				
Lab ID : BMI12051001-07A Perchlorate	ND	1.00 µg/L	05/10/12 17:30	05/14/12 23:15
Date Sampled 05/09/12 12:07				

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ND = Not Detected

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ANALYTICAL REPORT

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655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-19-5**				
Lab ID : BMI12051001-01A Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	05/14/12 11:25	05/14/12 11:25
Date Sampled 05/09/12 08:27 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 11:25	05/14/12 11:25
Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	05/14/12 11:25	05/14/12 11:25
Client ID: **MW-19-4**				
Lab ID : BMI12051001-02A Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	05/14/12 11:35	05/14/12 11:35
Date Sampled 05/09/12 08:55 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 11:35	05/14/12 11:35
Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	05/14/12 11:35	05/14/12 11:35
Client ID: **MW-19-3**				
Lab ID : BMI12051001-03A Alkalinity, Bicarbonate (As CaCO3)	180	10 mg/L	05/14/12 11:41	05/14/12 11:41
Date Sampled 05/09/12 09:20 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 11:41	05/14/12 11:41
Alkalinity, Total (As CaCO3 at pH 4.5)	180	10 mg/L	05/14/12 11:41	05/14/12 11:41
Client ID: **MW-19-2**				
Lab ID : BMI12051001-04A Alkalinity, Bicarbonate (As CaCO3)	220	10 mg/L	05/14/12 11:46	05/14/12 11:46
Date Sampled 05/09/12 09:54 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 11:46	05/14/12 11:46
Alkalinity, Total (As CaCO3 at pH 4.5)	220	10 mg/L	05/14/12 11:46	05/14/12 11:46
Client ID: **MW-19-1**				
Lab ID : BMI12051001-05A Alkalinity, Bicarbonate (As CaCO3)	220	10 mg/L	05/14/12 11:51	05/14/12 11:51
Date Sampled 05/09/12 12:20 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 11:51	05/14/12 11:51
Alkalinity, Total (As CaCO3 at pH 4.5)	220	10 mg/L	05/14/12 11:51	05/14/12 11:51
Client ID: **DUPE-5-2Q12**				
Lab ID : BMI12051001-06A Alkalinity, Bicarbonate (As CaCO3)	210	10 mg/L	05/14/12 11:57	05/14/12 11:57
Date Sampled 05/09/12 00:00 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 11:57	05/14/12 11:57
Alkalinity, Total (As CaCO3 at pH 4.5)	210	10 mg/L	05/14/12 11:57	05/14/12 11:57
Client ID: **EB-11-5/9/12**				
Lab ID : BMI12051001-07A Alkalinity, Bicarbonate (As CaCO3)	ND	10 mg/L	05/14/12 12:00	05/14/12 12:00
Date Sampled 05/09/12 12:07 Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 12:00	05/14/12 12:00
Alkalinity, Total (As CaCO3 at pH 4.5)	ND	10 mg/L	05/14/12 12:00	05/14/12 12:00

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ND = Not Detected

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5/22/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-19-5**				
Lab ID : BMI12051001-01A Sodium (Na)	33	0.50 mg/L	05/10/12 13:18	05/10/12 20:56
Date Sampled 05/09/12 08:27 Magnesium (Mg)	28	0.50 mg/L	05/10/12 13:18	05/10/12 20:56
Potassium (K)	2.9	0.50 mg/L	05/10/12 13:18	05/10/12 20:56
Calcium (Ca)	77	0.50 mg/L	05/10/12 13:18	05/10/12 20:56
Chromium (Cr)	0.0054	0.0050 mg/L	05/10/12 13:18	05/10/12 20:56
Iron (Fe)	1.1	0.30 mg/L	05/10/12 13:18	05/10/12 20:56
Arsenic (As)	0.0036	0.0020 mg/L	05/10/12 13:18	05/10/12 20:56
Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 20:56
Client ID: **MW-19-4**				
Lab ID : BMI12051001-02A Sodium (Na)	34	0.50 mg/L	05/10/12 13:18	05/10/12 21:02
Date Sampled 05/09/12 08:55 Magnesium (Mg)	32	0.50 mg/L	05/10/12 13:18	05/10/12 21:02
Potassium (K)	2.8	0.50 mg/L	05/10/12 13:18	05/10/12 21:02
Calcium (Ca)	62	0.50 mg/L	05/10/12 13:18	05/10/12 21:02
Chromium (Cr)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 21:02
Iron (Fe)	0.91	0.30 mg/L	05/10/12 13:18	05/10/12 21:02
Arsenic (As)	ND	0.0020 mg/L	05/10/12 13:18	05/10/12 21:02
Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 21:02
Client ID: **MW-19-3**				
Lab ID : BMI12051001-03A Sodium (Na)	30	0.50 mg/L	05/10/12 13:18	05/10/12 21:30
Date Sampled 05/09/12 09:20 Magnesium (Mg)	26	0.50 mg/L	05/10/12 13:18	05/10/12 21:30
Potassium (K)	2.4	0.50 mg/L	05/10/12 13:18	05/10/12 21:30
Calcium (Ca)	70	0.50 mg/L	05/10/12 13:18	05/10/12 21:30
Chromium (Cr)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 21:30
Iron (Fe)	1.1	0.30 mg/L	05/10/12 13:18	05/10/12 21:30
Arsenic (As)	ND	0.0020 mg/L	05/10/12 13:18	05/10/12 21:30
Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 21:30
Client ID: **MW-19-2**				
Lab ID : BMI12051001-04A Sodium (Na)	38	0.50 mg/L	05/10/12 13:18	05/10/12 21:36
Date Sampled 05/09/12 09:54 Magnesium (Mg)	44	0.50 mg/L	05/10/12 13:18	05/10/12 21:36
Potassium (K)	2.9	0.50 mg/L	05/10/12 13:18	05/10/12 21:36
Calcium (Ca)	120	0.50 mg/L	05/10/12 13:18	05/10/12 21:36
Chromium (Cr)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 21:36
Iron (Fe)	2.3	0.30 mg/L	05/10/12 13:18	05/10/12 21:36
Arsenic (As)	ND	0.0020 mg/L	05/10/12 23:32	05/10/12 23:32
Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 21:36

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Client ID: **MW-19-1**					
Lab ID : BMI12051001-05A	Sodium (Na)	18	0.50 mg/L	05/10/12 13:18	05/10/12 21:42
Date Sampled 05/09/12 12:20	Magnesium (Mg)	22	0.50 mg/L	05/10/12 13:18	05/10/12 21:42
	Potassium (K)	3.1	0.50 mg/L	05/10/12 13:18	05/10/12 21:42
	Calcium (Ca)	64	0.50 mg/L	05/10/12 13:18	05/10/12 21:42
	Chromium (Cr)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 21:42
	Iron (Fe)	1.0	0.30 mg/L	05/10/12 13:18	05/10/12 21:42
	Arsenic (As)	ND	0.0020 mg/L	05/10/12 13:18	05/10/12 21:42
	Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 21:42
Client ID: **DUPE-5-2Q12**					
Lab ID : BMI12051001-06A	Sodium (Na)	38	0.50 mg/L	05/10/12 13:18	05/10/12 21:48
Date Sampled 05/09/12 00:00	Magnesium (Mg)	45	0.50 mg/L	05/10/12 13:18	05/10/12 21:48
	Potassium (K)	3.0	0.50 mg/L	05/10/12 13:18	05/10/12 21:48
	Calcium (Ca)	120	0.50 mg/L	05/10/12 13:18	05/10/12 21:48
	Chromium (Cr)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 21:48
	Iron (Fe)	2.3	0.30 mg/L	05/10/12 13:18	05/10/12 21:48
	Arsenic (As)	ND	0.0020 mg/L	05/10/12 13:18	05/10/12 21:48
	Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 21:48
Client ID: **EB-11-5/9/12**					
Lab ID : BMI12051001-07A	Sodium (Na)	ND	0.50 mg/L	05/10/12 13:18	05/10/12 21:53
Date Sampled 05/09/12 12:07	Magnesium (Mg)	ND	0.50 mg/L	05/10/12 13:18	05/10/12 21:53
	Potassium (K)	ND	0.50 mg/L	05/10/12 13:18	05/10/12 21:53
	Calcium (Ca)	ND	0.50 mg/L	05/10/12 13:18	05/10/12 21:53
	Chromium (Cr)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 21:53
	Iron (Fe)	ND	0.30 mg/L	05/10/12 13:18	05/10/12 21:53
	Arsenic (As)	ND	0.0020 mg/L	05/10/12 13:18	05/10/12 21:53
	Lead (Pb)	ND	0.0050 mg/L	05/10/12 13:18	05/10/12 21:53

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-19-5**					
Lab ID : BMI12051001-01A	pH	7.9	1.7 pH Units	05/10/12 16:12	05/10/12 16:12
Date Sampled 05/09/12 08:27	pH - Temperature	21	1.0 °C	05/10/12 16:12	05/10/12 16:12
Client ID: **MW-19-4**					
Lab ID : BMI12051001-02A	pH	7.9	1.7 pH Units	05/10/12 16:14	05/10/12 16:14
Date Sampled 05/09/12 08:55	pH - Temperature	21	1.0 °C	05/10/12 16:14	05/10/12 16:14
Client ID: **MW-19-3**					
Lab ID : BMI12051001-03A	pH	7.4	1.7 pH Units	05/10/12 16:20	05/10/12 16:20
Date Sampled 05/09/12 09:20	pH - Temperature	21	1.0 °C	05/10/12 16:20	05/10/12 16:20
Client ID: **MW-19-2**					
Lab ID : BMI12051001-04A	pH	7.0	1.7 pH Units	05/10/12 16:22	05/10/12 16:22
Date Sampled 05/09/12 09:54	pH - Temperature	21	1.0 °C	05/10/12 16:22	05/10/12 16:22
Client ID: **MW-19-1**					
Lab ID : BMI12051001-05A	pH	7.7	1.7 pH Units	05/10/12 16:25	05/10/12 16:25
Date Sampled 05/09/12 12:20	pH - Temperature	21	1.0 °C	05/10/12 16:25	05/10/12 16:25
Client ID: **DUPE-5-2Q12**					
Lab ID : BMI12051001-06A	pH	7.2	1.7 pH Units	05/10/12 16:28	05/10/12 16:28
Date Sampled 05/09/12 00:00	pH - Temperature	21	1.0 °C	05/10/12 16:28	05/10/12 16:28
Client ID: **EB-11-5/9/12**					
Lab ID : BMI12051001-07A	pH	6.9	1.7 pH Units	05/10/12 16:35	05/10/12 16:35
Date Sampled 05/09/12 12:07	pH - Temperature	21	1.0 °C	05/10/12 16:35	05/10/12 16:35

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.

The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/22/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-19-5**					
Lab ID : BMI12051001-01A	Solids, Total Dissolved (TDS)	420	10 mg/L	05/14/12	05/14/12
Date Sampled 05/09/12 08:27					
Client ID: **MW-19-4**					
Lab ID : BMI12051001-02A	Solids, Total Dissolved (TDS)	420	10 mg/L	05/14/12	05/14/12
Date Sampled 05/09/12 08:55					
Client ID: **MW-19-3**					
Lab ID : BMI12051001-03A	Solids, Total Dissolved (TDS)	410	10 mg/L	05/14/12	05/14/12
Date Sampled 05/09/12 09:20					
Client ID: **MW-19-2**					
Lab ID : BMI12051001-04A	Solids, Total Dissolved (TDS)	700	10 mg/L	05/14/12	05/14/12
Date Sampled 05/09/12 09:54					
Client ID: **MW-19-1**					
Lab ID : BMI12051001-05A	Solids, Total Dissolved (TDS)	280	10 mg/L	05/14/12	05/14/12
Date Sampled 05/09/12 12:20					
Client ID: **DUPE-5-2Q12**					
Lab ID : BMI12051001-06A	Solids, Total Dissolved (TDS)	700	10 mg/L	05/14/12	05/14/12
Date Sampled 05/09/12 00:00					
Client ID: **EB-11-5/9/12**					
Lab ID : BMI12051001-07A	Solids, Total Dissolved (TDS)	ND	10 mg/L	05/14/12	05/14/12
Date Sampled 05/09/12 12:07					

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/22/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/10/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-19-5**					
Lab ID : BMI12051001-01A	Acrylonitrile	ND	10 µg/L	05/17/12 16:49	05/17/12 16:49
Date Sampled 05/09/12 08:27	Allyl chloride	ND	2.0 µg/L	05/17/12 16:49	05/17/12 16:49
	Carbon disulfide	ND	2.5 µg/L	05/17/12 16:49	05/17/12 16:49
	Chloroacetonitrile	ND	10 µg/L	05/17/12 16:49	05/17/12 16:49
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 16:49	05/17/12 16:49
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 16:49	05/17/12 16:49
	Diethyl ether	ND	2.0 µg/L	05/17/12 16:49	05/17/12 16:49
	Ethyl methacrylate	ND	10 µg/L	05/17/12 16:49	05/17/12 16:49
	Hexachloroethane	ND	10 µg/L	05/17/12 16:49	05/17/12 16:49
	Methacrylonitrile	ND	10 µg/L	05/17/12 16:49	05/17/12 16:49
	Methyl acrylate	ND	10 µg/L	05/17/12 16:49	05/17/12 16:49
	Methyl iodide	ND	2.0 µg/L	05/17/12 16:49	05/17/12 16:49
	Methyl methacrylate	ND	10 µg/L	05/17/12 16:49	05/17/12 16:49
	Nitrobenzene	ND	10 µg/L	05/17/12 16:49	05/17/12 16:49
	2-Nitropropane	ND	2.0 µg/L	05/17/12 16:49	05/17/12 16:49
	Pentachloroethane	ND	2.0 µg/L	05/17/12 16:49	05/17/12 16:49
	Propionitrile	ND	50 µg/L	05/17/12 16:49	05/17/12 16:49
	Tetrahydrofuran	ND	10 µg/L	05/17/12 16:49	05/17/12 16:49
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 16:49	05/17/12 16:49
Client ID: **MW-19-4**					
Lab ID : BMI12051001-02A	Acrylonitrile	ND	10 µg/L	05/17/12 17:10	05/17/12 17:10
Date Sampled 05/09/12 08:55	Allyl chloride	ND	2.0 µg/L	05/17/12 17:10	05/17/12 17:10
	Carbon disulfide	ND	2.5 µg/L	05/17/12 17:10	05/17/12 17:10
	Chloroacetonitrile	ND	10 µg/L	05/17/12 17:10	05/17/12 17:10
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 17:10	05/17/12 17:10
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 17:10	05/17/12 17:10
	Diethyl ether	ND	2.0 µg/L	05/17/12 17:10	05/17/12 17:10
	Ethyl methacrylate	ND	10 µg/L	05/17/12 17:10	05/17/12 17:10
	Hexachloroethane	ND	10 µg/L	05/17/12 17:10	05/17/12 17:10
	Methacrylonitrile	ND	10 µg/L	05/17/12 17:10	05/17/12 17:10
	Methyl acrylate	ND	10 µg/L	05/17/12 17:10	05/17/12 17:10
	Methyl iodide	ND	2.0 µg/L	05/17/12 17:10	05/17/12 17:10
	Methyl methacrylate	ND	10 µg/L	05/17/12 17:10	05/17/12 17:10
	Nitrobenzene	ND	10 µg/L	05/17/12 17:10	05/17/12 17:10
	2-Nitropropane	ND	2.0 µg/L	05/17/12 17:10	05/17/12 17:10
	Pentachloroethane	ND	2.0 µg/L	05/17/12 17:10	05/17/12 17:10
	Propionitrile	ND	50 µg/L	05/17/12 17:10	05/17/12 17:10
	Tetrahydrofuran	ND	10 µg/L	05/17/12 17:10	05/17/12 17:10
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 17:10	05/17/12 17:10

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Client ID: **MW-19-3**					
Lab ID : BMI12051001-03A	Acrylonitrile	ND	10 µg/L	05/17/12 17:32	05/17/12 17:32
Date Sampled 05/09/12 09:20	Allyl chloride	ND	2.0 µg/L	05/17/12 17:32	05/17/12 17:32
	Carbon disulfide	ND	2.5 µg/L	05/17/12 17:32	05/17/12 17:32
	Chloroacetonitrile	ND	10 µg/L	05/17/12 17:32	05/17/12 17:32
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 17:32	05/17/12 17:32
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 17:32	05/17/12 17:32
	Diethyl ether	ND	2.0 µg/L	05/17/12 17:32	05/17/12 17:32
	Ethyl methacrylate	ND	10 µg/L	05/17/12 17:32	05/17/12 17:32
	Hexachloroethane	ND	10 µg/L	05/17/12 17:32	05/17/12 17:32
	Methacrylonitrile	ND	10 µg/L	05/17/12 17:32	05/17/12 17:32
	Methyl acrylate	ND	10 µg/L	05/17/12 17:32	05/17/12 17:32
	Methyl iodide	ND	2.0 µg/L	05/17/12 17:32	05/17/12 17:32
	Methyl methacrylate	ND	10 µg/L	05/17/12 17:32	05/17/12 17:32
	Nitrobenzene	ND	10 µg/L	05/17/12 17:32	05/17/12 17:32
	2-Nitropropane	ND	2.0 µg/L	05/17/12 17:32	05/17/12 17:32
	Pentachloroethane	ND	2.0 µg/L	05/17/12 17:32	05/17/12 17:32
	Propionitrile	ND	50 µg/L	05/17/12 17:32	05/17/12 17:32
	Tetrahydrofuran	ND	10 µg/L	05/17/12 17:32	05/17/12 17:32
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 17:32	05/17/12 17:32
Client ID: **MW-19-2**					
Lab ID : BMI12051001-04A	Acrylonitrile	ND	10 µg/L	05/17/12 17:54	05/17/12 17:54
Date Sampled 05/09/12 09:54	Allyl chloride	ND	2.0 µg/L	05/17/12 17:54	05/17/12 17:54
	Carbon disulfide	ND	2.5 µg/L	05/17/12 17:54	05/17/12 17:54
	Chloroacetonitrile	ND	10 µg/L	05/17/12 17:54	05/17/12 17:54
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 17:54	05/17/12 17:54
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 17:54	05/17/12 17:54
	Diethyl ether	ND	2.0 µg/L	05/17/12 17:54	05/17/12 17:54
	Ethyl methacrylate	ND	10 µg/L	05/17/12 17:54	05/17/12 17:54
	Hexachloroethane	ND	10 µg/L	05/17/12 17:54	05/17/12 17:54
	Methacrylonitrile	ND	10 µg/L	05/17/12 17:54	05/17/12 17:54
	Methyl acrylate	ND	10 µg/L	05/17/12 17:54	05/17/12 17:54
	Methyl iodide	ND	2.0 µg/L	05/17/12 17:54	05/17/12 17:54
	Methyl methacrylate	ND	10 µg/L	05/17/12 17:54	05/17/12 17:54
	Nitrobenzene	ND	10 µg/L	05/17/12 17:54	05/17/12 17:54
	2-Nitropropane	ND	2.0 µg/L	05/17/12 17:54	05/17/12 17:54
	Pentachloroethane	ND	2.0 µg/L	05/17/12 17:54	05/17/12 17:54
	Propionitrile	ND	50 µg/L	05/17/12 17:54	05/17/12 17:54
	Tetrahydrofuran	ND	10 µg/L	05/17/12 17:54	05/17/12 17:54
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 17:54	05/17/12 17:54

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Client ID: **MW-19-1**					
Lab ID : BMI12051001-05A	Acrylonitrile	ND	10 µg/L	05/17/12 18:16	05/17/12 18:16
Date Sampled 05/09/12 12:20	Allyl chloride	ND	2.0 µg/L	05/17/12 18:16	05/17/12 18:16
	Carbon disulfide	ND	2.5 µg/L	05/17/12 18:16	05/17/12 18:16
	Chloroacetonitrile	ND	10 µg/L	05/17/12 18:16	05/17/12 18:16
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 18:16	05/17/12 18:16
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 18:16	05/17/12 18:16
	Diethyl ether	ND	2.0 µg/L	05/17/12 18:16	05/17/12 18:16
	Ethyl methacrylate	ND	10 µg/L	05/17/12 18:16	05/17/12 18:16
	Hexachloroethane	ND	10 µg/L	05/17/12 18:16	05/17/12 18:16
	Methacrylonitrile	ND	10 µg/L	05/17/12 18:16	05/17/12 18:16
	Methyl acrylate	ND	10 µg/L	05/17/12 18:16	05/17/12 18:16
	Methyl iodide	ND	2.0 µg/L	05/17/12 18:16	05/17/12 18:16
	Methyl methacrylate	ND	10 µg/L	05/17/12 18:16	05/17/12 18:16
	Nitrobenzene	ND	10 µg/L	05/17/12 18:16	05/17/12 18:16
	2-Nitropropane	ND	2.0 µg/L	05/17/12 18:16	05/17/12 18:16
	Pentachloroethane	ND	2.0 µg/L	05/17/12 18:16	05/17/12 18:16
	Propionitrile	ND	50 µg/L	05/17/12 18:16	05/17/12 18:16
	Tetrahydrofuran	ND	10 µg/L	05/17/12 18:16	05/17/12 18:16
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 18:16	05/17/12 18:16
Client ID: **DUPE-5-2Q12**					
Lab ID : BMI12051001-06A	Acrylonitrile	ND	10 µg/L	05/17/12 18:37	05/17/12 18:37
Date Sampled 05/09/12 00:00	Allyl chloride	ND	2.0 µg/L	05/17/12 18:37	05/17/12 18:37
	Carbon disulfide	ND	2.5 µg/L	05/17/12 18:37	05/17/12 18:37
	Chloroacetonitrile	ND	10 µg/L	05/17/12 18:37	05/17/12 18:37
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 18:37	05/17/12 18:37
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 18:37	05/17/12 18:37
	Diethyl ether	ND	2.0 µg/L	05/17/12 18:37	05/17/12 18:37
	Ethyl methacrylate	ND	10 µg/L	05/17/12 18:37	05/17/12 18:37
	Hexachloroethane	ND	10 µg/L	05/17/12 18:37	05/17/12 18:37
	Methacrylonitrile	ND	10 µg/L	05/17/12 18:37	05/17/12 18:37
	Methyl acrylate	ND	10 µg/L	05/17/12 18:37	05/17/12 18:37
	Methyl iodide	ND	2.0 µg/L	05/17/12 18:37	05/17/12 18:37
	Methyl methacrylate	ND	10 µg/L	05/17/12 18:37	05/17/12 18:37
	Nitrobenzene	ND	10 µg/L	05/17/12 18:37	05/17/12 18:37
	2-Nitropropane	ND	2.0 µg/L	05/17/12 18:37	05/17/12 18:37
	Pentachloroethane	ND	2.0 µg/L	05/17/12 18:37	05/17/12 18:37
	Propionitrile	ND	50 µg/L	05/17/12 18:37	05/17/12 18:37
	Tetrahydrofuran	ND	10 µg/L	05/17/12 18:37	05/17/12 18:37
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 18:37	05/17/12 18:37

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Client ID: **EB-11-5/9/12**					
Lab ID : BMI12051001-07A	Acrylonitrile	ND	10 µg/L	05/17/12 18:59	05/17/12 18:59
Date Sampled 05/09/12 12:07	Allyl chloride	ND	2.0 µg/L	05/17/12 18:59	05/17/12 18:59
	Carbon disulfide	ND	2.5 µg/L	05/17/12 18:59	05/17/12 18:59
	Chloroacetonitrile	ND	10 µg/L	05/17/12 18:59	05/17/12 18:59
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 18:59	05/17/12 18:59
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 18:59	05/17/12 18:59
	Diethyl ether	ND	2.0 µg/L	05/17/12 18:59	05/17/12 18:59
	Ethyl methacrylate	ND	10 µg/L	05/17/12 18:59	05/17/12 18:59
	Hexachloroethane	ND	10 µg/L	05/17/12 18:59	05/17/12 18:59
	Methacrylonitrile	ND	10 µg/L	05/17/12 18:59	05/17/12 18:59
	Methyl acrylate	ND	10 µg/L	05/17/12 18:59	05/17/12 18:59
	Methyl iodide	ND	2.0 µg/L	05/17/12 18:59	05/17/12 18:59
	Methyl methacrylate	ND	10 µg/L	05/17/12 18:59	05/17/12 18:59
	Nitrobenzene	ND	10 µg/L	05/17/12 18:59	05/17/12 18:59
	2-Nitropropane	ND	2.0 µg/L	05/17/12 18:59	05/17/12 18:59
	Pentachloroethane	ND	2.0 µg/L	05/17/12 18:59	05/17/12 18:59
	Propionitrile	ND	50 µg/L	05/17/12 18:59	05/17/12 18:59
	Tetrahydrofuran	ND	10 µg/L	05/17/12 18:59	05/17/12 18:59
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 18:59	05/17/12 18:59
Client ID: **TB-11-5/9/12**					
Lab ID : BMI12051001-08A	Acrylonitrile	ND	10 µg/L	05/17/12 19:21	05/17/12 19:21
Date Sampled 05/09/12 07:00	Allyl chloride	ND	2.0 µg/L	05/17/12 19:21	05/17/12 19:21
	Carbon disulfide	ND	2.5 µg/L	05/17/12 19:21	05/17/12 19:21
	Chloroacetonitrile	ND	10 µg/L	05/17/12 19:21	05/17/12 19:21
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 19:21	05/17/12 19:21
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 19:21	05/17/12 19:21
	Diethyl ether	ND	2.0 µg/L	05/17/12 19:21	05/17/12 19:21
	Ethyl methacrylate	ND	10 µg/L	05/17/12 19:21	05/17/12 19:21
	Hexachloroethane	ND	10 µg/L	05/17/12 19:21	05/17/12 19:21
	Methacrylonitrile	ND	10 µg/L	05/17/12 19:21	05/17/12 19:21
	Methyl acrylate	ND	10 µg/L	05/17/12 19:21	05/17/12 19:21
	Methyl iodide	ND	2.0 µg/L	05/17/12 19:21	05/17/12 19:21
	Methyl methacrylate	ND	10 µg/L	05/17/12 19:21	05/17/12 19:21
	Nitrobenzene	ND	10 µg/L	05/17/12 19:21	05/17/12 19:21
	2-Nitropropane	ND	2.0 µg/L	05/17/12 19:21	05/17/12 19:21
	Pentachloroethane	ND	2.0 µg/L	05/17/12 19:21	05/17/12 19:21
	Propionitrile	ND	50 µg/L	05/17/12 19:21	05/17/12 19:21
	Tetrahydrofuran	ND	10 µg/L	05/17/12 19:21	05/17/12 19:21
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 19:21	05/17/12 19:21

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Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/22/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051001-01A
Client I.D. Number: MW-19-5

Sampled: 05/09/12 08:27
Received: 05/10/12
Extracted: 05/17/12 16:49
Analyzed: 05/17/12 16:49

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	1.2	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	100	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/22/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051001-02A
Client I.D. Number: MW-19-4

Sampled: 05/09/12 08:55
Received: 05/10/12
Extracted: 05/17/12 17:10
Analyzed: 05/17/12 17:10

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/22/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051001-03A
Client I.D. Number: MW-19-3

Sampled: 05/09/12 09:20
Received: 05/10/12
Extracted: 05/17/12 17:32
Analyzed: 05/17/12 17:32

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	100	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/22/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051001-04A
Client I.D. Number: MW-19-2

Sampled: 05/09/12 09:54
Received: 05/10/12
Extracted: 05/17/12 17:54
Analyzed: 05/17/12 17:54

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	0.78	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/22/12
Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051001-05A
Client I.D. Number: MW-19-1

Sampled: 05/09/12 12:20
Received: 05/10/12
Extracted: 05/17/12 18:16
Analyzed: 05/17/12 18:16

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	100	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	93	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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5/22/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051001-06A
Client I.D. Number: DUPE-5-2Q12

Sampled: 05/09/12 00:00
Received: 05/10/12
Extracted: 05/17/12 18:37
Analyzed: 05/17/12 18:37

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	0.88	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	103	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/22/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051001-07A
Client I.D. Number: EB-11-5/9/12

Sampled: 05/09/12 12:07
Received: 05/10/12
Extracted: 05/17/12 18:59
Analyzed: 05/17/12 18:59

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/22/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051001-08A
Client I.D. Number: TB-11-5/9/12

Sampled: 05/09/12 07:00
Received: 05/10/12
Extracted: 05/17/12 19:21
Analyzed: 05/17/12 19:21

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/22/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

VOC Sample Preservation Report

Work Order: BMI12051001 **Job:** 100006114 / JPL Groundwater Monitoring

Alpha's Sample ID	Client's Sample ID	Matrix	pH
12051001-01A	MW-19-5	Aqueous	2
12051001-02A	MW-19-4	Aqueous	2
12051001-03A	MW-19-3	Aqueous	2
12051001-04A	MW-19-2	Aqueous	2
12051001-05A	MW-19-1	Aqueous	2
12051001-06A	DUPE-5-2Q12	Aqueous	2
12051001-07A	EB-11-5/9/12	Aqueous	2
12051001-08A	TB-11-5/9/12	Aqueous	2

5/22/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: 21-May-12

QC Summary Report

Work Order: 12051001

Method Blank

Type: **MBLK** Test Code: **EPA Method 300.0**

File ID: **24** Batch ID: **28710K** Analysis Date: **05/10/2012 13:44**

Sample ID: **MB-28710** Units : **mg/L** Run ID: **IC_1_120510B** Prep Date: **05/10/2012 13:41**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 300.0**

File ID: **25** Batch ID: **28710K** Analysis Date: **05/10/2012 14:02**

Sample ID: **LFB-28710** Units : **mg/L** Run ID: **IC_1_120510B** Prep Date: **05/10/2012 13:41**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	48.9	0.5	50		98	90	110			
Nitrite (NO2) - N	5	0.25	5		99.9	90	110			
Nitrate (NO3) - N	5.3	0.25	5		106	90	110			
Phosphate, ortho - P	5.12	0.5	5		102	90	110			
Sulfate (SO4)	99.3	0.5	100		99	90	110			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 300.0**

File ID: **36** Batch ID: **28710K** Analysis Date: **05/10/2012 17:26**

Sample ID: **12051001-01ALFM** Units : **mg/L** Run ID: **IC_1_120510B** Prep Date: **05/10/2012 13:41**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	293	1.3	250	54.43	95	90	110			
Nitrite (NO2) - N	25.2	0.63	25	0	101	90	110			
Nitrate (NO3) - N	31.9	0.63	25	6.787	101	90	110			
Phosphate, ortho - P	29.3	1.3	25	0	117	90	110			M1
Sulfate (SO4)	551	1.3	500	61.8	98	90	110			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 300.0**

File ID: **37** Batch ID: **28710K** Analysis Date: **05/10/2012 17:45**

Sample ID: **12051001-01ALFMD** Units : **mg/L** Run ID: **IC_1_120510B** Prep Date: **05/10/2012 13:41**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	296	1.3	250	54.43	97	90	110	293.1	0.9(15)	
Nitrite (NO2) - N	25.3	0.63	25	0	101	90	110	25.21	0.4(15)	
Nitrate (NO3) - N	32.2	0.63	25	6.787	102	90	110	31.95	0.8(15)	
Phosphate, ortho - P	29.7	1.3	25	0	119	90	110	29.25	1.6(15)	M1
Sulfate (SO4)	557	1.3	500	61.8	99	90	110	551.4	1.0(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

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Date: *21-May-12*

QC Summary Report

Work Order: 12051001

Method Blank

Type **MBLK** Test Code: **EPA Method 314.0**

File ID: **31** Batch ID: **28715K** Analysis Date: **05/14/2012 15:53**

Sample ID: **MB-28715** Units : **µg/L** Run ID: **IC_3_120514C** Prep Date: **05/10/2012 17:30**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 314.0**

File ID: **32** Batch ID: **28715K** Analysis Date: **05/14/2012 16:12**

Sample ID: **LFB-28715** Units : **µg/L** Run ID: **IC_3_120514C** Prep Date: **05/10/2012 17:30**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	24.9	2	25		99.7	85	115			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 314.0**

File ID: **39** Batch ID: **28715K** Analysis Date: **05/14/2012 18:21**

Sample ID: **12050904-01ALFM** Units : **µg/L** Run ID: **IC_3_120514C** Prep Date: **05/10/2012 17:30**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	27	2	25	0	108	85	115			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 314.0**

File ID: **40** Batch ID: **28715K** Analysis Date: **05/14/2012 18:39**

Sample ID: **12050904-01ALFMD** Units : **µg/L** Run ID: **IC_3_120514C** Prep Date: **05/10/2012 17:30**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	27.7	2	25	0	111	85	115	26.95	2.8(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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QC Summary Report

Work Order: 12051001

Laboratory Control Spike Type **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0514AL** Analysis Date: **05/14/2012 11:19**

Sample ID: **LCS-W0514AL** Units : **mg/L** Run ID: **WETLAB_120514C** Prep Date: **05/14/2012 11:19**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	282.9	10	250		113	80	120			
Alkalinity, Carbonate (As CaCO3)	282.9	10	250		113	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	283	10	250		113	80	120			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *21-May-12*

QC Summary Report

Work Order: 12051001

Method Blank

Type **MBLK** Test Code: **EPA Method 200.8**

File ID: **051012.B\084_M.D** Batch ID: **28708K** Analysis Date: **05/10/2012 19:23**

Sample ID: **MB-28708** Units : **mg/L** Run ID: **ICP/MS_120510C** Prep Date: **05/10/2012 13:18**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type **LCS** Test Code: **EPA Method 200.8**

File ID: **051012.B\085_M.D** Batch ID: **28708K** Analysis Date: **05/10/2012 19:29**

Sample ID: **LCS-28708** Units : **mg/L** Run ID: **ICP/MS_120510C** Prep Date: **05/10/2012 13:18**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	5.6	0.5	5		112	80	120			
Magnesium (Mg)	5.19	0.5	5		104	80	120			
Potassium (K)	5.31	0.5	5		106	80	120			
Calcium (Ca)	5.37	0.5	5		107	80	120			
Chromium (Cr)	0.0505	0.005	0.05		101	80	120			
Iron (Fe)	5.35	0.3	5		107	80	120			
Arsenic (As)	0.0509	0.002	0.05		102	80	120			
Lead (Pb)	0.0503	0.005	0.05		101	80	120			

Sample Matrix Spike

Type **MS** Test Code: **EPA Method 200.8**

File ID: **051012.B\090_M.D** Batch ID: **28708K** Analysis Date: **05/10/2012 19:57**

Sample ID: **12050904-01AMS** Units : **mg/L** Run ID: **ICP/MS_120510C** Prep Date: **05/10/2012 13:18**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	68.3	0.5	5	63.03	106	80	120			
Magnesium (Mg)	9.9	0.5	5	4.645	105	80	120			
Potassium (K)	6.81	0.5	5	1.535	106	80	120			
Calcium (Ca)	20.6	0.5	5	15.83	96	80	120			
Chromium (Cr)	0.0545	0.005	0.05	0	109	80	120			
Iron (Fe)	6.27	0.3	5	0.8512	108	80	120			
Arsenic (As)	0.0534	0.002	0.05	0.003936	99	80	120			
Lead (Pb)	0.0501	0.005	0.05	0	100	80	120			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method 200.8**

File ID: **051012.B\091_M.D** Batch ID: **28708K** Analysis Date: **05/10/2012 20:03**

Sample ID: **12050904-01AMSD** Units : **mg/L** Run ID: **ICP/MS_120510C** Prep Date: **05/10/2012 13:18**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	67.3	0.5	5	63.03	86	80	120	68.31	1.5(20)	
Magnesium (Mg)	9.99	0.5	5	4.645	107	80	120	9.898	0.9(20)	
Potassium (K)	6.99	0.5	5	1.535	109	80	120	6.811	2.5(20)	
Calcium (Ca)	20.7	0.5	5	15.83	97	80	120	20.64	0.1(20)	
Chromium (Cr)	0.0546	0.005	0.05	0	109	80	120	0.05452	0.1(20)	
Iron (Fe)	6.33	0.3	5	0.8512	110	80	120	6.27	0.9(20)	
Arsenic (As)	0.0583	0.002	0.05	0.003936	109	80	120	0.05341	8.7(20)	
Lead (Pb)	0.0515	0.005	0.05	0	103	80	120	0.05013	2.7(20)	

Comments:

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QC Summary Report

Work Order: 12051001

Laboratory Control Spike Type **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0510PH** Analysis Date: **05/10/2012 15:41**

Sample ID: **LCS-W0510PH** Units : **pH Units** Run ID: **WETLAB_120510A** Prep Date: **05/10/2012 15:41**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5.03	1.7	5		101	90	110			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *21-May-12*

QC Summary Report

Work Order: 12051001

Method Blank

Type: **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0511DS** Analysis Date: **05/14/2012 00:00**

Sample ID: **MBLK-W0511DS** Units : **mg/L** Run ID: **WETLAB_120511B** Prep Date: **05/14/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type: **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0511DS** Analysis Date: **05/14/2012 00:00**

Sample ID: **LCS-W0511DS** Units : **mg/L** Run ID: **WETLAB_120511B** Prep Date: **05/14/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	91	10	100		91	70	130			

Comments:

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Date: 22-May-12

QC Summary Report

Work Order: 12051001

Method Blank Type: **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12051707.D** Batch ID: **MS15W0517M** Analysis Date: **05/17/2012 13:31**

Sample ID: **MBLK MS15W0517M** Units : **µg/L** Run ID: **MSD_15_120517B** Prep Date: **05/17/2012 13:31**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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QC Summary Report

Work Order: 12051001

Surr: 1,2-Dichloroethane-d4	10.5	10	105	70	130
Surr: Toluene-d8	10	10	100	70	130
Surr: 4-Bromofluorobenzene	9.13	10	91	70	130

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QC Summary Report

Work Order: 12051001

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method SW8260B**

File ID: **12051704.D** Batch ID: **MS15W0517M** Analysis Date: **05/17/2012 11:45**

Sample ID: **LCS MS15W0517M** Units : **µg/L** Run ID: **MSD_15_120517B** Prep Date: **05/17/2012 11:45**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	11.9	1	10		119	70	130			
Chloromethane	9.24	2	10		92	70	130			
Vinyl chloride	10.7	1	10		107	70	130			
Chloroethane	9.32	1	10		93	70	130			
Bromomethane	8.49	2	10		85	70	130			
Trichlorofluoromethane	9.88	1	10		99	70	130			
Acetone	278	10	200		139	36	171			
1,1-Dichloroethene	9.83	1	10		98	70	130			
Dichloromethane	8.76	2	10		88	70	130			
Freon-113	10.4	1	10		104	70	137			
trans-1,2-Dichloroethene	9.92	1	10		99	70	130			
Methyl tert-butyl ether (MTBE)	9.12	0.5	10		91	70	130			
1,1-Dichloroethane	9.61	1	10		96	70	130			
2-Butanone (MEK)	247	10	200		123	70	130			
cis-1,2-Dichloroethene	9.88	1	10		99	70	130			
Bromochloromethane	10.1	1	10		101	70	130			
Chloroform	8.84	1	10		88	70	130			
2,2-Dichloropropane	9.57	1	10		96	70	130			
1,2-Dichloroethane	9.71	1	10		97	70	130			
1,1,1-Trichloroethane	10.1	1	10		101	70	130			
1,1-Dichloropropene	10.4	1	10		104	70	130			
Carbon tetrachloride	9.01	1	10		90	70	130			
Benzene	9.5	0.5	10		95	70	130			
Dibromomethane	9.67	1	10		97	70	130			
1,2-Dichloropropane	9.01	1	10		90	70	130			
Trichloroethene	9.84	1	10		98	70	130			
Bromodichloromethane	8.73	1	10		87	70	130			
4-Methyl-2-pentanone (MIBK)	24	2.5	25		96	20	182			
cis-1,3-Dichloropropene	9.04	1	10		90	70	130			
trans-1,3-Dichloropropene	8.89	1	10		89	70	130			
1,1,2-Trichloroethane	9.75	1	10		98	70	130			
Toluene	9.3	0.5	10		93	70	130			
1,3-Dichloropropane	9.74	1	10		97	70	130			
2-Hexanone	119	5	100		119	20	182			
Dibromochloromethane	8.56	1	10		86	70	130			
1,2-Dibromoethane (EDB)	19	2	20		95	70	130			
Tetrachloroethene	10.1	1	10		101	70	130			
1,1,1,2-Tetrachloroethane	10.3	1	10		103	70	130			
Chlorobenzene	9.65	1	10		97	70	130			
Ethylbenzene	9.48	0.5	10		95	70	130			
m,p-Xylene	9.33	0.5	10		93	70	130			
Bromoform	8.29	1	10		83	70	130			
Styrene	8.48	1	10		85	70	130			
o-Xylene	9.26	0.5	10		93	70	130			
1,1,2,2-Tetrachloroethane	9.56	1	10		96	70	130			
1,2,3-Trichloropropane	20.1	2	20		101	70	130			
Isopropylbenzene	9.53	1	10		95	70	130			
Bromobenzene	9.8	1	10		98	70	130			
n-Propylbenzene	9.83	1	10		98	70	130			
4-Chlorotoluene	9.86	1	10		99	70	130			
2-Chlorotoluene	9.61	1	10		96	70	130			
1,3,5-Trimethylbenzene	9.87	1	10		99	70	130			
tert-Butylbenzene	9.72	1	10		97	70	130			
1,2,4-Trimethylbenzene	9.85	1	10		99	70	130			
sec-Butylbenzene	9.86	1	10		99	70	130			
1,3-Dichlorobenzene	9.17	1	10		92	70	130			
1,4-Dichlorobenzene	9.68	1	10		97	70	130			
4-Isopropyltoluene	10	1	10		100	70	130			
1,2-Dichlorobenzene	9.22	1	10		92	70	130			
n-Butylbenzene	9.94	1	10		99	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	48.6	3	50		97	67	130			
1,2,4-Trichlorobenzene	9.33	2	10		93	70	130			
Naphthalene	8.18	2	10		82	70	130			
Hexachlorobutadiene	19.7	2	20		98	70	130			
1,2,3-Trichlorobenzene	7.85	2	10		79	70	130			

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QC Summary Report

Work Order: 12051001

Surr: 1,2-Dichloroethane-d4	11	10	110	70	130
Surr: Toluene-d8	9.99	10	99.9	70	130
Surr: 4-Bromofluorobenzene	9.54	10	95	70	130

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Date: 22-May-12

QC Summary Report

Work Order: 12051001

Sample Matrix Spike Type: **MS** Test Code: **EPA Method SW8260B**

File ID: **12051714.D** Batch ID: **MS15W0517M** Analysis Date: **05/17/2012 16:05**

Sample ID: **12051101-05AMS** Units : **µg/L** Run ID: **MSD_15_120517B** Prep Date: **05/17/2012 16:05**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	73.1	2.5	50	0	146	21	138			M1
Chloromethane	63.3	10	50	0	127	23	144			
Vinyl chloride	69.9	2.5	50	0	140	49	136			M1
Chloroethane	58.1	2.5	50	0	116	21	159			
Bromomethane	49.2	10	50	0	98	10	174			
Trichlorofluoromethane	62.8	2.5	50	0	126	32	154			
Acetone	761	50	1000	0	76	10	171			
1,1-Dichloroethene	62.4	2.5	50	0	125	64	130			
Dichloromethane	55.4	10	50	0	111	69	130			
Freon-113	66.1	2.5	50	0	132	55	141			
trans-1,2-Dichloroethene	62.3	2.5	50	0	125	63	130			
Methyl tert-butyl ether (MTBE)	62.3	1.3	50	0	125	47	150			
1,1-Dichloroethane	61	2.5	50	0	122	66	130			
2-Butanone (MEK)	957	50	1000	0	96	23	182			
cis-1,2-Dichloroethene	61.1	2.5	50	0	122	70	130			
Bromochloromethane	66.1	2.5	50	0	132	70	132			
Chloroform	54.9	2.5	50	0	110	70	130			
2,2-Dichloropropane	61	2.5	50	0	122	38	154			
1,2-Dichloroethane	63.1	2.5	50	0	126	65	134			
1,1,1-Trichloroethane	64.3	2.5	50	0	129	65	136			
1,1-Dichloropropene	65.4	2.5	50	0	131	68	132			
Carbon tetrachloride	58	2.5	50	0	116	58	148			
Benzene	60	1.3	50	0	120	59	138			
Dibromomethane	64.5	2.5	50	0	129	70	130			
1,2-Dichloropropane	57	2.5	50	0	114	70	131			
Trichloroethene	62	2.5	50	0	124	65	144			
Bromodichloromethane	56.2	2.5	50	0	112	50	157			
4-Methyl-2-pentanone (MIBK)	148	13	125	0	119	20	182			
cis-1,3-Dichloropropene	57.1	2.5	50	0	114	63	131			
trans-1,3-Dichloropropene	58.5	2.5	50	0	117	65	136			
1,1,2-Trichloroethane	64.4	2.5	50	0	129	70	131			
Toluene	58.6	1.3	50	0	117	68	130			
1,3-Dichloropropane	66.1	2.5	50	0	132	70	130			M1
2-Hexanone	472	25	500	0	94	20	182			
Dibromochloromethane	57.5	2.5	50	0	115	42	155			
1,2-Dibromoethane (EDB)	130	5	100	0	130	70	130			
Tetrachloroethene	63.1	2.5	50	0	126	65	130			
1,1,1,2-Tetrachloroethane	66.6	2.5	50	0	133	70	130			M1
Chlorobenzene	60.7	2.5	50	0	121	70	130			
Ethylbenzene	58.7	1.3	50	0	117	68	130			
m,p-Xylene	58.6	1.3	50	0	117	68	131			
Bromoform	56.7	2.5	50	0	113	65	143			
Styrene	53.5	2.5	50	0	107	59	153			
o-Xylene	57.7	1.3	50	0	115	70	130			
1,1,2,2-Tetrachloroethane	66	2.5	50	0	132	67	130			M1
1,2,3-Trichloropropane	135	10	100	0	135	70	130			M1
Isopropylbenzene	58.7	2.5	50	0	117	55	138			
Bromobenzene	62.3	2.5	50	0	125	70	130			
n-Propylbenzene	59.9	2.5	50	0	120	67	133			
4-Chlorotoluene	61.9	2.5	50	0	124	70	130			
2-Chlorotoluene	59.1	2.5	50	0	118	70	130			
1,3,5-Trimethylbenzene	59.6	2.5	50	0	119	67	134			
tert-Butylbenzene	58.2	2.5	50	0	116	55	147			
1,2,4-Trimethylbenzene	60.2	2.5	50	0	120	65	135			
sec-Butylbenzene	58.7	2.5	50	0	117	68	135			
1,3-Dichlorobenzene	58.4	2.5	50	0	117	70	130			
1,4-Dichlorobenzene	61.3	2.5	50	0	123	70	130			
4-Isopropyltoluene	59.7	2.5	50	0	119	68	132			
1,2-Dichlorobenzene	58.7	2.5	50	0	117	70	130			
n-Butylbenzene	58.6	2.5	50	0	117	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	329	15	250	0	132	64	130			M1
1,2,4-Trichlorobenzene	63.7	10	50	0	127	62	133			
Naphthalene	58.9	10	50	0	118	32	166			
Hexachlorobutadiene	115	10	100	0	115	63	130			

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *22-May-12*

QC Summary Report

Work Order: 12051001

1,2,3-Trichlorobenzene	55.8	10	50	0	112	55	138
Surr: 1,2-Dichloroethane-d4	52.3		50		105	70	130
Surr: Toluene-d8	50.5		50		101	70	130
Surr: 4-Bromofluorobenzene	48.6		50		97	70	130

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: 22-May-12

QC Summary Report

Work Order: 12051001

Sample Matrix Spike Duplicate Type: **MSD** Test Code: **EPA Method SW8260B**

File ID: **12051715.D** Batch ID: **MS15W0517M** Analysis Date: **05/17/2012 16:27**

Sample ID: **12051101-05AMSD** Units : **µg/L** Run ID: **MSD_15_120517B** Prep Date: **05/17/2012 16:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	68.1	2.5	50	0	136	21	138	73.1	7.1(33)	
Chloromethane	57.4	10	50	0	115	23	144	63.32	9.9(27)	
Vinyl chloride	68.1	2.5	50	0	136	49	136	69.9	2.6(21)	
Chloroethane	56.1	2.5	50	0	112	21	159	58.12	3.5(40)	
Bromomethane	50.6	10	50	0	101	10	174	49.24	2.7(40)	
Trichlorofluoromethane	61.2	2.5	50	0	122	32	154	62.75	2.6(37)	
Acetone	720	50	1000	0	72	10	171	761.3	5.6(23)	
1,1-Dichloroethene	60.9	2.5	50	0	122	64	130	62.42	2.5(21)	
Dichloromethane	53.9	10	50	0	108	69	130	55.38	2.7(20)	
Freon-113	61.9	2.5	50	0	124	55	141	66.13	6.5(40)	
trans-1,2-Dichloroethene	61.2	2.5	50	0	122	63	130	62.33	1.8(20)	
Methyl tert-butyl ether (MTBE)	61.7	1.3	50	0	123	47	150	62.33	1.1(40)	
1,1-Dichloroethane	59.7	2.5	50	0	119	66	130	60.98	2.1(20)	
2-Butanone (MEK)	916	50	1000	0	92	23	182	957.1	4.4(22)	
cis-1,2-Dichloroethene	61.8	2.5	50	0	124	70	130	61.05	1.2(20)	
Bromochloromethane	64.3	2.5	50	0	129	70	132	66.14	2.9(20)	
Chloroform	54.5	2.5	50	0	109	70	130	54.86	0.6(20)	
2,2-Dichloropropane	59.8	2.5	50	0	120	38	154	61.04	2.0(22)	
1,2-Dichloroethane	61.2	2.5	50	0	122	65	134	63.06	3.0(20)	
1,1,1-Trichloroethane	63.6	2.5	50	0	127	65	136	64.31	1.1(20)	
1,1-Dichloropropene	64.3	2.5	50	0	129	68	132	65.37	1.7(20)	
Carbon tetrachloride	57.3	2.5	50	0	115	58	148	57.98	1.1(20)	
Benzene	58.7	1.3	50	0	117	59	138	59.96	2.1(21)	
Dibromomethane	62.9	2.5	50	0	126	70	130	64.54	2.6(20)	
1,2-Dichloropropane	56.6	2.5	50	0	113	70	131	56.97	0.6(20)	
Trichloroethene	60.4	2.5	50	0	121	65	144	62.04	2.6(20)	
Bromodichloromethane	55.7	2.5	50	0	111	50	157	56.22	1.0(20)	
4-Methyl-2-pentanone (MIBK)	144	13	125	0	115	20	182	148.4	3.3(20)	
cis-1,3-Dichloropropene	56.2	2.5	50	0	112	63	131	57.12	1.6(20)	
trans-1,3-Dichloropropene	57.4	2.5	50	0	115	65	136	58.52	2.0(20)	
1,1,2-Trichloroethane	62.5	2.5	50	0	125	70	131	64.35	2.9(20)	
Toluene	57.5	1.3	50	0	115	68	130	58.61	1.9(20)	
1,3-Dichloropropane	64.1	2.5	50	0	128	70	130	66.08	3.1(20)	
2-Hexanone	457	25	500	0	91	20	182	471.5	3.2(20)	
Dibromochloromethane	56.7	2.5	50	0	113	42	155	57.46	1.3(20)	
1,2-Dibromoethane (EDB)	126	5	100	0	126	70	130	130.5	3.3(20)	
Tetrachloroethene	61.3	2.5	50	0	123	65	130	63.05	2.8(20)	
1,1,1,2-Tetrachloroethane	65.3	2.5	50	0	131	70	130	66.6	2.0(20)	M1
Chlorobenzene	59.6	2.5	50	0	119	70	130	60.68	1.9(20)	
Ethylbenzene	57.6	1.3	50	0	115	68	130	58.72	1.9(20)	
m,p-Xylene	57	1.3	50	0	114	68	131	58.62	2.8(20)	
Bromoform	55.5	2.5	50	0	111	65	143	56.66	2.0(20)	
Styrene	52.7	2.5	50	0	105	59	153	53.53	1.5(37)	
o-Xylene	56.9	1.3	50	0	114	70	130	57.73	1.5(20)	
1,1,2,2-Tetrachloroethane	64.3	2.5	50	0	129	67	130	65.95	2.5(20)	
1,2,3-Trichloropropane	131	10	100	0	131	70	130	134.5	2.3(20)	M1
Isopropylbenzene	57.4	2.5	50	0	115	55	138	58.68	2.2(20)	
Bromobenzene	60	2.5	50	0	120	70	130	62.29	3.8(20)	
n-Propylbenzene	58.6	2.5	50	0	117	67	133	59.87	2.2(30)	
4-Chlorotoluene	59.8	2.5	50	0	120	70	130	61.92	3.5(20)	
2-Chlorotoluene	58.3	2.5	50	0	117	70	130	59.06	1.4(20)	
1,3,5-Trimethylbenzene	58.4	2.5	50	0	117	67	134	59.58	1.9(21)	
tert-Butylbenzene	57.3	2.5	50	0	115	55	147	58.18	1.5(20)	
1,2,4-Trimethylbenzene	58.5	2.5	50	0	117	65	135	60.18	2.8(25)	
sec-Butylbenzene	57.4	2.5	50	0	115	68	135	58.68	2.2(20)	
1,3-Dichlorobenzene	56.4	2.5	50	0	113	70	130	58.35	3.4(20)	
1,4-Dichlorobenzene	59.2	2.5	50	0	118	70	130	61.25	3.4(20)	
4-Isopropyltoluene	58.3	2.5	50	0	117	68	132	59.72	2.3(20)	
1,2-Dichlorobenzene	56.8	2.5	50	0	114	70	130	58.73	3.3(20)	
n-Butylbenzene	56.9	2.5	50	0	114	62	134	58.61	2.9(21)	
1,2-Dibromo-3-chloropropane (DBCP)	318	15	250	0	127	64	130	329.1	3.3(20)	
1,2,4-Trichlorobenzene	60.7	10	50	0	121	62	133	63.65	4.7(29)	
Naphthalene	57.5	10	50	0	115	32	166	58.86	2.3(40)	
Hexachlorobutadiene	113	10	100	0	113	63	130	114.5	1.8(21)	

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *22-May-12*

QC Summary Report

Work Order: 12051001

1,2,3-Trichlorobenzene	54	10	50	0	108	55	138	55.77	3.2(36)
Surr: 1,2-Dichloroethane-d4	53.1		50		106	70	130		
Surr: Toluene-d8	50.4		50		101	70	130		
Surr: 4-Bromofluorobenzene	48.4		50		97	70	130		

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

CA

WorkOrder : BMIS12051001

Report Due By : 5:00 PM On : 23-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : Chase Brogden

PO : 286215

Client's COC # : 53769 Job : 100006114 / JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
0 °C	10-May-12	**10-May-12**

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12051001-01A	MW-19-5	AQ	05/09/12 08:27	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	Level IV QC
BMI12051001-02A	MW-19-4	AQ	05/09/12 08:55	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051001-03A	MW-19-3	AQ	05/09/12 09:20	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051001-04A	MW-19-2	AQ	05/09/12 09:54	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051001-05A	MW-19-1	AQ	05/09/12 12:20	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051001-06A	DUPE-5-2Q12	AQ	05/09/12 00:00	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051001-07A	EB-11-5/9/12	AQ	05/09/12 12:07	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051001-08A	TB-11-5/9/12	AQ	05/09/12 07:00	1	0	9							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip blank 4/2/12

Comments: Security seals intact. Frozen Ice. Temp. Blank #9460 received @ 0°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -01A :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Coffee	Sara Coffee	**Alpha Analytical, Inc.**	5/10/12 10 23

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

53769

Billing Information:
Company Name: BATTELLE
Attn: GERALD TOMPKINS
Address: 505 KING AVE
City, State, Zip: COLUMBUS, OH 43201
Phone Number: _____ Fax: _____

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ___ CA X NV ___ WA ___ DOD Site ___
ID ___ OR ___ OTHER ___ Page # 1 of 1

Consultant / Client Name: BATTELLE / DAVID CONNEN
Address: 3990 OLD TOWN AVE., C-205
City, State, Zip: SAN DIEGO, CA 92110
Job #: 100006114 / PO# 286479
Job Name: STL GW MON. 2012
Report Attention / Project Manager
Name: DAVID CONNEN
Email: Connend@battelle.org
Phone: _____ Mobile: (619) 726-7311
P.O. # 286 215

Analyses Required: (524.2) VOCs; (200.8) *; (314.0 PERCHLORATE); (SM2320B, SM2540C, 150.2) *; (300.0) *

Data Validation Level: II or IV
EDD / EDF? YES ___ NO ___
Global ID # ___

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	# Containers**	REMARKS
0827	5/9/12	AQ	BMI12051001-01A	MW-19-5			3v, 2p	QC LV
0855			02A	MW-19-4				
0920			03A	MW-19-3				
0954			04A	MW-19-2				
1220		AQ	05A	MW-19-1			3v, 2p	
	5/9/12	AQ	06A	DUPE-5-2012			3v, 2p	DUPLICATE
1207		AQ	07A	EB-11-5/9/12			3v, 2p	EQUIP BLANK
0700	5/9/12	AQ	08A	TB-11-5/9/12			1v	TRIP BLANK

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: *(200.8) - TOTAL CR, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320C, SM2540C, 150.2) - CO_3, HCO_3, TDS, PH, ALK. *(300.0) - CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by: CHASE BROWDON

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:
INSIGHT	Alpha Analytical	5/9/12	1305
Alpha Analytical	Kerri Lukkee / alpha	5/10/12	10:22

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *23-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Work Order: BMI12051101 **Cooler Temp:** 0 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12051101-01A	MW-18-5	Aqueous
12051101-02A	MW-18-4	Aqueous
12051101-03A	MW-18-3	Aqueous
12051101-04A	MW-18-2	Aqueous
12051101-05A	MW-18-1	Aqueous
12051101-06A	DUPE-6-2Q12	Aqueous
12051101-07A	EB-12-5/10/12	Aqueous
12051101-08A	TB-12-5/10/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
12051101-02A	EPA Method 314.0	Perchlorate
12051101-03A	EPA Method 314.0	Perchlorate

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/11/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-18-5**					
Lab ID : BMI12051101-01A	Chloride	11	0.50 mg/L	05/11/12 12:16	05/11/12 15:49
Date Sampled 05/10/12 08:52	Nitrite (NO2) - N	ND	0.25 mg/L	05/11/12 12:16	05/11/12 15:49
	Nitrate (NO3) - N	ND	0.25 mg/L	05/11/12 12:16	05/11/12 15:49
	Phosphate, ortho - P	ND	0.50 mg/L	05/11/12 12:16	05/11/12 15:49
	Sulfate (SO4)	5.7	0.50 mg/L	05/11/12 12:16	05/11/12 15:49
Client ID: **MW-18-4**					
Lab ID : BMI12051101-02A	Chloride	14	0.50 mg/L	05/11/12 12:16	05/11/12 16:07
Date Sampled 05/10/12 09:33	Nitrite (NO2) - N	ND	0.25 mg/L	05/11/12 12:16	05/11/12 16:07
	Nitrate (NO3) - N	1.6	0.25 mg/L	05/11/12 12:16	05/11/12 16:07
	Phosphate, ortho - P	ND	0.50 mg/L	05/11/12 12:16	05/11/12 16:07
	Sulfate (SO4)	28	0.50 mg/L	05/11/12 12:16	05/11/12 16:07
Client ID: **MW-18-3**					
Lab ID : BMI12051101-03A	Chloride	21	0.50 mg/L	05/11/12 12:16	05/11/12 16:26
Date Sampled 05/10/12 12:05	Nitrite (NO2) - N	ND	0.25 mg/L	05/11/12 12:16	05/11/12 16:26
	Nitrate (NO3) - N	1.7	0.25 mg/L	05/11/12 12:16	05/11/12 16:26
	Phosphate, ortho - P	ND	0.50 mg/L	05/11/12 12:16	05/11/12 16:26
	Sulfate (SO4)	36	0.50 mg/L	05/11/12 12:16	05/11/12 16:26
Client ID: **MW-18-2**					
Lab ID : BMI12051101-04A	Chloride	14	0.50 mg/L	05/11/12 12:16	05/11/12 16:44
Date Sampled 05/10/12 12:34	Nitrite (NO2) - N	ND	0.25 mg/L	05/11/12 12:16	05/11/12 16:44
	Nitrate (NO3) - N	1.1	0.25 mg/L	05/11/12 12:16	05/11/12 16:44
	Phosphate, ortho - P	ND	0.50 mg/L	05/11/12 12:16	05/11/12 16:44
	Sulfate (SO4)	40	0.50 mg/L	05/11/12 12:16	05/11/12 16:44
Client ID: **MW-18-1**					
Lab ID : BMI12051101-05A	Chloride	7.4	0.50 mg/L	05/11/12 12:16	05/11/12 17:03
Date Sampled 05/10/12 13:09	Nitrite (NO2) - N	ND	0.25 mg/L	05/11/12 12:16	05/11/12 17:03
	Nitrate (NO3) - N	0.42	0.25 mg/L	05/11/12 12:16	05/11/12 17:03
	Phosphate, ortho - P	ND	0.50 mg/L	05/11/12 12:16	05/11/12 17:03
	Sulfate (SO4)	24	0.50 mg/L	05/11/12 12:16	05/11/12 17:03
Client ID: **DUPE-6-2Q12**					
Lab ID : BMI12051101-06A	Chloride	14	0.50 mg/L	05/11/12 12:16	05/11/12 17:58
Date Sampled 05/10/12 00:00	Nitrite (NO2) - N	ND	0.25 mg/L	05/11/12 12:16	05/11/12 17:58
	Nitrate (NO3) - N	1.5	0.25 mg/L	05/11/12 12:16	05/11/12 17:58
	Phosphate, ortho - P	ND	0.50 mg/L	05/11/12 12:16	05/11/12 17:58
	Sulfate (SO4)	28	0.50 mg/L	05/11/12 12:16	05/11/12 17:58

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Client ID: **EB-12-5/10/12**

Lab ID : BMI12051101-07A

Date Sampled 05/10/12 12:52

Chloride	ND	0.50 mg/L	05/11/12 12:16	05/11/12 18:17
Nitrite (NO2) - N	ND	0.25 mg/L	05/11/12 12:16	05/11/12 18:17
Nitrate (NO3) - N	ND	0.25 mg/L	05/11/12 12:16	05/11/12 18:17
Phosphate, ortho - P	ND	0.50 mg/L	05/11/12 12:16	05/11/12 18:17
Sulfate (SO4)	ND	0.50 mg/L	05/11/12 12:16	05/11/12 18:17

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/11/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-18-5**				
Lab ID : BMI12051101-01A Perchlorate	ND	1.00 µg/L	05/14/12 09:32	05/14/12 12:31
Date Sampled 05/10/12 08:52				
Client ID: **MW-18-4**				
Lab ID : BMI12051101-02A Perchlorate	47.3	1.00 µg/L	05/14/12 09:32	05/14/12 12:49
Date Sampled 05/10/12 09:33				
Client ID: **MW-18-3**				
Lab ID : BMI12051101-03A Perchlorate	64.4	1.00 µg/L	05/14/12 09:32	05/14/12 13:08
Date Sampled 05/10/12 12:05				
Client ID: **MW-18-2**				
Lab ID : BMI12051101-04A Perchlorate	ND	1.00 µg/L	05/14/12 09:32	05/14/12 13:26
Date Sampled 05/10/12 12:34				
Client ID: **MW-18-1**				
Lab ID : BMI12051101-05A Perchlorate	ND	1.00 µg/L	05/14/12 09:32	05/14/12 13:44
Date Sampled 05/10/12 13:09				
Client ID: **DUPE-6-2Q12**				
Lab ID : BMI12051101-06A Perchlorate	46.2	1.00 µg/L	05/14/12 09:32	05/14/12 14:40
Date Sampled 05/10/12 00:00				
Client ID: **EB-12-5/10/12**				
Lab ID : BMI12051101-07A Perchlorate	ND	1.00 µg/L	05/14/12 09:32	05/14/12 14:58
Date Sampled 05/10/12 12:52				

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ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/11/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-18-5**					
Lab ID : BMI12051101-01A	Alkalinity, Bicarbonate (As CaCO3)	140	10 mg/L	05/14/12 13:00	05/14/12 13:00
Date Sampled 05/10/12 08:52	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 13:00	05/14/12 13:00
	Alkalinity, Total (As CaCO3 at pH 4.5)	140	10 mg/L	05/14/12 13:00	05/14/12 13:00
Client ID: **MW-18-4**					
Lab ID : BMI12051101-02A	Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	05/14/12 13:09	05/14/12 13:09
Date Sampled 05/10/12 09:33	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 13:09	05/14/12 13:09
	Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	05/14/12 13:09	05/14/12 13:09
Client ID: **MW-18-3**					
Lab ID : BMI12051101-03A	Alkalinity, Bicarbonate (As CaCO3)	210	10 mg/L	05/14/12 13:14	05/14/12 13:14
Date Sampled 05/10/12 12:05	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 13:14	05/14/12 13:14
	Alkalinity, Total (As CaCO3 at pH 4.5)	210	10 mg/L	05/14/12 13:14	05/14/12 13:14
Client ID: **MW-18-2**					
Lab ID : BMI12051101-04A	Alkalinity, Bicarbonate (As CaCO3)	200	10 mg/L	05/14/12 13:20	05/14/12 13:20
Date Sampled 05/10/12 12:34	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 13:20	05/14/12 13:20
	Alkalinity, Total (As CaCO3 at pH 4.5)	200	10 mg/L	05/14/12 13:20	05/14/12 13:20
Client ID: **MW-18-1**					
Lab ID : BMI12051101-05A	Alkalinity, Bicarbonate (As CaCO3)	160	10 mg/L	05/14/12 13:26	05/14/12 13:26
Date Sampled 05/10/12 13:09	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 13:26	05/14/12 13:26
	Alkalinity, Total (As CaCO3 at pH 4.5)	160	10 mg/L	05/14/12 13:26	05/14/12 13:26
Client ID: **DUPE-6-2Q12**					
Lab ID : BMI12051101-06A	Alkalinity, Bicarbonate (As CaCO3)	200	10 mg/L	05/14/12 13:31	05/14/12 13:31
Date Sampled 05/10/12 00:00	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 13:31	05/14/12 13:31
	Alkalinity, Total (As CaCO3 at pH 4.5)	200	10 mg/L	05/14/12 13:31	05/14/12 13:31
Client ID: **EB-12-5/10/12**					
Lab ID : BMI12051101-07A	Alkalinity, Bicarbonate (As CaCO3)	ND	10 mg/L	05/14/12 13:36	05/14/12 13:36
Date Sampled 05/10/12 12:52	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/14/12 13:36	05/14/12 13:36
	Alkalinity, Total (As CaCO3 at pH 4.5)	ND	10 mg/L	05/14/12 13:36	05/14/12 13:36

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ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/23/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/11/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-18-5**				
Lab ID : BMI12051101-01A Sodium (Na)	49	0.50 mg/L	05/16/12 11:33	05/18/12 14:17
Date Sampled 05/10/12 08:52 Magnesium (Mg)	4.5	0.50 mg/L	05/16/12 11:33	05/18/12 14:17
Potassium (K)	1.0	0.50 mg/L	05/16/12 11:33	05/18/12 14:17
Calcium (Ca)	14	0.50 mg/L	05/16/12 11:33	05/18/12 14:17
Chromium (Cr)	ND	0.010 mg/L	05/16/12 11:33	05/18/12 14:17
Iron (Fe)	0.36	0.30 mg/L	05/16/12 11:33	05/18/12 14:17
Arsenic (As)	ND	0.0020 mg/L	05/16/12 11:33	05/18/12 14:17
Lead (Pb)	ND	0.0050 mg/L	05/16/12 11:33	05/18/12 14:17
Client ID: **MW-18-4**				
Lab ID : BMI12051101-02A Sodium (Na)	32	0.50 mg/L	05/16/12 11:33	05/18/12 14:23
Date Sampled 05/10/12 09:33 Magnesium (Mg)	14	0.50 mg/L	05/16/12 11:33	05/18/12 14:23
Potassium (K)	1.3	0.50 mg/L	05/16/12 11:33	05/18/12 14:23
Calcium (Ca)	41	0.50 mg/L	05/16/12 11:33	05/18/12 14:23
Chromium (Cr)	ND	0.010 mg/L	05/16/12 11:33	05/18/12 14:23
Iron (Fe)	0.71	0.30 mg/L	05/16/12 11:33	05/18/12 14:23
Arsenic (As)	ND	0.0020 mg/L	05/16/12 11:33	05/18/12 14:23
Lead (Pb)	ND	0.0050 mg/L	05/16/12 11:33	05/18/12 14:23
Client ID: **MW-18-3**				
Lab ID : BMI12051101-03A Sodium (Na)	23	0.50 mg/L	05/16/12 11:33	05/18/12 14:29
Date Sampled 05/10/12 12:05 Magnesium (Mg)	18	0.50 mg/L	05/16/12 11:33	05/18/12 14:29
Potassium (K)	2.5	0.50 mg/L	05/16/12 11:33	05/18/12 14:29
Calcium (Ca)	61	0.50 mg/L	05/16/12 11:33	05/18/12 14:29
Chromium (Cr)	ND	0.010 mg/L	05/16/12 11:33	05/18/12 14:29
Iron (Fe)	0.88	0.30 mg/L	05/16/12 11:33	05/18/12 14:29
Arsenic (As)	ND	0.0020 mg/L	05/16/12 11:33	05/18/12 14:29
Lead (Pb)	ND	0.0050 mg/L	05/16/12 11:33	05/18/12 14:29
Client ID: **MW-18-2**				
Lab ID : BMI12051101-04A Sodium (Na)	22	0.50 mg/L	05/16/12 11:33	05/18/12 14:35
Date Sampled 05/10/12 12:34 Magnesium (Mg)	20	0.50 mg/L	05/16/12 11:33	05/18/12 14:35
Potassium (K)	2.5	0.50 mg/L	05/16/12 11:33	05/18/12 14:35
Calcium (Ca)	61	0.50 mg/L	05/16/12 11:33	05/18/12 14:35
Chromium (Cr)	ND	0.010 mg/L	05/16/12 11:33	05/18/12 14:35
Iron (Fe)	0.93	0.30 mg/L	05/16/12 11:33	05/18/12 14:35
Arsenic (As)	ND	0.0020 mg/L	05/16/12 11:33	05/18/12 14:35
Lead (Pb)	ND	0.0050 mg/L	05/16/12 11:33	05/18/12 14:35

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Client ID: **MW-18-1**					
Lab ID : BMI12051101-05A	Sodium (Na)	16	0.50 mg/L	05/16/12 11:33	05/18/12 13:54
Date Sampled 05/10/12 13:09	Magnesium (Mg)	13	0.50 mg/L	05/16/12 11:33	05/18/12 13:54
	Potassium (K)	2.0	0.50 mg/L	05/16/12 11:33	05/18/12 13:54
	Calcium (Ca)	40	0.50 mg/L	05/16/12 11:33	05/18/12 13:54
	Chromium (Cr)	ND	0.010 mg/L	05/16/12 11:33	05/18/12 13:54
	Iron (Fe)	0.87	0.30 mg/L	05/16/12 11:33	05/18/12 13:54
	Arsenic (As)	ND	0.0020 mg/L	05/16/12 11:33	05/18/12 13:54
	Lead (Pb)	ND	0.0050 mg/L	05/16/12 11:33	05/18/12 13:54
Client ID: **DUPE-6-2Q12**					
Lab ID : BMI12051101-06A	Sodium (Na)	32	0.50 mg/L	05/16/12 11:33	05/18/12 14:40
Date Sampled 05/10/12 00:00	Magnesium (Mg)	14	0.50 mg/L	05/16/12 11:33	05/18/12 14:40
	Potassium (K)	1.3	0.50 mg/L	05/16/12 11:33	05/18/12 14:40
	Calcium (Ca)	41	0.50 mg/L	05/16/12 11:33	05/18/12 14:40
	Chromium (Cr)	ND	0.010 mg/L	05/16/12 11:33	05/18/12 14:40
	Iron (Fe)	0.71	0.30 mg/L	05/16/12 11:33	05/18/12 14:40
	Arsenic (As)	ND	0.0020 mg/L	05/16/12 11:33	05/18/12 14:40
	Lead (Pb)	ND	0.0050 mg/L	05/16/12 11:33	05/18/12 14:40
Client ID: **EB-12-5/10/12**					
Lab ID : BMI12051101-07A	Sodium (Na)	ND	0.50 mg/L	05/16/12 11:33	05/18/12 14:46
Date Sampled 05/10/12 12:52	Magnesium (Mg)	ND	0.50 mg/L	05/16/12 11:33	05/18/12 14:46
	Potassium (K)	ND	0.50 mg/L	05/16/12 11:33	05/18/12 14:46
	Calcium (Ca)	ND	0.50 mg/L	05/16/12 11:33	05/18/12 14:46
	Chromium (Cr)	ND	0.010 mg/L	05/16/12 11:33	05/23/12 16:01
	Iron (Fe)	ND	0.30 mg/L	05/16/12 11:33	05/18/12 14:46
	Arsenic (As)	ND	0.0020 mg/L	05/16/12 11:33	05/18/12 14:46
	Lead (Pb)	ND	0.0050 mg/L	05/16/12 11:33	05/18/12 14:46

Due to instrument conditions Chromium Reporting Limit was increased to 0.010 mg/L.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/24/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/11/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-18-5**				
Lab ID : BMI12051101-01A pH	8.4	1.7 pH Units	05/11/12 15:01	05/11/12 15:01
Date Sampled 05/10/12 08:52 pH - Temperature	23	1.0 °C	05/11/12 15:01	05/11/12 15:01
Client ID: **MW-18-4**				
Lab ID : BMI12051101-02A pH	8.1	1.7 pH Units	05/11/12 15:07	05/11/12 15:07
Date Sampled 05/10/12 09:33 pH - Temperature	23	1.0 °C	05/11/12 15:07	05/11/12 15:07
Client ID: **MW-18-3**				
Lab ID : BMI12051101-03A pH	7.7	1.7 pH Units	05/11/12 15:08	05/11/12 15:08
Date Sampled 05/10/12 12:05 pH - Temperature	24	1.0 °C	05/11/12 15:08	05/11/12 15:08
Client ID: **MW-18-2**				
Lab ID : BMI12051101-04A pH	7.5	1.7 pH Units	05/11/12 15:08	05/11/12 15:08
Date Sampled 05/10/12 12:34 pH - Temperature	24	1.0 °C	05/11/12 15:08	05/11/12 15:08
Client ID: **MW-18-1**				
Lab ID : BMI12051101-05A pH	7.2	1.7 pH Units	05/11/12 15:12	05/11/12 15:12
Date Sampled 05/10/12 13:09 pH - Temperature	23	1.0 °C	05/11/12 15:12	05/11/12 15:12
Client ID: **DUPE-6-2Q12**				
Lab ID : BMI12051101-06A pH	8.1	1.7 pH Units	05/11/12 15:14	05/11/12 15:14
Date Sampled 05/10/12 00:00 pH - Temperature	23	1.0 °C	05/11/12 15:14	05/11/12 15:14
Client ID: **EB-12-5/10/12**				
Lab ID : BMI12051101-07A pH	6.7	1.7 pH Units	05/11/12 15:20	05/11/12 15:20
Date Sampled 05/10/12 12:52 pH - Temperature	23	1.0 °C	05/11/12 15:20	05/11/12 15:20

Alpha Analytical, Inc.

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.

The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/11/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-18-5**				
Lab ID : BMI12051101-01A Solids, Total Dissolved (TDS)	180	10 mg/L	05/14/12	05/14/12
Date Sampled 05/10/12 08:52				
Client ID: **MW-18-4**				
Lab ID : BMI12051101-02A Solids, Total Dissolved (TDS)	250	10 mg/L	05/14/12	05/14/12
Date Sampled 05/10/12 09:33				
Client ID: **MW-18-3**				
Lab ID : BMI12051101-03A Solids, Total Dissolved (TDS)	320	10 mg/L	05/14/12	05/14/12
Date Sampled 05/10/12 12:05				
Client ID: **MW-18-2**				
Lab ID : BMI12051101-04A Solids, Total Dissolved (TDS)	300	10 mg/L	05/14/12	05/14/12
Date Sampled 05/10/12 12:34				
Client ID: **MW-18-1**				
Lab ID : BMI12051101-05A Solids, Total Dissolved (TDS)	220	10 mg/L	05/14/12	05/14/12
Date Sampled 05/10/12 13:09				
Client ID: **DUPE-6-2Q12**				
Lab ID : BMI12051101-06A Solids, Total Dissolved (TDS)	260	10 mg/L	05/14/12	05/14/12
Date Sampled 05/10/12 00:00				
Client ID: **EB-12-5/10/12**				
Lab ID : BMI12051101-07A Solids, Total Dissolved (TDS)	ND	10 mg/L	05/14/12	05/14/12
Date Sampled 05/10/12 12:52				

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/23/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/11/12

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-18-5**					
Lab ID : BMI12051101-01A	Acrylonitrile	ND	10 µg/L	05/17/12 20:05	05/17/12 20:05
Date Sampled 05/10/12 08:52	Allyl chloride	ND	2.0 µg/L	05/17/12 20:05	05/17/12 20:05
	Carbon disulfide	ND	2.5 µg/L	05/17/12 20:05	05/17/12 20:05
	Chloroacetonitrile	ND	10 µg/L	05/17/12 20:05	05/17/12 20:05
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 20:05	05/17/12 20:05
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 20:05	05/17/12 20:05
	Diethyl ether	ND	2.0 µg/L	05/17/12 20:05	05/17/12 20:05
	Ethyl methacrylate	ND	10 µg/L	05/17/12 20:05	05/17/12 20:05
	Hexachloroethane	ND	10 µg/L	05/17/12 20:05	05/17/12 20:05
	Methacrylonitrile	ND	10 µg/L	05/17/12 20:05	05/17/12 20:05
	Methyl acrylate	ND	10 µg/L	05/17/12 20:05	05/17/12 20:05
	Methyl iodide	ND	2.0 µg/L	05/17/12 20:05	05/17/12 20:05
	Methyl methacrylate	ND	10 µg/L	05/17/12 20:05	05/17/12 20:05
	Nitrobenzene	ND	10 µg/L	05/17/12 20:05	05/17/12 20:05
	2-Nitropropane	ND	2.0 µg/L	05/17/12 20:05	05/17/12 20:05
	Pentachloroethane	ND	2.0 µg/L	05/17/12 20:05	05/17/12 20:05
	Propionitrile	ND	50 µg/L	05/17/12 20:05	05/17/12 20:05
	Tetrahydrofuran	ND	10 µg/L	05/17/12 20:05	05/17/12 20:05
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 20:05	05/17/12 20:05
Client ID: **MW-18-4**					
Lab ID : BMI12051101-02A	Acrylonitrile	ND	10 µg/L	05/17/12 20:26	05/17/12 20:26
Date Sampled 05/10/12 09:33	Allyl chloride	ND	2.0 µg/L	05/17/12 20:26	05/17/12 20:26
	Carbon disulfide	ND	2.5 µg/L	05/17/12 20:26	05/17/12 20:26
	Chloroacetonitrile	ND	10 µg/L	05/17/12 20:26	05/17/12 20:26
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 20:26	05/17/12 20:26
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 20:26	05/17/12 20:26
	Diethyl ether	ND	2.0 µg/L	05/17/12 20:26	05/17/12 20:26
	Ethyl methacrylate	ND	10 µg/L	05/17/12 20:26	05/17/12 20:26
	Hexachloroethane	ND	10 µg/L	05/17/12 20:26	05/17/12 20:26
	Methacrylonitrile	ND	10 µg/L	05/17/12 20:26	05/17/12 20:26
	Methyl acrylate	ND	10 µg/L	05/17/12 20:26	05/17/12 20:26
	Methyl iodide	ND	2.0 µg/L	05/17/12 20:26	05/17/12 20:26
	Methyl methacrylate	ND	10 µg/L	05/17/12 20:26	05/17/12 20:26
	Nitrobenzene	ND	10 µg/L	05/17/12 20:26	05/17/12 20:26
	2-Nitropropane	ND	2.0 µg/L	05/17/12 20:26	05/17/12 20:26
	Pentachloroethane	ND	2.0 µg/L	05/17/12 20:26	05/17/12 20:26
	Propionitrile	ND	50 µg/L	05/17/12 20:26	05/17/12 20:26
	Tetrahydrofuran	ND	10 µg/L	05/17/12 20:26	05/17/12 20:26
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 20:26	05/17/12 20:26

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Client ID: **MW-18-3**					
Lab ID : BMI12051101-03A	Acrylonitrile	ND	10 µg/L	05/17/12 20:48	05/17/12 20:48
Date Sampled 05/10/12 12:05	Allyl chloride	ND	2.0 µg/L	05/17/12 20:48	05/17/12 20:48
	Carbon disulfide	ND	2.5 µg/L	05/17/12 20:48	05/17/12 20:48
	Chloroacetonitrile	ND	10 µg/L	05/17/12 20:48	05/17/12 20:48
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 20:48	05/17/12 20:48
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 20:48	05/17/12 20:48
	Diethyl ether	ND	2.0 µg/L	05/17/12 20:48	05/17/12 20:48
	Ethyl methacrylate	ND	10 µg/L	05/17/12 20:48	05/17/12 20:48
	Hexachloroethane	ND	10 µg/L	05/17/12 20:48	05/17/12 20:48
	Methacrylonitrile	ND	10 µg/L	05/17/12 20:48	05/17/12 20:48
	Methyl acrylate	ND	10 µg/L	05/17/12 20:48	05/17/12 20:48
	Methyl iodide	ND	2.0 µg/L	05/17/12 20:48	05/17/12 20:48
	Methyl methacrylate	ND	10 µg/L	05/17/12 20:48	05/17/12 20:48
	Nitrobenzene	ND	10 µg/L	05/17/12 20:48	05/17/12 20:48
	2-Nitropropane	ND	2.0 µg/L	05/17/12 20:48	05/17/12 20:48
	Pentachloroethane	ND	2.0 µg/L	05/17/12 20:48	05/17/12 20:48
	Propionitrile	ND	50 µg/L	05/17/12 20:48	05/17/12 20:48
	Tetrahydrofuran	ND	10 µg/L	05/17/12 20:48	05/17/12 20:48
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 20:48	05/17/12 20:48
Client ID: **MW-18-2**					
Lab ID : BMI12051101-04A	Acrylonitrile	ND	10 µg/L	05/17/12 21:09	05/17/12 21:09
Date Sampled 05/10/12 12:34	Allyl chloride	ND	2.0 µg/L	05/17/12 21:09	05/17/12 21:09
	Carbon disulfide	ND	2.5 µg/L	05/17/12 21:09	05/17/12 21:09
	Chloroacetonitrile	ND	10 µg/L	05/17/12 21:09	05/17/12 21:09
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 21:09	05/17/12 21:09
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 21:09	05/17/12 21:09
	Diethyl ether	ND	2.0 µg/L	05/17/12 21:09	05/17/12 21:09
	Ethyl methacrylate	ND	10 µg/L	05/17/12 21:09	05/17/12 21:09
	Hexachloroethane	ND	10 µg/L	05/17/12 21:09	05/17/12 21:09
	Methacrylonitrile	ND	10 µg/L	05/17/12 21:09	05/17/12 21:09
	Methyl acrylate	ND	10 µg/L	05/17/12 21:09	05/17/12 21:09
	Methyl iodide	ND	2.0 µg/L	05/17/12 21:09	05/17/12 21:09
	Methyl methacrylate	ND	10 µg/L	05/17/12 21:09	05/17/12 21:09
	Nitrobenzene	ND	10 µg/L	05/17/12 21:09	05/17/12 21:09
	2-Nitropropane	ND	2.0 µg/L	05/17/12 21:09	05/17/12 21:09
	Pentachloroethane	ND	2.0 µg/L	05/17/12 21:09	05/17/12 21:09
	Propionitrile	ND	50 µg/L	05/17/12 21:09	05/17/12 21:09
	Tetrahydrofuran	ND	10 µg/L	05/17/12 21:09	05/17/12 21:09
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 21:09	05/17/12 21:09

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Client ID: **MW-18-1**					
Lab ID : BMI12051101-05A	Acrylonitrile	ND	10 µg/L	05/17/12 21:31	05/17/12 21:31
Date Sampled 05/10/12 13:09	Allyl chloride	ND	2.0 µg/L	05/17/12 21:31	05/17/12 21:31
	Carbon disulfide	ND	2.5 µg/L	05/17/12 21:31	05/17/12 21:31
	Chloroacetonitrile	ND	10 µg/L	05/17/12 21:31	05/17/12 21:31
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 21:31	05/17/12 21:31
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 21:31	05/17/12 21:31
	Diethyl ether	ND	2.0 µg/L	05/17/12 21:31	05/17/12 21:31
	Ethyl methacrylate	ND	10 µg/L	05/17/12 21:31	05/17/12 21:31
	Hexachloroethane	ND	10 µg/L	05/17/12 21:31	05/17/12 21:31
	Methacrylonitrile	ND	10 µg/L	05/17/12 21:31	05/17/12 21:31
	Methyl acrylate	ND	10 µg/L	05/17/12 21:31	05/17/12 21:31
	Methyl iodide	ND	2.0 µg/L	05/17/12 21:31	05/17/12 21:31
	Methyl methacrylate	ND	10 µg/L	05/17/12 21:31	05/17/12 21:31
	Nitrobenzene	ND	10 µg/L	05/17/12 21:31	05/17/12 21:31
	2-Nitropropane	ND	2.0 µg/L	05/17/12 21:31	05/17/12 21:31
	Pentachloroethane	ND	2.0 µg/L	05/17/12 21:31	05/17/12 21:31
	Propionitrile	ND	50 µg/L	05/17/12 21:31	05/17/12 21:31
	Tetrahydrofuran	ND	10 µg/L	05/17/12 21:31	05/17/12 21:31
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 21:31	05/17/12 21:31
Client ID: **DUPE-6-2Q12**					
Lab ID : BMI12051101-06A	Acrylonitrile	ND	10 µg/L	05/17/12 21:53	05/17/12 21:53
Date Sampled 05/10/12 00:00	Allyl chloride	ND	2.0 µg/L	05/17/12 21:53	05/17/12 21:53
	Carbon disulfide	ND	2.5 µg/L	05/17/12 21:53	05/17/12 21:53
	Chloroacetonitrile	ND	10 µg/L	05/17/12 21:53	05/17/12 21:53
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 21:53	05/17/12 21:53
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 21:53	05/17/12 21:53
	Diethyl ether	ND	2.0 µg/L	05/17/12 21:53	05/17/12 21:53
	Ethyl methacrylate	ND	10 µg/L	05/17/12 21:53	05/17/12 21:53
	Hexachloroethane	ND	10 µg/L	05/17/12 21:53	05/17/12 21:53
	Methacrylonitrile	ND	10 µg/L	05/17/12 21:53	05/17/12 21:53
	Methyl acrylate	ND	10 µg/L	05/17/12 21:53	05/17/12 21:53
	Methyl iodide	ND	2.0 µg/L	05/17/12 21:53	05/17/12 21:53
	Methyl methacrylate	ND	10 µg/L	05/17/12 21:53	05/17/12 21:53
	Nitrobenzene	ND	10 µg/L	05/17/12 21:53	05/17/12 21:53
	2-Nitropropane	ND	2.0 µg/L	05/17/12 21:53	05/17/12 21:53
	Pentachloroethane	ND	2.0 µg/L	05/17/12 21:53	05/17/12 21:53
	Propionitrile	ND	50 µg/L	05/17/12 21:53	05/17/12 21:53
	Tetrahydrofuran	ND	10 µg/L	05/17/12 21:53	05/17/12 21:53
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 21:53	05/17/12 21:53

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Client ID: **EB-12-5/10/12**					
Lab ID: BMI12051101-07A	Acrylonitrile	ND	10 µg/L	05/17/12 22:15	05/17/12 22:15
Date Sampled 05/10/12 12:52	Allyl chloride	ND	2.0 µg/L	05/17/12 22:15	05/17/12 22:15
	Carbon disulfide	ND	2.5 µg/L	05/17/12 22:15	05/17/12 22:15
	Chloroacetonitrile	ND	10 µg/L	05/17/12 22:15	05/17/12 22:15
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 22:15	05/17/12 22:15
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 22:15	05/17/12 22:15
	Diethyl ether	ND	2.0 µg/L	05/17/12 22:15	05/17/12 22:15
	Ethyl methacrylate	ND	10 µg/L	05/17/12 22:15	05/17/12 22:15
	Hexachloroethane	ND	10 µg/L	05/17/12 22:15	05/17/12 22:15
	Methacrylonitrile	ND	10 µg/L	05/17/12 22:15	05/17/12 22:15
	Methyl acrylate	ND	10 µg/L	05/17/12 22:15	05/17/12 22:15
	Methyl iodide	ND	2.0 µg/L	05/17/12 22:15	05/17/12 22:15
	Methyl methacrylate	ND	10 µg/L	05/17/12 22:15	05/17/12 22:15
	Nitrobenzene	ND	10 µg/L	05/17/12 22:15	05/17/12 22:15
	2-Nitropropane	ND	2.0 µg/L	05/17/12 22:15	05/17/12 22:15
	Pentachloroethane	ND	2.0 µg/L	05/17/12 22:15	05/17/12 22:15
	Propionitrile	ND	50 µg/L	05/17/12 22:15	05/17/12 22:15
	Tetrahydrofuran	ND	10 µg/L	05/17/12 22:15	05/17/12 22:15
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 22:15	05/17/12 22:15
Client ID: **TB-12-5/10/12**					
Lab ID: BMI12051101-08A	Acrylonitrile	ND	10 µg/L	05/17/12 19:43	05/17/12 19:43
Date Sampled 05/10/12 07:00	Allyl chloride	ND	2.0 µg/L	05/17/12 19:43	05/17/12 19:43
	Carbon disulfide	ND	2.5 µg/L	05/17/12 19:43	05/17/12 19:43
	Chloroacetonitrile	ND	10 µg/L	05/17/12 19:43	05/17/12 19:43
	1-Chlorobutane	ND	2.0 µg/L	05/17/12 19:43	05/17/12 19:43
	1,1-Dichloropropanone	ND	10 µg/L	05/17/12 19:43	05/17/12 19:43
	Diethyl ether	ND	2.0 µg/L	05/17/12 19:43	05/17/12 19:43
	Ethyl methacrylate	ND	10 µg/L	05/17/12 19:43	05/17/12 19:43
	Hexachloroethane	ND	10 µg/L	05/17/12 19:43	05/17/12 19:43
	Methacrylonitrile	ND	10 µg/L	05/17/12 19:43	05/17/12 19:43
	Methyl acrylate	ND	10 µg/L	05/17/12 19:43	05/17/12 19:43
	Methyl iodide	ND	2.0 µg/L	05/17/12 19:43	05/17/12 19:43
	Methyl methacrylate	ND	10 µg/L	05/17/12 19:43	05/17/12 19:43
	Nitrobenzene	ND	10 µg/L	05/17/12 19:43	05/17/12 19:43
	2-Nitropropane	ND	2.0 µg/L	05/17/12 19:43	05/17/12 19:43
	Pentachloroethane	ND	2.0 µg/L	05/17/12 19:43	05/17/12 19:43
	Propionitrile	ND	50 µg/L	05/17/12 19:43	05/17/12 19:43
	Tetrahydrofuran	ND	10 µg/L	05/17/12 19:43	05/17/12 19:43
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/17/12 19:43	05/17/12 19:43

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Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/23/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051101-01A
Client I.D. Number: MW-18-5

Sampled: 05/10/12 08:52
Received: 05/11/12
Extracted: 05/17/12 20:05
Analyzed: 05/17/12 20:05

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	100	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/23/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051101-02A
Client I.D. Number: MW-18-4

Sampled: 05/10/12 09:33
Received: 05/11/12
Extracted: 05/17/12 20:26
Analyzed: 05/17/12 20:26

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	1.2	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	4.0	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	0.80	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/23/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051101-03A
Client I.D. Number: MW-18-3

Sampled: 05/10/12 12:05
Received: 05/11/12
Extracted: 05/17/12 20:48
Analyzed: 05/17/12 20:48

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	1.3	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	8.3	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	0.78	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/23/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051101-04A
Client I.D. Number: MW-18-2

Sampled: 05/10/12 12:34
Received: 05/11/12
Extracted: 05/17/12 21:09
Analyzed: 05/17/12 21:09

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	100	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/23/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051101-05A
Client I.D. Number: MW-18-1

Sampled: 05/10/12 13:09
Received: 05/11/12
Extracted: 05/17/12 21:31
Analyzed: 05/17/12 21:31

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration		Reporting Limit			Compound	Concentration		Reporting Limit	
1	Dichlorodifluoromethane	ND	J	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND		1.0	µg/L
2	Chloromethane	ND		2.0	µg/L	37	Tetrachloroethene	ND		0.50	µg/L
3	Vinyl chloride	ND	J	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	J	0.50	µg/L
4	Chloroethane	ND		0.50	µg/L	39	Chlorobenzene	ND		0.50	µg/L
5	Bromomethane	ND		2.0	µg/L	40	Ethylbenzene	ND		0.50	µg/L
6	Trichlorofluoromethane	ND		0.50	µg/L	41	m,p-Xylene	ND		0.50	µg/L
7	Acetone	ND		10	µg/L	42	Bromoform	ND		0.50	µg/L
8	1,1-Dichloroethene	ND		0.50	µg/L	43	Styrene	ND		0.50	µg/L
9	Dichloromethane	ND		2.0	µg/L	44	o-Xylene	ND		0.50	µg/L
10	Freon-113	ND		0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND		0.50	µg/L
11	trans-1,2-Dichloroethene	ND		0.50	µg/L	46	1,2,3-Trichloropropane	ND		2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND		0.50	µg/L	47	Isopropylbenzene	ND		0.50	µg/L
13	1,1-Dichloroethane	ND		0.50	µg/L	48	Bromobenzene	ND		0.50	µg/L
14	2-Butanone (MEK)	ND		10	µg/L	49	n-Propylbenzene	ND		0.50	µg/L
15	cis-1,2-Dichloroethene	ND		0.50	µg/L	50	4-Chlorotoluene	ND		0.50	µg/L
16	Bromochloromethane	ND	J	0.50	µg/L	51	2-Chlorotoluene	ND		0.50	µg/L
17	Chloroform	ND		0.50	µg/L	52	1,3,5-Trimethylbenzene	ND		0.50	µg/L
18	2,2-Dichloropropane	ND		0.50	µg/L	53	tert-Butylbenzene	ND		0.50	µg/L
19	1,2-Dichloroethane	ND		0.50	µg/L	54	1,2,4-Trimethylbenzene	ND		0.50	µg/L
20	1,1,1-Trichloroethane	ND		0.50	µg/L	55	sec-Butylbenzene	ND		0.50	µg/L
21	1,1-Dichloropropene	ND	J	0.50	µg/L	56	1,3-Dichlorobenzene	ND		0.50	µg/L
22	Carbon tetrachloride	ND		0.50	µg/L	57	1,4-Dichlorobenzene	ND		0.50	µg/L
23	Benzene	ND		0.50	µg/L	58	4-Isopropyltoluene	ND		0.50	µg/L
24	Dibromomethane	ND		0.50	µg/L	59	1,2-Dichlorobenzene	ND		0.50	µg/L
25	1,2-Dichloropropane	ND		0.50	µg/L	60	n-Butylbenzene	ND		0.50	µg/L
26	Trichloroethene	ND		0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND		3.0	µg/L
27	Bromodichloromethane	ND		0.50	µg/L	62	1,2,4-Trichlorobenzene	ND		2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND		2.5	µg/L	63	Naphthalene	ND		2.0	µg/L
29	cis-1,3-Dichloropropene	ND		0.50	µg/L	64	Hexachlorobutadiene	ND		2.0	µg/L
30	trans-1,3-Dichloropropene	ND		0.50	µg/L	65	1,2,3-Trichlorobenzene	ND		2.0	µg/L
31	1,1,2-Trichloroethane	ND		0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	102		(70-130)	%REC
32	Toluene	ND		0.50	µg/L	67	Surr: Toluene-d8	103		(70-130)	%REC
33	1,3-Dichloropropane	ND	J	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	92		(70-130)	%REC
34	2-Hexanone	ND		5.0	µg/L						
35	Dibromochloromethane	ND		0.50	µg/L						

Note: Analysis conducted using EPA Method 524.2 criteria.

J=Estimated: The analyte was positively identified; the quanitation is an estimation.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

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5/23/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051101-06A
Client I.D. Number: DUPE-6-2Q12

Sampled: 05/10/12 00:00
Received: 05/11/12
Extracted: 05/17/12 21:53
Analyzed: 05/17/12 21:53

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	1.4	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	5.1	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	0.98	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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5/23/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051101-07A
Client I.D. Number: EB-12-5/10/12

Sampled: 05/10/12 12:52
Received: 05/11/12
Extracted: 05/17/12 22:15
Analyzed: 05/17/12 22:15

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/23/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114 / JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051101-08A
Client I.D. Number: TB-12-5/10/12

Sampled: 05/10/12 07:00
Received: 05/11/12
Extracted: 05/17/12 19:43
Analyzed: 05/17/12 19:43

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/23/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

VOC Sample Preservation Report

Work Order: BMI12051101 **Job:** 100006114 / JPL Groundwater Monitoring

Alpha's Sample ID	Client's Sample ID	Matrix	pH
12051101-01A	MW-18-5	Aqueous	2
12051101-02A	MW-18-4	Aqueous	2
12051101-03A	MW-18-3	Aqueous	2
12051101-04A	MW-18-2	Aqueous	2
12051101-05A	MW-18-1	Aqueous	2
12051101-06A	DUPE-6-2Q12	Aqueous	2
12051101-07A	EB-12-5/10/12	Aqueous	2
12051101-08A	TB-12-5/10/12	Aqueous	2

5/23/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *23-May-12*

QC Summary Report

Work Order: 12051101

Method Blank

Type: **MBLK** Test Code: **EPA Method 300.0**
File ID: **25** Batch ID: **28724K** Analysis Date: **05/11/2012 14:53**
Sample ID: **MB-28724** Units : **mg/L** Run ID: **IC_1_120511B** Prep Date: **05/11/2012 12:16**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 300.0**
File ID: **26** Batch ID: **28724K** Analysis Date: **05/11/2012 15:12**
Sample ID: **LFB-28724** Units : **mg/L** Run ID: **IC_1_120511B** Prep Date: **05/11/2012 12:16**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	49	0.5	50		98	90	110			
Nitrite (NO2) - N	5.16	0.25	5		103	90	110			
Nitrate (NO3) - N	5.33	0.25	5		107	90	110			
Phosphate, ortho - P	5.26	0.5	5		105	90	110			
Sulfate (SO4)	99.9	0.5	100		99.9	90	110			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 300.0**
File ID: **33** Batch ID: **28724K** Analysis Date: **05/11/2012 17:21**
Sample ID: **12051101-05ALFM** Units : **mg/L** Run ID: **IC_1_120511B** Prep Date: **05/11/2012 12:16**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	242	1.3	250	7.445	94	90	110			
Nitrite (NO2) - N	24.1	0.63	25	0	96	90	110			
Nitrate (NO3) - N	25.8	0.63	25	0.4228	102	90	110			
Phosphate, ortho - P	26.2	1.3	25	0	105	90	110			
Sulfate (SO4)	503	1.3	500	24	96	90	110			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 300.0**
File ID: **34** Batch ID: **28724K** Analysis Date: **05/11/2012 17:40**
Sample ID: **12051101-05ALFMD** Units : **mg/L** Run ID: **IC_1_120511B** Prep Date: **05/11/2012 12:16**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	251	1.3	250	7.445	97	90	110	241.7	3.8(15)	
Nitrite (NO2) - N	24.8	0.63	25	0	99	90	110	24.1	3.0(15)	
Nitrate (NO3) - N	26.7	0.63	25	0.4228	105	90	110	25.8	3.5(15)	
Phosphate, ortho - P	27.4	1.3	25	0	110	90	110	26.21	4.4(15)	
Sulfate (SO4)	520	1.3	500	24	99	90	110	503.2	3.3(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *23-May-12*

QC Summary Report

Work Order: 12051101

Method Blank

Type: **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **28726K** Analysis Date: **05/14/2012 10:30**

Sample ID: **MB-28726** Units : **µg/L** Run ID: **IC_3_120514A** Prep Date: **05/14/2012 09:32**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **28726K** Analysis Date: **05/14/2012 10:48**

Sample ID: **LFB-28726** Units : **µg/L** Run ID: **IC_3_120514A** Prep Date: **05/14/2012 09:32**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.7	2	25		103	85	115			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 314.0**

File ID: **25** Batch ID: **28726K** Analysis Date: **05/14/2012 14:03**

Sample ID: **12051101-05ALFM** Units : **µg/L** Run ID: **IC_3_120514A** Prep Date: **05/14/2012 09:32**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	24.3	2	25	0	97	85	115			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 314.0**

File ID: **26** Batch ID: **28726K** Analysis Date: **05/14/2012 14:21**

Sample ID: **12051101-05ALFMD** Units : **µg/L** Run ID: **IC_3_120514A** Prep Date: **05/14/2012 09:32**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.5	2	25	0	102	85	115	24.3	4.8(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *23-May-12*

QC Summary Report

Work Order: 12051101

Laboratory Control Spike Type: **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0514AL** Analysis Date: **05/14/2012 11:19**

Sample ID: **LCS-W0514AL** Units : **mg/L** Run ID: **WETLAB_120514C** Prep Date: **05/14/2012 11:19**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	282.9	10	250		113	80	120			
Alkalinity, Carbonate (As CaCO3)	282.9	10	250		113	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	283	10	250		113	80	120			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: 24-May-12

QC Summary Report

Work Order: 12051101

Method Blank

Type: **MBLK** Test Code: **EPA Method 200.8**

File ID: **051812.B\019_M.D** Batch ID: **28743K** Analysis Date: **05/18/2012 13:25**

Sample ID: **MB-28743** Units : **mg/L** Run ID: **ICP/MS_120518A** Prep Date: **05/16/2012 11:33**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 200.8**

File ID: **051812.B\020_M.D** Batch ID: **28743K** Analysis Date: **05/18/2012 13:31**

Sample ID: **LCS-28743** Units : **mg/L** Run ID: **ICP/MS_120518A** Prep Date: **05/16/2012 11:33**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	4.32	0.5	5		86	80	120			
Magnesium (Mg)	4.9	0.5	5		98	80	120			
Potassium (K)	4.91	0.5	5		98	80	120			
Calcium (Ca)	5.11	0.5	5		102	80	120			
Chromium (Cr)	0.0502	0.005	0.05		100	80	120			
Iron (Fe)	5.07	0.3	5		101	80	120			
Arsenic (As)	0.0512	0.002	0.05		102	80	120			
Lead (Pb)	0.0501	0.005	0.05		100	80	120			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method 200.8**

File ID: **051812.B\025_M.D** Batch ID: **28743K** Analysis Date: **05/18/2012 14:00**

Sample ID: **12051101-05AMS** Units : **mg/L** Run ID: **ICP/MS_120518A** Prep Date: **05/16/2012 11:33**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	20	0.5	5	15.54	89	80	120			
Magnesium (Mg)	18.1	0.5	5	13.01	101	80	120			
Potassium (K)	6.59	0.5	5	1.992	92	80	120			
Calcium (Ca)	46.9	0.5	5	40.04	138	80	120			M3
Chromium (Cr)	0.0536	0.005	0.05	0	107	80	120			
Iron (Fe)	6.05	0.3	5	0.8709	104	80	120			
Arsenic (As)	0.0477	0.002	0.05	0	95	80	120			
Lead (Pb)	0.0542	0.005	0.05	0	108	80	120			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method 200.8**

File ID: **051812.B\026_M.D** Batch ID: **28743K** Analysis Date: **05/18/2012 14:06**

Sample ID: **12051101-05AMSD** Units : **mg/L** Run ID: **ICP/MS_120518A** Prep Date: **05/16/2012 11:33**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	19.7	0.5	5	15.54	83	80	120	20	1.6(20)	
Magnesium (Mg)	18.1	0.5	5	13.01	101	80	120	18.05	0.2(20)	
Potassium (K)	6.66	0.5	5	1.992	93	80	120	6.588	1.1(20)	
Calcium (Ca)	46.6	0.5	5	40.04	131	80	120	46.92	0.7(20)	M3
Chromium (Cr)	0.0544	0.005	0.05	0	109	80	120	0.05356	1.5(20)	
Iron (Fe)	6.08	0.3	5	0.8709	104	80	120	6.048	0.4(20)	
Arsenic (As)	0.049	0.002	0.05	0	98	80	120	0.04774	2.6(20)	
Lead (Pb)	0.0534	0.005	0.05	0	107	80	120	0.05418	1.5(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M3 = The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to the spike level. The method control sample recovery was acceptable.

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Date: *23-May-12*

QC Summary Report

Work Order: 12051101

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0511PH** Analysis Date: **05/11/2012 14:57**

Sample ID: **LCS-W0511PH** Units : **pH Units** Run ID: **WETLAB_120511A** Prep Date: **05/11/2012 14:57**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5.02	1.7	5		100	90	110			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *23-May-12*

QC Summary Report

Work Order: 12051101

Method Blank

Type: **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0511DS** Analysis Date: **05/14/2012 00:00**

Sample ID: **MBLK-W0511DS** Units : **mg/L** Run ID: **WETLAB_120511B** Prep Date: **05/14/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type: **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0511DS** Analysis Date: **05/14/2012 00:00**

Sample ID: **LCS-W0511DS** Units : **mg/L** Run ID: **WETLAB_120511B** Prep Date: **05/14/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	91	10	100		91	70	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *23-May-12*

QC Summary Report

Work Order: 12051101

Method Blank Type: **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12051707.D** Batch ID: **MS15W0517M** Analysis Date: **05/17/2012 13:31**

Sample ID: **MBLK MS15W0517M** Units : **µg/L** Run ID: **MSD_15_120517B** Prep Date: **05/17/2012 13:31**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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Date: *23-May-12*

QC Summary Report

Work Order: 12051101

Surr: 1,2-Dichloroethane-d4	10.5	10	105	70	130
Surr: Toluene-d8	10	10	100	70	130
Surr: 4-Bromofluorobenzene	9.13	10	91	70	130

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Date: 23-May-12

QC Summary Report

Work Order: 12051101

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method SW8260B**

File ID: **12051704.D** Batch ID: **MS15W0517M** Analysis Date: **05/17/2012 11:45**

Sample ID: **LCS MS15W0517M** Units : **µg/L** Run ID: **MSD_15_120517B** Prep Date: **05/17/2012 11:45**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	11.9	1	10		119	70	130			
Chloromethane	9.24	2	10		92	70	130			
Vinyl chloride	10.7	1	10		107	70	130			
Chloroethane	9.32	1	10		93	70	130			
Bromomethane	8.49	2	10		85	70	130			
Trichlorofluoromethane	9.88	1	10		99	70	130			
Acetone	278	10	200		139	36	171			
1,1-Dichloroethene	9.83	1	10		98	70	130			
Dichloromethane	8.76	2	10		88	70	130			
Freon-113	10.4	1	10		104	70	137			
trans-1,2-Dichloroethene	9.92	1	10		99	70	130			
Methyl tert-butyl ether (MTBE)	9.12	0.5	10		91	70	130			
1,1-Dichloroethane	9.61	1	10		96	70	130			
2-Butanone (MEK)	247	10	200		123	70	130			
cis-1,2-Dichloroethene	9.88	1	10		99	70	130			
Bromochloromethane	10.1	1	10		101	70	130			
Chloroform	8.84	1	10		88	70	130			
2,2-Dichloropropane	9.57	1	10		96	70	130			
1,2-Dichloroethane	9.71	1	10		97	70	130			
1,1,1-Trichloroethane	10.1	1	10		101	70	130			
1,1-Dichloropropene	10.4	1	10		104	70	130			
Carbon tetrachloride	9.01	1	10		90	70	130			
Benzene	9.5	0.5	10		95	70	130			
Dibromomethane	9.67	1	10		97	70	130			
1,2-Dichloropropane	9.01	1	10		90	70	130			
Trichloroethene	9.84	1	10		98	70	130			
Bromodichloromethane	8.73	1	10		87	70	130			
4-Methyl-2-pentanone (MIBK)	24	2.5	25		96	20	182			
cis-1,3-Dichloropropene	9.04	1	10		90	70	130			
trans-1,3-Dichloropropene	8.89	1	10		89	70	130			
1,1,2-Trichloroethane	9.75	1	10		98	70	130			
Toluene	9.3	0.5	10		93	70	130			
1,3-Dichloropropane	9.74	1	10		97	70	130			
2-Hexanone	119	5	100		119	20	182			
Dibromochloromethane	8.56	1	10		86	70	130			
1,2-Dibromoethane (EDB)	19	2	20		95	70	130			
Tetrachloroethene	10.1	1	10		101	70	130			
1,1,1,2-Tetrachloroethane	10.3	1	10		103	70	130			
Chlorobenzene	9.65	1	10		97	70	130			
Ethylbenzene	9.48	0.5	10		95	70	130			
m,p-Xylene	9.33	0.5	10		93	70	130			
Bromoform	8.29	1	10		83	70	130			
Styrene	8.48	1	10		85	70	130			
o-Xylene	9.26	0.5	10		93	70	130			
1,1,2,2-Tetrachloroethane	9.56	1	10		96	70	130			
1,2,3-Trichloropropane	20.1	2	20		101	70	130			
Isopropylbenzene	9.53	1	10		95	70	130			
Bromobenzene	9.8	1	10		98	70	130			
n-Propylbenzene	9.83	1	10		98	70	130			
4-Chlorotoluene	9.86	1	10		99	70	130			
2-Chlorotoluene	9.61	1	10		96	70	130			
1,3,5-Trimethylbenzene	9.87	1	10		99	70	130			
tert-Butylbenzene	9.72	1	10		97	70	130			
1,2,4-Trimethylbenzene	9.85	1	10		99	70	130			
sec-Butylbenzene	9.86	1	10		99	70	130			
1,3-Dichlorobenzene	9.17	1	10		92	70	130			
1,4-Dichlorobenzene	9.68	1	10		97	70	130			
4-Isopropyltoluene	10	1	10		100	70	130			
1,2-Dichlorobenzene	9.22	1	10		92	70	130			
n-Butylbenzene	9.94	1	10		99	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	48.6	3	50		97	67	130			
1,2,4-Trichlorobenzene	9.33	2	10		93	70	130			
Naphthalene	8.18	2	10		82	70	130			
Hexachlorobutadiene	19.7	2	20		98	70	130			
1,2,3-Trichlorobenzene	7.85	2	10		79	70	130			

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Date: *23-May-12*

QC Summary Report

Work Order: 12051101

Surr: 1,2-Dichloroethane-d4	11	10	110	70	130
Surr: Toluene-d8	9.99	10	99.9	70	130
Surr: 4-Bromofluorobenzene	9.54	10	95	70	130

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Date: 23-May-12

QC Summary Report

Work Order: 12051101

Sample Matrix Spike Type: **MS** Test Code: **EPA Method SW8260B**

File ID: **12051714.D** Batch ID: **MS15W0517M** Analysis Date: **05/17/2012 16:05**

Sample ID: **12051101-05AMS** Units : **µg/L** Run ID: **MSD_15_120517B** Prep Date: **05/17/2012 16:05**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	73.1	2.5	50	0	146	21	138			M1
Chloromethane	63.3	10	50	0	127	23	144			
Vinyl chloride	69.9	2.5	50	0	140	49	136			M1
Chloroethane	58.1	2.5	50	0	116	21	159			
Bromomethane	49.2	10	50	0	98	10	174			
Trichlorofluoromethane	62.8	2.5	50	0	126	32	154			
Acetone	761	50	1000	0	76	10	171			
1,1-Dichloroethene	62.4	2.5	50	0	125	64	130			
Dichloromethane	55.4	10	50	0	111	69	130			
Freon-113	66.1	2.5	50	0	132	55	141			
trans-1,2-Dichloroethene	62.3	2.5	50	0	125	63	130			
Methyl tert-butyl ether (MTBE)	62.3	1.3	50	0	125	47	150			
1,1-Dichloroethane	61	2.5	50	0	122	66	130			
2-Butanone (MEK)	957	50	1000	0	96	23	182			
cis-1,2-Dichloroethene	61.1	2.5	50	0	122	70	130			
Bromochloromethane	66.1	2.5	50	0	132	70	132			
Chloroform	54.9	2.5	50	0	110	70	130			
2,2-Dichloropropane	61	2.5	50	0	122	38	154			
1,2-Dichloroethane	63.1	2.5	50	0	126	65	134			
1,1,1-Trichloroethane	64.3	2.5	50	0	129	65	136			
1,1-Dichloropropene	65.4	2.5	50	0	131	68	132			
Carbon tetrachloride	58	2.5	50	0	116	58	148			
Benzene	60	1.3	50	0	120	59	138			
Dibromomethane	64.5	2.5	50	0	129	70	130			
1,2-Dichloropropane	57	2.5	50	0	114	70	131			
Trichloroethene	62	2.5	50	0	124	65	144			
Bromodichloromethane	56.2	2.5	50	0	112	50	157			
4-Methyl-2-pentanone (MIBK)	148	13	125	0	119	20	182			
cis-1,3-Dichloropropene	57.1	2.5	50	0	114	63	131			
trans-1,3-Dichloropropene	58.5	2.5	50	0	117	65	136			
1,1,2-Trichloroethane	64.4	2.5	50	0	129	70	131			
Toluene	58.6	1.3	50	0	117	68	130			
1,3-Dichloropropane	66.1	2.5	50	0	132	70	130			M1
2-Hexanone	472	25	500	0	94	20	182			
Dibromochloromethane	57.5	2.5	50	0	115	42	155			
1,2-Dibromoethane (EDB)	130	5	100	0	130	70	130			
Tetrachloroethene	63.1	2.5	50	0	126	65	130			
1,1,1,2-Tetrachloroethane	66.6	2.5	50	0	133	70	130			M1
Chlorobenzene	60.7	2.5	50	0	121	70	130			
Ethylbenzene	58.7	1.3	50	0	117	68	130			
m,p-Xylene	58.6	1.3	50	0	117	68	131			
Bromoform	56.7	2.5	50	0	113	65	143			
Styrene	53.5	2.5	50	0	107	59	153			
o-Xylene	57.7	1.3	50	0	115	70	130			
1,1,2,2-Tetrachloroethane	66	2.5	50	0	132	67	130			M1
1,2,3-Trichloropropane	135	10	100	0	135	70	130			M1
Isopropylbenzene	58.7	2.5	50	0	117	55	138			
Bromobenzene	62.3	2.5	50	0	125	70	130			
n-Propylbenzene	59.9	2.5	50	0	120	67	133			
4-Chlorotoluene	61.9	2.5	50	0	124	70	130			
2-Chlorotoluene	59.1	2.5	50	0	118	70	130			
1,3,5-Trimethylbenzene	59.6	2.5	50	0	119	67	134			
tert-Butylbenzene	58.2	2.5	50	0	116	55	147			
1,2,4-Trimethylbenzene	60.2	2.5	50	0	120	65	135			
sec-Butylbenzene	58.7	2.5	50	0	117	68	135			
1,3-Dichlorobenzene	58.4	2.5	50	0	117	70	130			
1,4-Dichlorobenzene	61.3	2.5	50	0	123	70	130			
4-Isopropyltoluene	59.7	2.5	50	0	119	68	132			
1,2-Dichlorobenzene	58.7	2.5	50	0	117	70	130			
n-Butylbenzene	58.6	2.5	50	0	117	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	329	15	250	0	132	64	130			M1
1,2,4-Trichlorobenzene	63.7	10	50	0	127	62	133			
Naphthalene	58.9	10	50	0	118	32	166			
Hexachlorobutadiene	115	10	100	0	115	63	130			

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *23-May-12*

QC Summary Report

Work Order: 12051101

1,2,3-Trichlorobenzene	55.8	10	50	0	112	55	138
Surr: 1,2-Dichloroethane-d4	52.3		50		105	70	130
Surr: Toluene-d8	50.5		50		101	70	130
Surr: 4-Bromofluorobenzene	48.6		50		97	70	130

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: 23-May-12

QC Summary Report

Work Order: 12051101

Sample Matrix Spike Duplicate Type: **MSD** Test Code: **EPA Method SW8260B**

File ID: **12051715.D** Batch ID: **MS15W0517M** Analysis Date: **05/17/2012 16:27**

Sample ID: **12051101-05AMSD** Units : **µg/L** Run ID: **MSD_15_120517B** Prep Date: **05/17/2012 16:27**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	68.1	2.5	50	0	136	21	138	73.1	7.1(33)	
Chloromethane	57.4	10	50	0	115	23	144	63.32	9.9(27)	
Vinyl chloride	68.1	2.5	50	0	136	49	136	69.9	2.6(21)	
Chloroethane	56.1	2.5	50	0	112	21	159	58.12	3.5(40)	
Bromomethane	50.6	10	50	0	101	10	174	49.24	2.7(40)	
Trichlorofluoromethane	61.2	2.5	50	0	122	32	154	62.75	2.6(37)	
Acetone	720	50	1000	0	72	10	171	761.3	5.6(23)	
1,1-Dichloroethene	60.9	2.5	50	0	122	64	130	62.42	2.5(21)	
Dichloromethane	53.9	10	50	0	108	69	130	55.38	2.7(20)	
Freon-113	61.9	2.5	50	0	124	55	141	66.13	6.5(40)	
trans-1,2-Dichloroethene	61.2	2.5	50	0	122	63	130	62.33	1.8(20)	
Methyl tert-butyl ether (MTBE)	61.7	1.3	50	0	123	47	150	62.33	1.1(40)	
1,1-Dichloroethane	59.7	2.5	50	0	119	66	130	60.98	2.1(20)	
2-Butanone (MEK)	916	50	1000	0	92	23	182	957.1	4.4(22)	
cis-1,2-Dichloroethene	61.8	2.5	50	0	124	70	130	61.05	1.2(20)	
Bromochloromethane	64.3	2.5	50	0	129	70	132	66.14	2.9(20)	
Chloroform	54.5	2.5	50	0	109	70	130	54.86	0.6(20)	
2,2-Dichloropropane	59.8	2.5	50	0	120	38	154	61.04	2.0(22)	
1,2-Dichloroethane	61.2	2.5	50	0	122	65	134	63.06	3.0(20)	
1,1,1-Trichloroethane	63.6	2.5	50	0	127	65	136	64.31	1.1(20)	
1,1-Dichloropropene	64.3	2.5	50	0	129	68	132	65.37	1.7(20)	
Carbon tetrachloride	57.3	2.5	50	0	115	58	148	57.98	1.1(20)	
Benzene	58.7	1.3	50	0	117	59	138	59.96	2.1(21)	
Dibromomethane	62.9	2.5	50	0	126	70	130	64.54	2.6(20)	
1,2-Dichloropropane	56.6	2.5	50	0	113	70	131	56.97	0.6(20)	
Trichloroethene	60.4	2.5	50	0	121	65	144	62.04	2.6(20)	
Bromodichloromethane	55.7	2.5	50	0	111	50	157	56.22	1.0(20)	
4-Methyl-2-pentanone (MIBK)	144	13	125	0	115	20	182	148.4	3.3(20)	
cis-1,3-Dichloropropene	56.2	2.5	50	0	112	63	131	57.12	1.6(20)	
trans-1,3-Dichloropropene	57.4	2.5	50	0	115	65	136	58.52	2.0(20)	
1,1,2-Trichloroethane	62.5	2.5	50	0	125	70	131	64.35	2.9(20)	
Toluene	57.5	1.3	50	0	115	68	130	58.61	1.9(20)	
1,3-Dichloropropane	64.1	2.5	50	0	128	70	130	66.08	3.1(20)	
2-Hexanone	457	25	500	0	91	20	182	471.5	3.2(20)	
Dibromochloromethane	56.7	2.5	50	0	113	42	155	57.46	1.3(20)	
1,2-Dibromoethane (EDB)	126	5	100	0	126	70	130	130.5	3.3(20)	
Tetrachloroethene	61.3	2.5	50	0	123	65	130	63.05	2.8(20)	
1,1,1,2-Tetrachloroethane	65.3	2.5	50	0	131	70	130	66.6	2.0(20)	M1
Chlorobenzene	59.6	2.5	50	0	119	70	130	60.68	1.9(20)	
Ethylbenzene	57.6	1.3	50	0	115	68	130	58.72	1.9(20)	
m,p-Xylene	57	1.3	50	0	114	68	131	58.62	2.8(20)	
Bromoform	55.5	2.5	50	0	111	65	143	56.66	2.0(20)	
Styrene	52.7	2.5	50	0	105	59	153	53.53	1.5(37)	
o-Xylene	56.9	1.3	50	0	114	70	130	57.73	1.5(20)	
1,1,2,2-Tetrachloroethane	64.3	2.5	50	0	129	67	130	65.95	2.5(20)	
1,2,3-Trichloropropane	131	10	100	0	131	70	130	134.5	2.3(20)	M1
Isopropylbenzene	57.4	2.5	50	0	115	55	138	58.68	2.2(20)	
Bromobenzene	60	2.5	50	0	120	70	130	62.29	3.8(20)	
n-Propylbenzene	58.6	2.5	50	0	117	67	133	59.87	2.2(30)	
4-Chlorotoluene	59.8	2.5	50	0	120	70	130	61.92	3.5(20)	
2-Chlorotoluene	58.3	2.5	50	0	117	70	130	59.06	1.4(20)	
1,3,5-Trimethylbenzene	58.4	2.5	50	0	117	67	134	59.58	1.9(21)	
tert-Butylbenzene	57.3	2.5	50	0	115	55	147	58.18	1.5(20)	
1,2,4-Trimethylbenzene	58.5	2.5	50	0	117	65	135	60.18	2.8(25)	
sec-Butylbenzene	57.4	2.5	50	0	115	68	135	58.68	2.2(20)	
1,3-Dichlorobenzene	56.4	2.5	50	0	113	70	130	58.35	3.4(20)	
1,4-Dichlorobenzene	59.2	2.5	50	0	118	70	130	61.25	3.4(20)	
4-Isopropyltoluene	58.3	2.5	50	0	117	68	132	59.72	2.3(20)	
1,2-Dichlorobenzene	56.8	2.5	50	0	114	70	130	58.73	3.3(20)	
n-Butylbenzene	56.9	2.5	50	0	114	62	134	58.61	2.9(21)	
1,2-Dibromo-3-chloropropane (DBCP)	318	15	250	0	127	64	130	329.1	3.3(20)	
1,2,4-Trichlorobenzene	60.7	10	50	0	121	62	133	63.65	4.7(29)	
Naphthalene	57.5	10	50	0	115	32	166	58.86	2.3(40)	
Hexachlorobutadiene	113	10	100	0	113	63	130	114.5	1.8(21)	

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *23-May-12*

QC Summary Report

Work Order: 12051101

1,2,3-Trichlorobenzene	54	10	50	0	108	55	138	55.77	3.2(36)
Surr: 1,2-Dichloroethane-d4	53.1		50		106	70	130		
Surr: Toluene-d8	50.4		50		101	70	130		
Surr: 4-Bromofluorobenzene	48.4		50		97	70	130		

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

CA

WorkOrder : BMIS12051101

Report Due By : 5:00 PM On : 24-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : Chase Brogdon

PO : 286215

Client's COC # : 53774 Job : 100006114 / JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
0 °C	11-May-12	**11-May-12**

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12051101-01A	MW-18-5	AQ	05/10/12 08:52	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051101-02A	MW-18-4	AQ	05/10/12 09:33	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051101-03A	MW-18-3	AQ	05/10/12 12:05	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051101-04A	MW-18-2	AQ	05/10/12 12:34	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051101-05A	MW-18-1	AQ	05/10/12 13:09	10	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	MS/MSD
BMI12051101-06A	DUPE-6-2Q12	AQ	05/10/12 00:00	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051101-07A	EB-12-5/10/12	AQ	05/10/12 12:52	5	0	9	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051101-08A	TB-12-5/10/12	AQ	05/10/12 07:00	1	0	9							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 4/2/12

Comments: Security seals intact. Frozen Ice. Temp. Blank #8209 received @ 0°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sarah Lee	Sarah Lee	**Alpha Analytical, Inc.**	5/11/12 10:53

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

53774

Billing Information:
Company Name: BATTELLE
Attn: GERALD TOMPKINS
Address: 505 KING AVE.
City, State, Zip: COLUMBUS, OH 43201
Phone Number: _____ Fax: _____

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ___ CA X NV ___ WA ___ DOD Site ___
ID ___ OR ___ OTHER ___
Page # 1 of 1

Consultant / Client Name: BATTELLE / DAVID CONNEW
Address: 3990 OLD TOWN AVE, C-205
City, State, Zip: SAN DIEGO, CA 92110
Job #: 140006114 / PO# 286479
Job Name: SPI GW MON 2012
Report Attention / Project Manager
Name: DAVID CONNEW
Email: Connewd@battelle.org
Phone: _____ Mobile: (619) 726-7311
P.O. # 286215

Analyses Required

Data Validation Level: (III) or IV
EDD / EDF? YES ___ NO ___
Global ID # ___

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number / Office (Use Only)	Sample Description	TAT	Field Filtered	# Containers**	(524.2) VOCs	(200.8)*	Benchmarks (314.0)	(SM2320B, SM2540C, 150.2)*	(300.0)*	REMARKS
0852	5/10/12	AQ	BMI1205110I-01A	MW-18-5			3v, 2p	X	X	X	X	X	
0933			-02A	MW-18-4				X	X	X	X	X	
1205			-03A	MW-18-3				X	X	X	X	X	
1234			-04A	MW-18-2				X	X	X	X	X	
1309	5/10/12	AQ	-05A	MW-18-1			6v, 4p	X	X	X	X	X	MS/MSD
~~1100~~	5/10/12	AQ	-06A	DUPE-6-2012			3v, 2p	X	X	X	X	X	DUPLICATE
1252	5/10/12	AQ	-07A	EB-12-5/10/12			3v, 2p	X	X	X	X	X	EQUIP BLANK
0700	5/10/12	AQ	-08A	TB-12-5/10/12			1v	X					TRIP BLANK

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: *(200.8)-TOTAL Cr, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320B, SM2540C, 150.2)-CO3, HCO3, TDS, PH, ALK. *(300.0)-CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: CHASE BLODGON

Relinquished by: (Signature/Affiliation) / INSIGHT	Received by: (Signature/Affiliation) / Alpha Analytical	Date: 5/10/12	Time: 1400
Relinquished by: (Signature/Affiliation) / Alpha Analytical	Received by: (Signature/Affiliation)	Date: 5/10/12	Time: 1400
Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date: 5/11/12	Time: 10:52

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *25-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Work Order: BMI12051503 **Cooler Temp:** 2 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12051503-01A	MW-25-5	Aqueous
12051503-02A	MW-25-4	Aqueous
12051503-03A	MW-25-3	Aqueous
12051503-04A	MW-25-2	Aqueous
12051503-05A	MW-25-1	Aqueous
12051503-06A	EB-13-5/14/12	Aqueous
12051503-07A	TB-13-5/14/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/15/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-25-5**					
Lab ID : BMI12051503-01A	Chloride	18	0.50 mg/L	05/15/12 10:49	05/15/12 13:24
Date Sampled 05/14/12 09:42	Nitrite (NO2) - N	ND	0.25 mg/L	05/15/12 10:49	05/15/12 13:24
	Nitrate (NO3) - N	ND	0.25 mg/L	05/15/12 10:49	05/15/12 13:24
	Phosphate, ortho - P	ND	0.50 mg/L	05/15/12 10:49	05/15/12 13:24
	Sulfate (SO4)	89	0.50 mg/L	05/15/12 10:49	05/15/12 13:24
Client ID: **MW-25-4**					
Lab ID : BMI12051503-02A	Chloride	50	0.50 mg/L	05/15/12 10:49	05/15/12 14:38
Date Sampled 05/14/12 10:15	Nitrite (NO2) - N	ND	0.25 mg/L	05/15/12 10:49	05/15/12 14:38
	Nitrate (NO3) - N	ND	0.25 mg/L	05/15/12 10:49	05/15/12 14:38
	Phosphate, ortho - P	ND	0.50 mg/L	05/15/12 10:49	05/15/12 14:38
	Sulfate (SO4)	79	0.50 mg/L	05/15/12 10:49	05/15/12 14:38
Client ID: **MW-25-3**					
Lab ID : BMI12051503-03A	Chloride	42	0.50 mg/L	05/15/12 10:49	05/15/12 14:56
Date Sampled 05/14/12 10:48	Nitrite (NO2) - N	ND	0.25 mg/L	05/15/12 10:49	05/15/12 14:56
	Nitrate (NO3) - N	9.5	0.25 mg/L	05/15/12 10:49	05/15/12 14:56
	Phosphate, ortho - P	ND	0.50 mg/L	05/15/12 10:49	05/15/12 14:56
	Sulfate (SO4)	68	0.50 mg/L	05/15/12 10:49	05/15/12 14:56
Client ID: **MW-25-2**					
Lab ID : BMI12051503-04A	Chloride	43	0.50 mg/L	05/15/12 10:49	05/15/12 15:15
Date Sampled 05/14/12 11:20	Nitrite (NO2) - N	ND	0.25 mg/L	05/15/12 10:49	05/15/12 15:15
	Nitrate (NO3) - N	9.8	0.25 mg/L	05/15/12 10:49	05/15/12 15:15
	Phosphate, ortho - P	ND	0.50 mg/L	05/15/12 10:49	05/15/12 15:15
	Sulfate (SO4)	78	0.50 mg/L	05/15/12 10:49	05/15/12 15:15
Client ID: **MW-25-1**					
Lab ID : BMI12051503-05A	Chloride	70	0.50 mg/L	05/15/12 10:49	05/15/12 15:33
Date Sampled 05/14/12 11:58	Nitrite (NO2) - N	ND	0.25 mg/L	05/15/12 10:49	05/15/12 15:33
	Nitrate (NO3) - N	9.7	0.25 mg/L	05/15/12 10:49	05/15/12 15:33
	Phosphate, ortho - P	ND	0.50 mg/L	05/15/12 10:49	05/15/12 15:33
	Sulfate (SO4)	140	0.50 mg/L	05/15/12 10:49	05/15/12 15:33
Client ID: **EB-13-5/14/12**					
Lab ID : BMI12051503-06A	Chloride	ND	0.50 mg/L	05/15/12 10:49	05/15/12 15:52
Date Sampled 05/14/12 11:43	Nitrite (NO2) - N	ND	0.25 mg/L	05/15/12 10:49	05/15/12 15:52
	Nitrate (NO3) - N	ND	0.25 mg/L	05/15/12 10:49	05/15/12 15:52
	Phosphate, ortho - P	ND	0.50 mg/L	05/15/12 10:49	05/15/12 15:52
	Sulfate (SO4)	ND	0.50 mg/L	05/15/12 10:49	05/15/12 15:52

Alpha Analytical, Inc.

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/15/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-25-5**				
Lab ID : BMI12051503-01A Perchlorate	ND	1.00 µg/L	05/22/12 16:24	05/22/12 18:34
Date Sampled 05/14/12 09:42				
Client ID: **MW-25-4**				
Lab ID : BMI12051503-02A Perchlorate	10.0	1.00 µg/L	05/22/12 16:24	05/22/12 18:52
Date Sampled 05/14/12 10:15				
Client ID: **MW-25-3**				
Lab ID : BMI12051503-03A Perchlorate	11.6	1.00 µg/L	05/22/12 16:24	05/22/12 19:11
Date Sampled 05/14/12 10:48				
Client ID: **MW-25-2**				
Lab ID : BMI12051503-04A Perchlorate	16.6	1.00 µg/L	05/22/12 16:24	05/22/12 19:29
Date Sampled 05/14/12 11:20				
Client ID: **MW-25-1**				
Lab ID : BMI12051503-05A Perchlorate	10.6	1.00 µg/L	05/22/12 16:24	05/22/12 19:48
Date Sampled 05/14/12 11:58				
Client ID: **EB-13-5/14/12**				
Lab ID : BMI12051503-06A Perchlorate	ND	1.00 µg/L	05/22/12 16:24	05/22/12 20:06
Date Sampled 05/14/12 11:43				

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ND = Not Detected

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Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/15/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-25-5**					
Lab ID : BMI12051503-01A	Alkalinity, Bicarbonate (As CaCO3)	110	10 mg/L	05/18/12 06:14	05/18/12 06:14
Date Sampled 05/14/12 09:42	Alkalinity, Carbonate (As CaCO3)	15	10 mg/L	05/18/12 06:14	05/18/12 06:14
	Alkalinity, Total (As CaCO3 at pH 4.5)	120	10 mg/L	05/18/12 06:14	05/18/12 06:14
Client ID: **MW-25-4**					
Lab ID : BMI12051503-02A	Alkalinity, Bicarbonate (As CaCO3)	230	10 mg/L	05/18/12 06:24	05/18/12 06:24
Date Sampled 05/14/12 10:15	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 06:24	05/18/12 06:24
	Alkalinity, Total (As CaCO3 at pH 4.5)	230	10 mg/L	05/18/12 06:24	05/18/12 06:24
Client ID: **MW-25-3**					
Lab ID : BMI12051503-03A	Alkalinity, Bicarbonate (As CaCO3)	210	10 mg/L	05/18/12 06:29	05/18/12 06:29
Date Sampled 05/14/12 10:48	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 06:29	05/18/12 06:29
	Alkalinity, Total (As CaCO3 at pH 4.5)	210	10 mg/L	05/18/12 06:29	05/18/12 06:29
Client ID: **MW-25-2**					
Lab ID : BMI12051503-04A	Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	05/18/12 06:36	05/18/12 06:36
Date Sampled 05/14/12 11:20	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 06:36	05/18/12 06:36
	Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	05/18/12 06:36	05/18/12 06:36
Client ID: **MW-25-1**					
Lab ID : BMI12051503-05A	Alkalinity, Bicarbonate (As CaCO3)	200	10 mg/L	05/18/12 06:41	05/18/12 06:41
Date Sampled 05/14/12 11:58	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 06:41	05/18/12 06:41
	Alkalinity, Total (As CaCO3 at pH 4.5)	200	10 mg/L	05/18/12 06:41	05/18/12 06:41
Client ID: **EB-13-5/14/12**					
Lab ID : BMI12051503-06A	Alkalinity, Bicarbonate (As CaCO3)	ND	10 mg/L	05/18/12 06:44	05/18/12 06:44
Date Sampled 05/14/12 11:43	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 06:44	05/18/12 06:44
	Alkalinity, Total (As CaCO3 at pH 4.5)	ND	10 mg/L	05/18/12 06:44	05/18/12 06:44

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ND = Not Detected

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/15/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-25-5**					
Lab ID : BMI12051503-01A	Sodium (Na)	80	0.50 mg/L	05/16/12 11:33	05/29/12 17:14
Date Sampled 05/14/12 09:42	Magnesium (Mg)	9.1	0.50 mg/L	05/16/12 11:33	05/29/12 17:14
	Potassium (K)	1.4	0.50 mg/L	05/16/12 11:33	05/29/12 17:14
	Calcium (Ca)	16	0.50 mg/L	05/16/12 11:33	05/29/12 17:14
	Chromium (Cr)	ND	0.0050 mg/L	05/16/12 11:33	05/29/12 17:14
	Iron (Fe)	ND	0.30 mg/L	05/16/12 11:33	05/29/12 17:14
	Arsenic (As)	ND	0.0020 mg/L	05/30/12 11:47	05/30/12 11:47
	Lead (Pb)	ND	0.0050 mg/L	05/16/12 11:33	05/29/12 17:14
Client ID: **MW-25-4**					
Lab ID : BMI12051503-02A	Sodium (Na)	48	0.50 mg/L	05/16/12 11:33	05/25/12 16:06
Date Sampled 05/14/12 10:15	Magnesium (Mg)	21	0.50 mg/L	05/16/12 11:33	05/25/12 16:06
	Potassium (K)	2.1	0.50 mg/L	05/16/12 11:33	05/25/12 16:06
	Calcium (Ca)	74	0.50 mg/L	05/16/12 11:33	05/25/12 16:06
	Chromium (Cr)	ND	0.0050 mg/L	05/16/12 11:33	05/25/12 16:06
	Iron (Fe)	0.99	0.30 mg/L	05/16/12 11:33	05/25/12 16:06
	Arsenic (As)	ND	0.0020 mg/L	05/16/12 11:33	05/25/12 16:06
	Lead (Pb)	ND	0.0050 mg/L	05/16/12 11:33	05/25/12 16:06
Client ID: **MW-25-3**					
Lab ID : BMI12051503-03A	Sodium (Na)	33	0.50 mg/L	05/16/12 11:33	05/25/12 16:12
Date Sampled 05/14/12 10:48	Magnesium (Mg)	22	0.50 mg/L	05/16/12 11:33	05/25/12 16:12
	Potassium (K)	2.6	0.50 mg/L	05/16/12 11:33	05/25/12 16:12
	Calcium (Ca)	72	0.50 mg/L	05/16/12 11:33	05/25/12 16:12
	Chromium (Cr)	ND	0.0050 mg/L	05/16/12 11:33	05/25/12 16:12
	Iron (Fe)	0.97	0.30 mg/L	05/16/12 11:33	05/25/12 16:12
	Arsenic (As)	ND	0.0020 mg/L	05/16/12 11:33	05/25/12 16:12
	Lead (Pb)	ND	0.0050 mg/L	05/16/12 11:33	05/25/12 16:12
Client ID: **MW-25-2**					
Lab ID : BMI12051503-04A	Sodium (Na)	29	0.50 mg/L	05/16/12 11:33	05/25/12 16:18
Date Sampled 05/14/12 11:20	Magnesium (Mg)	23	0.50 mg/L	05/16/12 11:33	05/25/12 16:18
	Potassium (K)	2.3	0.50 mg/L	05/16/12 11:33	05/25/12 16:18
	Calcium (Ca)	69	0.50 mg/L	05/16/12 11:33	05/25/12 16:18
	Chromium (Cr)	ND	0.0050 mg/L	05/16/12 11:33	05/25/12 16:18
	Iron (Fe)	0.99	0.30 mg/L	05/16/12 11:33	05/25/12 16:18
	Arsenic (As)	ND	0.0020 mg/L	05/16/12 11:33	05/25/12 16:18
	Lead (Pb)	ND	0.0050 mg/L	05/16/12 11:33	05/25/12 16:18

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Client ID: **MW-25-1**					
Lab ID : BMI12051503-05A	Sodium (Na)	34	0.50 mg/L	05/16/12 11:33	05/25/12 16:24
Date Sampled 05/14/12 11:58	Magnesium (Mg)	31	0.50 mg/L	05/16/12 11:33	05/25/12 16:24
	Potassium (K)	2.7	0.50 mg/L	05/16/12 11:33	05/25/12 16:24
	Calcium (Ca)	92	0.50 mg/L	05/16/12 11:33	05/25/12 16:24
	Chromium (Cr)	ND	0.0050 mg/L	05/16/12 11:33	05/25/12 16:24
	Iron (Fe)	1.7	0.30 mg/L	05/16/12 11:33	05/25/12 16:24
	Arsenic (As)	ND	0.0020 mg/L	05/16/12 11:33	05/25/12 16:24
	Lead (Pb)	ND	0.0050 mg/L	05/16/12 11:33	05/25/12 16:24
Client ID: **EB-13-5/14/12**					
Lab ID : BMI12051503-06A	Sodium (Na)	ND	0.50 mg/L	05/16/12 11:33	05/25/12 16:29
Date Sampled 05/14/12 11:43	Magnesium (Mg)	ND	0.50 mg/L	05/16/12 11:33	05/25/12 16:29
	Potassium (K)	ND	0.50 mg/L	05/16/12 11:33	05/25/12 16:29
	Calcium (Ca)	ND	0.50 mg/L	05/16/12 11:33	05/25/12 16:29
	Chromium (Cr)	ND	0.0050 mg/L	05/16/12 11:33	05/25/12 16:29
	Iron (Fe)	ND	0.30 mg/L	05/16/12 11:33	05/25/12 16:29
	Arsenic (As)	ND	0.0020 mg/L	05/16/12 11:33	05/25/12 16:29
	Lead (Pb)	ND	0.0050 mg/L	05/16/12 11:33	05/25/12 16:29

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/15/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-25-5**					
Lab ID : BMI12051503-01A	pH	8.7	1.7 pH Units	05/15/12 13:59	05/15/12 13:59
Date Sampled 05/14/12 09:42	pH - Temperature	21	1.0 °C	05/15/12 13:59	05/15/12 13:59
Client ID: **MW-25-4**					
Lab ID : BMI12051503-02A	pH	7.6	1.7 pH Units	05/15/12 14:04	05/15/12 14:04
Date Sampled 05/14/12 10:15	pH - Temperature	21	1.0 °C	05/15/12 14:04	05/15/12 14:04
Client ID: **MW-25-3**					
Lab ID : BMI12051503-03A	pH	7.6	1.7 pH Units	05/15/12 14:05	05/15/12 14:05
Date Sampled 05/14/12 10:48	pH - Temperature	21	1.0 °C	05/15/12 14:05	05/15/12 14:05
Client ID: **MW-25-2**					
Lab ID : BMI12051503-04A	pH	7.6	1.7 pH Units	05/15/12 14:07	05/15/12 14:07
Date Sampled 05/14/12 11:20	pH - Temperature	21	1.0 °C	05/15/12 14:07	05/15/12 14:07
Client ID: **MW-25-1**					
Lab ID : BMI12051503-05A	pH	7.2	1.7 pH Units	05/15/12 14:09	05/15/12 14:09
Date Sampled 05/14/12 11:58	pH - Temperature	21	1.0 °C	05/15/12 14:09	05/15/12 14:09
Client ID: **EB-13-5/14/12**					
Lab ID : BMI12051503-06A	pH	6.6	1.7 pH Units	05/15/12 14:15	05/15/12 14:15
Date Sampled 05/14/12 11:43	pH - Temperature	21	1.0 °C	05/15/12 14:15	05/15/12 14:15

Information regarding the estimate of the uncertainty of measurement is available upon client request.

The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.
The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

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Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/15/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-25-5**					
Lab ID : BMI12051503-01A	Solids, Total Dissolved (TDS)	250	10 mg/L	05/22/12	05/22/12
Date Sampled 05/14/12 09:42					
Client ID: **MW-25-4**					
Lab ID : BMI12051503-02A	Solids, Total Dissolved (TDS)	440	10 mg/L	05/22/12	05/22/12
Date Sampled 05/14/12 10:15					
Client ID: **MW-25-3**					
Lab ID : BMI12051503-03A	Solids, Total Dissolved (TDS)	350	10 mg/L	05/22/12	05/22/12
Date Sampled 05/14/12 10:48					
Client ID: **MW-25-2**					
Lab ID : BMI12051503-04A	Solids, Total Dissolved (TDS)	400	10 mg/L	05/22/12	05/22/12
Date Sampled 05/14/12 11:20					
Client ID: **MW-25-1**					
Lab ID : BMI12051503-05A	Solids, Total Dissolved (TDS)	500	10 mg/L	05/22/12	05/22/12
Date Sampled 05/14/12 11:58					
Client ID: **EB-13-5/14/12**					
Lab ID : BMI12051503-06A	Solids, Total Dissolved (TDS)	ND	10 mg/L	05/22/12	05/22/12
Date Sampled 05/14/12 11:43					

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Date Received : 05/15/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-25-5**					
Lab ID : BMI12051503-01A	Acrylonitrile	ND	10 µg/L	05/22/12 12:53	05/22/12 12:53
Date Sampled 05/14/12 09:42	Allyl chloride	ND	2.0 µg/L	05/22/12 12:53	05/22/12 12:53
	Carbon disulfide	ND	2.0 µg/L	05/22/12 12:53	05/22/12 12:53
	Chloroacetonitrile	ND	10 µg/L	05/22/12 12:53	05/22/12 12:53
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 12:53	05/22/12 12:53
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 12:53	05/22/12 12:53
	Diethyl ether	ND	2.0 µg/L	05/22/12 12:53	05/22/12 12:53
	Ethyl methacrylate	ND	10 µg/L	05/22/12 12:53	05/22/12 12:53
	Hexachloroethane	ND	10 µg/L	05/22/12 12:53	05/22/12 12:53
	Methacrylonitrile	ND	10 µg/L	05/22/12 12:53	05/22/12 12:53
	Methyl acrylate	ND	10 µg/L	05/22/12 12:53	05/22/12 12:53
	Methyl iodide	ND	2.0 µg/L	05/22/12 12:53	05/22/12 12:53
	Methyl methacrylate	ND	10 µg/L	05/22/12 12:53	05/22/12 12:53
	Nitrobenzene	ND	10 µg/L	05/22/12 12:53	05/22/12 12:53
	2-Nitropropane	ND	2.0 µg/L	05/22/12 12:53	05/22/12 12:53
	Pentachloroethane	ND	2.0 µg/L	05/22/12 12:53	05/22/12 12:53
	Propionitrile	ND	50 µg/L	05/22/12 12:53	05/22/12 12:53
	Tetrahydrofuran	ND	10 µg/L	05/22/12 12:53	05/22/12 12:53
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 12:53	05/22/12 12:53
Client ID: **MW-25-4**					
Lab ID : BMI12051503-02A	Acrylonitrile	ND	10 µg/L	05/22/12 13:15	05/22/12 13:15
Date Sampled 05/14/12 10:15	Allyl chloride	ND	2.0 µg/L	05/22/12 13:15	05/22/12 13:15
	Carbon disulfide	ND	2.0 µg/L	05/22/12 13:15	05/22/12 13:15
	Chloroacetonitrile	ND	10 µg/L	05/22/12 13:15	05/22/12 13:15
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 13:15	05/22/12 13:15
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 13:15	05/22/12 13:15
	Diethyl ether	ND	2.0 µg/L	05/22/12 13:15	05/22/12 13:15
	Ethyl methacrylate	ND	10 µg/L	05/22/12 13:15	05/22/12 13:15
	Hexachloroethane	ND	10 µg/L	05/22/12 13:15	05/22/12 13:15
	Methacrylonitrile	ND	10 µg/L	05/22/12 13:15	05/22/12 13:15
	Methyl acrylate	ND	10 µg/L	05/22/12 13:15	05/22/12 13:15
	Methyl iodide	ND	2.0 µg/L	05/22/12 13:15	05/22/12 13:15
	Methyl methacrylate	ND	10 µg/L	05/22/12 13:15	05/22/12 13:15
	Nitrobenzene	ND	10 µg/L	05/22/12 13:15	05/22/12 13:15
	2-Nitropropane	ND	2.0 µg/L	05/22/12 13:15	05/22/12 13:15
	Pentachloroethane	ND	2.0 µg/L	05/22/12 13:15	05/22/12 13:15
	Propionitrile	ND	50 µg/L	05/22/12 13:15	05/22/12 13:15
	Tetrahydrofuran	ND	10 µg/L	05/22/12 13:15	05/22/12 13:15
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 13:15	05/22/12 13:15

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Client ID: **MW-25-3**					
Lab ID : BMI12051503-03A	Acrylonitrile	ND	10 µg/L	05/22/12 13:36	05/22/12 13:36
Date Sampled 05/14/12 10:48	Allyl chloride	ND	2.0 µg/L	05/22/12 13:36	05/22/12 13:36
	Carbon disulfide	ND	2.0 µg/L	05/22/12 13:36	05/22/12 13:36
	Chloroacetonitrile	ND	10 µg/L	05/22/12 13:36	05/22/12 13:36
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 13:36	05/22/12 13:36
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 13:36	05/22/12 13:36
	Diethyl ether	ND	2.0 µg/L	05/22/12 13:36	05/22/12 13:36
	Ethyl methacrylate	ND	10 µg/L	05/22/12 13:36	05/22/12 13:36
	Hexachloroethane	ND	10 µg/L	05/22/12 13:36	05/22/12 13:36
	Methacrylonitrile	ND	10 µg/L	05/22/12 13:36	05/22/12 13:36
	Methyl acrylate	ND	10 µg/L	05/22/12 13:36	05/22/12 13:36
	Methyl iodide	ND	2.0 µg/L	05/22/12 13:36	05/22/12 13:36
	Methyl methacrylate	ND	10 µg/L	05/22/12 13:36	05/22/12 13:36
	Nitrobenzene	ND	10 µg/L	05/22/12 13:36	05/22/12 13:36
	2-Nitropropane	ND	2.0 µg/L	05/22/12 13:36	05/22/12 13:36
	Pentachloroethane	ND	2.0 µg/L	05/22/12 13:36	05/22/12 13:36
	Propionitrile	ND	50 µg/L	05/22/12 13:36	05/22/12 13:36
	Tetrahydrofuran	ND	10 µg/L	05/22/12 13:36	05/22/12 13:36
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 13:36	05/22/12 13:36
Client ID: **MW-25-2**					
Lab ID : BMI12051503-04A	Acrylonitrile	ND	10 µg/L	05/22/12 13:58	05/22/12 13:58
Date Sampled 05/14/12 11:20	Allyl chloride	ND	2.0 µg/L	05/22/12 13:58	05/22/12 13:58
	Carbon disulfide	ND	2.0 µg/L	05/22/12 13:58	05/22/12 13:58
	Chloroacetonitrile	ND	10 µg/L	05/22/12 13:58	05/22/12 13:58
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 13:58	05/22/12 13:58
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 13:58	05/22/12 13:58
	Diethyl ether	ND	2.0 µg/L	05/22/12 13:58	05/22/12 13:58
	Ethyl methacrylate	ND	10 µg/L	05/22/12 13:58	05/22/12 13:58
	Hexachloroethane	ND	10 µg/L	05/22/12 13:58	05/22/12 13:58
	Methacrylonitrile	ND	10 µg/L	05/22/12 13:58	05/22/12 13:58
	Methyl acrylate	ND	10 µg/L	05/22/12 13:58	05/22/12 13:58
	Methyl iodide	ND	2.0 µg/L	05/22/12 13:58	05/22/12 13:58
	Methyl methacrylate	ND	10 µg/L	05/22/12 13:58	05/22/12 13:58
	Nitrobenzene	ND	10 µg/L	05/22/12 13:58	05/22/12 13:58
	2-Nitropropane	ND	2.0 µg/L	05/22/12 13:58	05/22/12 13:58
	Pentachloroethane	ND	2.0 µg/L	05/22/12 13:58	05/22/12 13:58
	Propionitrile	ND	50 µg/L	05/22/12 13:58	05/22/12 13:58
	Tetrahydrofuran	ND	10 µg/L	05/22/12 13:58	05/22/12 13:58
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 13:58	05/22/12 13:58
Client ID: **MW-25-1**					
Lab ID : BMI12051503-05A	Acrylonitrile	ND	10 µg/L	05/22/12 14:20	05/22/12 14:20
Date Sampled 05/14/12 11:58	Allyl chloride	ND	2.0 µg/L	05/22/12 14:20	05/22/12 14:20
	Carbon disulfide	ND	2.0 µg/L	05/22/12 14:20	05/22/12 14:20
	Chloroacetonitrile	ND	10 µg/L	05/22/12 14:20	05/22/12 14:20
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 14:20	05/22/12 14:20
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 14:20	05/22/12 14:20
	Diethyl ether	ND	2.0 µg/L	05/22/12 14:20	05/22/12 14:20
	Ethyl methacrylate	ND	10 µg/L	05/22/12 14:20	05/22/12 14:20
	Hexachloroethane	ND	10 µg/L	05/22/12 14:20	05/22/12 14:20
	Methacrylonitrile	ND	10 µg/L	05/22/12 14:20	05/22/12 14:20
	Methyl acrylate	ND	10 µg/L	05/22/12 14:20	05/22/12 14:20
	Methyl iodide	ND	2.0 µg/L	05/22/12 14:20	05/22/12 14:20
	Methyl methacrylate	ND	10 µg/L	05/22/12 14:20	05/22/12 14:20
	Nitrobenzene	ND	10 µg/L	05/22/12 14:20	05/22/12 14:20
	2-Nitropropane	ND	2.0 µg/L	05/22/12 14:20	05/22/12 14:20
	Pentachloroethane	ND	2.0 µg/L	05/22/12 14:20	05/22/12 14:20
	Propionitrile	ND	50 µg/L	05/22/12 14:20	05/22/12 14:20
	Tetrahydrofuran	ND	10 µg/L	05/22/12 14:20	05/22/12 14:20
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 14:20	05/22/12 14:20

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Client ID: **EB-13-5/14/12**					
Lab ID : BMI12051503-06A	Acrylonitrile	ND	10 µg/L	05/22/12 14:41	05/22/12 14:41
Date Sampled 05/14/12 11:43	Allyl chloride	ND	2.0 µg/L	05/22/12 14:41	05/22/12 14:41
	Carbon disulfide	ND	2.0 µg/L	05/22/12 14:41	05/22/12 14:41
	Chloroacetonitrile	ND	10 µg/L	05/22/12 14:41	05/22/12 14:41
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 14:41	05/22/12 14:41
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 14:41	05/22/12 14:41
	Diethyl ether	ND	2.0 µg/L	05/22/12 14:41	05/22/12 14:41
	Ethyl methacrylate	ND	10 µg/L	05/22/12 14:41	05/22/12 14:41
	Hexachloroethane	ND	10 µg/L	05/22/12 14:41	05/22/12 14:41
	Methacrylonitrile	ND	10 µg/L	05/22/12 14:41	05/22/12 14:41
	Methyl acrylate	ND	10 µg/L	05/22/12 14:41	05/22/12 14:41
	Methyl iodide	ND	2.0 µg/L	05/22/12 14:41	05/22/12 14:41
	Methyl methacrylate	ND	10 µg/L	05/22/12 14:41	05/22/12 14:41
	Nitrobenzene	ND	10 µg/L	05/22/12 14:41	05/22/12 14:41
	2-Nitropropane	ND	2.0 µg/L	05/22/12 14:41	05/22/12 14:41
	Pentachloroethane	ND	2.0 µg/L	05/22/12 14:41	05/22/12 14:41
	Propionitrile	ND	50 µg/L	05/22/12 14:41	05/22/12 14:41
	Tetrahydrofuran	ND	10 µg/L	05/22/12 14:41	05/22/12 14:41
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 14:41	05/22/12 14:41
Client ID: **TB-13-5/14/12**					
Lab ID : BMI12051503-07A	Acrylonitrile	ND	10 µg/L	05/22/12 15:03	05/22/12 15:03
Date Sampled 05/14/12 07:00	Allyl chloride	ND	2.0 µg/L	05/22/12 15:03	05/22/12 15:03
	Carbon disulfide	ND	2.0 µg/L	05/22/12 15:03	05/22/12 15:03
	Chloroacetonitrile	ND	10 µg/L	05/22/12 15:03	05/22/12 15:03
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 15:03	05/22/12 15:03
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 15:03	05/22/12 15:03
	Diethyl ether	ND	2.0 µg/L	05/22/12 15:03	05/22/12 15:03
	Ethyl methacrylate	ND	10 µg/L	05/22/12 15:03	05/22/12 15:03
	Hexachloroethane	ND	10 µg/L	05/22/12 15:03	05/22/12 15:03
	Methacrylonitrile	ND	10 µg/L	05/22/12 15:03	05/22/12 15:03
	Methyl acrylate	ND	10 µg/L	05/22/12 15:03	05/22/12 15:03
	Methyl iodide	ND	2.0 µg/L	05/22/12 15:03	05/22/12 15:03
	Methyl methacrylate	ND	10 µg/L	05/22/12 15:03	05/22/12 15:03
	Nitrobenzene	ND	10 µg/L	05/22/12 15:03	05/22/12 15:03
	2-Nitropropane	ND	2.0 µg/L	05/22/12 15:03	05/22/12 15:03
	Pentachloroethane	ND	2.0 µg/L	05/22/12 15:03	05/22/12 15:03
	Propionitrile	ND	50 µg/L	05/22/12 15:03	05/22/12 15:03
	Tetrahydrofuran	ND	10 µg/L	05/22/12 15:03	05/22/12 15:03
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 15:03	05/22/12 15:03

Information regarding the estimate of the uncertainty of measurement is available upon client request.

Note: Analysis conducted using EPA Method 524.2 criteria.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/25/12

Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051503-01A
Client I.D. Number: MW-25-5

Sampled: 05/14/12 09:42
Received: 05/15/12
Extracted: 05/22/12 12:53
Analyzed: 05/22/12 12:53

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	102	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	103	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/25/12
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051503-02A
Client I.D. Number: MW-25-4

Sampled: 05/14/12 10:15
Received: 05/15/12
Extracted: 05/22/12 13:15
Analyzed: 05/22/12 13:15

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	102	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/25/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051503-03A
Client I.D. Number: MW-25-3

Sampled: 05/14/12 10:48
Received: 05/15/12
Extracted: 05/22/12 13:36
Analyzed: 05/22/12 13:36

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/25/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051503-04A
Client I.D. Number: MW-25-2

Sampled: 05/14/12 11:20
Received: 05/15/12
Extracted: 05/22/12 13:58
Analyzed: 05/22/12 13:58

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	103	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/25/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051503-05A
Client I.D. Number: MW-25-1

Sampled: 05/14/12 11:58
Received: 05/15/12
Extracted: 05/22/12 14:20
Analyzed: 05/22/12 14:20

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	2.2	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	106	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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5/25/12
Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051503-06A
Client I.D. Number: EB-13-5/14/12

Sampled: 05/14/12 11:43
Received: 05/15/12
Extracted: 05/22/12 14:41
Analyzed: 05/22/12 14:41

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	103	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	89	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/25/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051503-07A
Client I.D. Number: TB-13-5/14/12

Sampled: 05/14/12 07:00
Received: 05/15/12
Extracted: 05/22/12 15:03
Analyzed: 05/22/12 15:03

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/25/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

VOC Sample Preservation Report

Work Order: BMI12051503 **Job:** 100006114/ JPL Groundwater Monitoring

Alpha's Sample ID	Client's Sample ID	Matrix	pH
12051503-01A	MW-25-5	Aqueous	2
12051503-02A	MW-25-4	Aqueous	2
12051503-03A	MW-25-3	Aqueous	2
12051503-04A	MW-25-2	Aqueous	2
12051503-05A	MW-25-1	Aqueous	2
12051503-06A	EB-13-5/14/12	Aqueous	2
12051503-07A	TB-13-5/14/12	Aqueous	2

5/25/12

Report Date

Alpha Analytical, Inc.

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Date: *24-May-12*

QC Summary Report

Work Order: 12051503

Method Blank

Type **MBLK** Test Code: **EPA Method 300.0**

File ID: **26** Batch ID: **28732K** Analysis Date: **05/15/2012 12:28**

Sample ID: **MB-28732** Units : **mg/L** Run ID: **IC_1_120515B** Prep Date: **05/15/2012 10:49**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0**

File ID: **30** Batch ID: **28732K** Analysis Date: **05/15/2012 13:42**

Sample ID: **LFB-28732** Units : **mg/L** Run ID: **IC_1_120515B** Prep Date: **05/15/2012 10:49**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	50.4	0.5	50		101	90	110			
Nitrite (NO2) - N	5.32	0.25	5		106	90	110			
Nitrate (NO3) - N	5.45	0.25	5		109	90	110			
Phosphate, ortho - P	5.02	0.5	5		100	90	110			
Sulfate (SO4)	103	0.5	100		103	90	110			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0**

File ID: **31** Batch ID: **28732K** Analysis Date: **05/15/2012 14:01**

Sample ID: **12051503-01ALFM** Units : **mg/L** Run ID: **IC_1_120515B** Prep Date: **05/15/2012 10:49**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	276	1.3	250	18.22	103	90	110			
Nitrite (NO2) - N	26.7	0.63	25	0	107	90	110			
Nitrate (NO3) - N	28	0.63	25	0	112	90	110			M1
Phosphate, ortho - P	27.9	1.3	25	0	112	90	110			M1
Sulfate (SO4)	608	1.3	500	89.3	104	90	110			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0**

File ID: **32** Batch ID: **28732K** Analysis Date: **05/15/2012 14:19**

Sample ID: **12051503-01ALFMD** Units : **mg/L** Run ID: **IC_1_120515B** Prep Date: **05/15/2012 10:49**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	278	1.3	250	18.22	104	90	110	276.4	0.5(15)	
Nitrite (NO2) - N	26.5	0.63	25	0	106	90	110	26.7	0.7(15)	
Nitrate (NO3) - N	28	0.63	25	0	112	90	110	28.01	0.1(15)	M1
Phosphate, ortho - P	27.8	1.3	25	0	111	90	110	27.94	0.5(15)	M1
Sulfate (SO4)	609	1.3	500	89.3	104	90	110	608.5	0.1(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *25-May-12*

QC Summary Report

Work Order: 12051503

Method Blank

Type: **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **28790K** Analysis Date: **05/22/2012 17:20**

Sample ID: **MB-28790** Units : **µg/L** Run ID: **IC_3_120522A** Prep Date: **05/22/2012 16:24**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **28790K** Analysis Date: **05/22/2012 17:39**

Sample ID: **LFB-28790** Units : **µg/L** Run ID: **IC_3_120522A** Prep Date: **05/22/2012 16:24**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.1	2	25		100	85	115			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 314.0**

File ID: **26** Batch ID: **28790K** Analysis Date: **05/22/2012 21:01**

Sample ID: **12051602-02ALFM** Units : **µg/L** Run ID: **IC_3_120522A** Prep Date: **05/22/2012 16:24**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.8	2	25	1.02	99	85	115			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 314.0**

File ID: **27** Batch ID: **28790K** Analysis Date: **05/22/2012 21:20**

Sample ID: **12051602-02ALFMD** Units : **µg/L** Run ID: **IC_3_120522A** Prep Date: **05/22/2012 16:24**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	28.1	2	25	1.02	108	85	115	25.77	8.8(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *24-May-12*

QC Summary Report

Work Order: 12051503

Laboratory Control Spike Type **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0518AL** Analysis Date: **05/18/2012 06:08**

Sample ID: **LCS-W0518AL** Units : **mg/L** Run ID: **WETLAB_120518E** Prep Date: **05/18/2012 06:08**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	264.4	10	250		106	80	120			
Alkalinity, Carbonate (As CaCO3)	264.4	10	250		106	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	264	10	250		106	80	120			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *30-May-12*

QC Summary Report

Work Order: 12051503

Method Blank

Type: **MBLK** Test Code: **EPA Method 200.8**

File ID: **051812.B\019_M.D** Batch ID: **28743K** Analysis Date: **05/18/2012 13:25**

Sample ID: **MB-28743** Units : **mg/L** Run ID: **ICP/MS_120518A** Prep Date: **05/16/2012 11:33**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 200.8**

File ID: **051812.B\020_M.D** Batch ID: **28743K** Analysis Date: **05/18/2012 13:31**

Sample ID: **LCS-28743** Units : **mg/L** Run ID: **ICP/MS_120518A** Prep Date: **05/16/2012 11:33**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	4.32	0.5	5		86	80	120			
Magnesium (Mg)	4.9	0.5	5		98	80	120			
Potassium (K)	4.91	0.5	5		98	80	120			
Calcium (Ca)	5.11	0.5	5		102	80	120			
Chromium (Cr)	0.0502	0.005	0.05		100	80	120			
Iron (Fe)	5.07	0.3	5		101	80	120			
Arsenic (As)	0.0512	0.002	0.05		102	80	120			
Lead (Pb)	0.0501	0.005	0.05		100	80	120			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method 200.8**

File ID: **051812.B\025_M.D** Batch ID: **28743K** Analysis Date: **05/18/2012 14:00**

Sample ID: **12051101-05AMS** Units : **mg/L** Run ID: **ICP/MS_120518A** Prep Date: **05/16/2012 11:33**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	20	0.5	5	15.54	89	80	120			
Magnesium (Mg)	18.1	0.5	5	13.01	101	80	120			
Potassium (K)	6.59	0.5	5	1.992	92	80	120			
Calcium (Ca)	46.9	0.5	5	40.04	138	80	120			M3
Chromium (Cr)	0.0536	0.005	0.05	0	107	80	120			
Iron (Fe)	6.05	0.3	5	0.8709	104	80	120			
Arsenic (As)	0.0477	0.002	0.05	0	95	80	120			
Lead (Pb)	0.0542	0.005	0.05	0	108	80	120			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method 200.8**

File ID: **051812.B\026_M.D** Batch ID: **28743K** Analysis Date: **05/18/2012 14:06**

Sample ID: **12051101-05AMSD** Units : **mg/L** Run ID: **ICP/MS_120518A** Prep Date: **05/16/2012 11:33**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	19.7	0.5	5	15.54	83	80	120	20	1.6(20)	
Magnesium (Mg)	18.1	0.5	5	13.01	101	80	120	18.05	0.2(20)	
Potassium (K)	6.66	0.5	5	1.992	93	80	120	6.588	1.1(20)	
Calcium (Ca)	46.6	0.5	5	40.04	131	80	120	46.92	0.7(20)	M3
Chromium (Cr)	0.0544	0.005	0.05	0	109	80	120	0.05356	1.5(20)	
Iron (Fe)	6.08	0.3	5	0.8709	104	80	120	6.048	0.4(20)	
Arsenic (As)	0.049	0.002	0.05	0	98	80	120	0.04774	2.6(20)	
Lead (Pb)	0.0534	0.005	0.05	0	107	80	120	0.05418	1.5(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M3 = The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to the spike level. The method control sample recovery was acceptable.

Alpha Analytical, Inc.

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Date: *24-May-12*

QC Summary Report

Work Order: 12051503

Laboratory Control Spike Type **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0515PH** Analysis Date: **05/15/2012 13:51**

Sample ID: **LCS-W0515PH** Units : **pH Units** Run ID: **WETLAB_120515C** Prep Date: **05/15/2012 13:51**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5.03	1.7	5		101	90	110			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *24-May-12*

QC Summary Report

Work Order: 12051503

Method Blank

Type **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0521DS** Analysis Date: **05/22/2012 00:00**

Sample ID: **MBLK-W0521DS** Units : **mg/L** Run ID: **WETLAB_120521A** Prep Date: **05/22/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0521DS** Analysis Date: **05/22/2012 00:00**

Sample ID: **LCS-W0521DS** Units : **mg/L** Run ID: **WETLAB_120521A** Prep Date: **05/22/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	80	10	100		80	70	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: 25-May-12

QC Summary Report

Work Order: 12051503

Method Blank Type: **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12052207.D** Batch ID: **MS15W0522M** Analysis Date: **05/22/2012 12:31**

Sample ID: **MBLK MS15W0522M** Units : **µg/L** Run ID: **MSD_15_120522A** Prep Date: **05/22/2012 12:31**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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Date: *25-May-12*

QC Summary Report

Work Order: 12051503

Surr: 1,2-Dichloroethane-d4	10.2	10	102	70	130	
Surr: Toluene-d8	10.1	10	101	70	130	
Surr: 4-Bromofluorobenzene	9.29	10	93	70	130	

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Date: 25-May-12

QC Summary Report

Work Order: 12051503

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method SW8260B**

File ID: **12052203.D** Batch ID: **MS15W0522M** Analysis Date: **05/22/2012 11:04**

Sample ID: **LCS MS15W0522M** Units : **µg/L** Run ID: **MSD_15_120522A** Prep Date: **05/22/2012 11:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	11	1	10		110	70	130			
Chloromethane	5.34	2	10		53	70(70)	130			L50
Vinyl chloride	11.6	1	10		116	70	130			
Chloroethane	10	1	10		100	70	130			
Bromomethane	8.7	2	10		87	70	130			
Trichlorofluoromethane	11	1	10		110	70	130			
Acetone	266	10	200		133	36	171			
1,1-Dichloroethene	10.7	1	10		107	70	130			
Dichloromethane	9.18	2	10		92	70	130			
Freon-113	11.2	1	10		112	70	137			
trans-1,2-Dichloroethene	10.6	1	10		106	70	130			
Methyl tert-butyl ether (MTBE)	9.09	0.5	10		91	70	130			
1,1-Dichloroethane	10.4	1	10		104	70	130			
2-Butanone (MEK)	235	10	200		118	70	130			
cis-1,2-Dichloroethene	10.3	1	10		103	70	130			
Bromochloromethane	10.4	1	10		104	70	130			
Chloroform	9.42	1	10		94	70	130			
2,2-Dichloropropane	10.4	1	10		104	70	130			
1,2-Dichloroethane	10.1	1	10		101	70	130			
1,1,1-Trichloroethane	10.9	1	10		109	70	130			
1,1-Dichloropropene	11.3	1	10		113	70	130			
Carbon tetrachloride	10	1	10		100	70	130			
Benzene	10.3	0.5	10		103	70	130			
Dibromomethane	10.1	1	10		101	70	130			
1,2-Dichloropropane	9.48	1	10		95	70	130			
Trichloroethene	10.6	1	10		106	70	130			
Bromodichloromethane	9.57	1	10		96	70	130			
4-Methyl-2-pentanone (MIBK)	23.3	2.5	25		93	20	182			
cis-1,3-Dichloropropene	9.7	1	10		97	70	130			
trans-1,3-Dichloropropene	9.4	1	10		94	70	130			
1,1,2-Trichloroethane	10.1	1	10		101	70	130			
Toluene	10.1	0.5	10		101	70	130			
1,3-Dichloropropane	10.2	1	10		102	70	130			
2-Hexanone	114	5	100		114	20	182			
Dibromochloromethane	9.5	1	10		95	70	130			
1,2-Dibromoethane (EDB)	19.9	2	20		99.7	70	130			
Tetrachloroethene	10.9	1	10		109	70	130			
1,1,1,2-Tetrachloroethane	11.2	1	10		112	70	130			
Chlorobenzene	10.5	1	10		105	70	130			
Ethylbenzene	10.3	0.5	10		103	70	130			
m,p-Xylene	10.1	0.5	10		101	70	130			
Bromoform	9.25	1	10		93	70	130			
Styrene	9.18	1	10		92	70	130			
o-Xylene	10.1	0.5	10		101	70	130			
1,1,2,2-Tetrachloroethane	9.88	1	10		99	70	130			
1,2,3-Trichloropropane	20.5	2	20		103	70	130			
Isopropylbenzene	10.5	1	10		105	70	130			
Bromobenzene	10.5	1	10		105	70	130			
n-Propylbenzene	10.9	1	10		109	70	130			
4-Chlorotoluene	10.8	1	10		108	70	130			
2-Chlorotoluene	10.6	1	10		106	70	130			
1,3,5-Trimethylbenzene	10.8	1	10		108	70	130			
tert-Butylbenzene	10.6	1	10		106	70	130			
1,2,4-Trimethylbenzene	10.7	1	10		107	70	130			
sec-Butylbenzene	10.7	1	10		107	70	130			
1,3-Dichlorobenzene	10.1	1	10		101	70	130			
1,4-Dichlorobenzene	10.5	1	10		105	70	130			
4-Isopropyltoluene	11	1	10		110	70	130			
1,2-Dichlorobenzene	9.89	1	10		99	70	130			
n-Butylbenzene	10.9	1	10		109	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	50.9	3	50		102	67	130			
1,2,4-Trichlorobenzene	10	2	10		100	70	130			
Naphthalene	8.52	2	10		85	70	130			
Hexachlorobutadiene	21	2	20		105	70	130			
1,2,3-Trichlorobenzene	8.46	2	10		85	70	130			

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Date: *25-May-12*

QC Summary Report

Work Order: 12051503

Surr: 1,2-Dichloroethane-d4	9.98	10	99.8	70	130
Surr: Toluene-d8	10.1	10	101	70	130
Surr: 4-Bromofluorobenzene	9.65	10	97	70	130

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QC Summary Report

Work Order: 12051503

Sample Matrix Spike Type: **MS** Test Code: **EPA Method SW8260B**

File ID: **12052215.D** Batch ID: **MS15W0522M** Analysis Date: **05/22/2012 15:25**

Sample ID: **12051602-02AMS** Units : **µg/L** Run ID: **MSD_15_120522A** Prep Date: **05/22/2012 15:25**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	59.7	2.5	50	0	119	21	138			
Chloromethane	29	10	50	0	58	23	144			
Vinyl chloride	65.4	2.5	50	0	131	49	136			
Chloroethane	57	2.5	50	0	114	21	159			
Bromomethane	32.5	10	50	0	65	10	174			
Trichlorofluoromethane	66.1	2.5	50	0	132	32	154			
Acetone	738	50	1000	0	74	10	171			
1,1-Dichloroethene	61.4	2.5	50	0	123	64	130			
Dichloromethane	53.7	10	50	0	107	69	130			
Freon-113	60.8	2.5	50	0	122	55	141			
trans-1,2-Dichloroethene	60.7	2.5	50	0	121	63	130			
Methyl tert-butyl ether (MTBE)	58	1.3	50	0	116	47	150			
1,1-Dichloroethane	60	2.5	50	0	120	66	130			
2-Butanone (MEK)	911	50	1000	0	91	23	182			
cis-1,2-Dichloroethene	61.4	2.5	50	0	123	70	130			
Bromochloromethane	60.6	2.5	50	0	121	70	132			
Chloroform	55.4	2.5	50	0	111	70	130			
2,2-Dichloropropane	55.5	2.5	50	0	111	38	154			
1,2-Dichloroethane	61.6	2.5	50	0	123	65	134			
1,1,1-Trichloroethane	63.6	2.5	50	0	127	65	136			
1,1-Dichloropropene	64.7	2.5	50	0	129	68	132			
Carbon tetrachloride	57.9	2.5	50	0	116	58	148			
Benzene	59.6	1.3	50	0	119	59	138			
Dibromomethane	62.6	2.5	50	0	125	70	130			
1,2-Dichloropropane	56.7	2.5	50	0	113	70	131			
Trichloroethene	61.6	2.5	50	0	123	65	144			
Bromodichloromethane	57.2	2.5	50	0	114	50	157			
4-Methyl-2-pentanone (MIBK)	141	13	125	0	113	20	182			
cis-1,3-Dichloropropene	54.9	2.5	50	0	110	63	131			
trans-1,3-Dichloropropene	56.1	2.5	50	0	112	65	136			
1,1,2-Trichloroethane	63.4	2.5	50	0	127	70	131			
Toluene	56.6	1.3	50	0	113	68	130			
1,3-Dichloropropane	61.6	2.5	50	0	123	70	130			
2-Hexanone	437	25	500	0	87	20	182			
Dibromochloromethane	56.5	2.5	50	0	113	42	155			
1,2-Dibromoethane (EDB)	121	5	100	0	121	70	130			
Tetrachloroethene	60.3	2.5	50	0	121	65	130			
1,1,1,2-Tetrachloroethane	65.6	2.5	50	0	131	70	130			M1
Chlorobenzene	60.2	2.5	50	0	120	70	130			
Ethylbenzene	58.4	1.3	50	0	117	68	130			
m,p-Xylene	57.2	1.3	50	0	114	68	131			
Bromoform	57	2.5	50	0	114	65	143			
Styrene	52.4	2.5	50	0	105	59	153			
o-Xylene	57	1.3	50	0	114	70	130			
1,1,2,2-Tetrachloroethane	62.8	2.5	50	0	126	67	130			
1,2,3-Trichloropropane	129	10	100	0	129	70	130			
Isopropylbenzene	57	2.5	50	0	114	55	138			
Bromobenzene	59.4	2.5	50	0	119	70	130			
n-Propylbenzene	58.3	2.5	50	0	117	67	133			
4-Chlorotoluene	59.5	2.5	50	0	119	70	130			
2-Chlorotoluene	57.4	2.5	50	0	115	70	130			
1,3,5-Trimethylbenzene	58.7	2.5	50	0	117	67	134			
tert-Butylbenzene	57.4	2.5	50	0	115	55	147			
1,2,4-Trimethylbenzene	59	2.5	50	0	118	65	135			
sec-Butylbenzene	57.7	2.5	50	0	115	68	135			
1,3-Dichlorobenzene	55.8	2.5	50	0	112	70	130			
1,4-Dichlorobenzene	58.5	2.5	50	0	117	70	130			
4-Isopropyltoluene	58.5	2.5	50	0	117	68	132			
1,2-Dichlorobenzene	57.1	2.5	50	0	114	70	130			
n-Butylbenzene	56.5	2.5	50	0	113	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	314	15	250	0	126	64	130			
1,2,4-Trichlorobenzene	58.5	10	50	0	117	62	133			
Naphthalene	54.5	10	50	0	109	32	166			
Hexachlorobutadiene	108	10	100	0	108	63	130			
1,2,3-Trichlorobenzene	51.9	10	50	0	104	55	138			

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Date: *25-May-12*

QC Summary Report

Work Order: 12051503

Surr: 1,2-Dichloroethane-d4	52.5	50	105	70	130
Surr: Toluene-d8	49.1	50	98	70	130
Surr: 4-Bromofluorobenzene	46.7	50	93	70	130

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Date: 25-May-12

QC Summary Report

Work Order: 12051503

Sample Matrix Spike Duplicate Type: **MSD** Test Code: **EPA Method SW8260B**

File ID: **12052216.D** Batch ID: **MS15W0522M** Analysis Date: **05/22/2012 15:47**

Sample ID: **12051602-02AMSD** Units : **µg/L** Run ID: **MSD_15_120522A** Prep Date: **05/22/2012 15:47**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	59.7	2.5	50	0	119	21	138	59.67	0.1(33)	
Chloromethane	33	10	50	0	66	23	144	28.99	13.1(27)	
Vinyl chloride	69.1	2.5	50	0	138	49	136	65.35	5.6(21)	M1
Chloroethane	58.9	2.5	50	0	118	21	159	57	3.3(40)	
Bromomethane	39.7	10	50	0	79	10	174	32.49	19.9(40)	
Trichlorofluoromethane	67.5	2.5	50	0	135	32	154	66.13	2.1(37)	
Acetone	776	50	1000	0	78	10	171	737.6	5.1(23)	
1,1-Dichloroethene	63.4	2.5	50	0	127	64	130	61.35	3.3(21)	
Dichloromethane	55.5	10	50	0	111	69	130	53.69	3.3(20)	
Freon-113	61.6	2.5	50	0	123	55	141	60.8	1.3(40)	
trans-1,2-Dichloroethene	62.9	2.5	50	0	126	63	130	60.7	3.5(20)	
Methyl tert-butyl ether (MTBE)	62.9	1.3	50	0	126	47	150	58.04	8.0(40)	
1,1-Dichloroethane	62.8	2.5	50	0	126	66	130	59.98	4.6(20)	
2-Butanone (MEK)	971	50	1000	0	97	23	182	911.1	6.4(22)	
cis-1,2-Dichloroethene	64.2	2.5	50	0	128	70	130	61.39	4.5(20)	
Bromochloromethane	65.8	2.5	50	0	132	70	132	60.55	8.4(20)	
Chloroform	58	2.5	50	0	116	70	130	55.4	4.6(20)	
2,2-Dichloropropane	59.1	2.5	50	0	118	38	154	55.48	6.4(22)	
1,2-Dichloroethane	64.6	2.5	50	0	129	65	134	61.57	4.8(20)	
1,1,1-Trichloroethane	66.5	2.5	50	0	133	65	136	63.59	4.4(20)	
1,1-Dichloropropene	67.4	2.5	50	0	135	68	132	64.71	4.1(20)	M1
Carbon tetrachloride	61.6	2.5	50	0	123	58	148	57.93	6.2(20)	
Benzene	61.8	1.3	50	0	124	59	138	59.59	3.7(21)	
Dibromomethane	66.5	2.5	50	0	133	70	130	62.57	6.1(20)	M1
1,2-Dichloropropane	59.4	2.5	50	0	119	70	131	56.74	4.5(20)	
Trichloroethene	64.2	2.5	50	0	128	65	144	61.55	4.3(20)	
Bromodichloromethane	60.2	2.5	50	0	120	50	157	57.16	5.1(20)	
4-Methyl-2-pentanone (MIBK)	153	13	125	0	122	20	182	141	7.9(20)	
cis-1,3-Dichloropropene	58.4	2.5	50	0	117	63	131	54.89	6.3(20)	
trans-1,3-Dichloropropene	60.2	2.5	50	0	120	65	136	56.05	7.1(20)	
1,1,2-Trichloroethane	66.5	2.5	50	0	133	70	131	63.4	4.8(20)	M1
Toluene	59.1	1.3	50	0	118	68	130	56.55	4.3(20)	
1,3-Dichloropropane	65.2	2.5	50	0	130	70	130	61.6	5.7(20)	
2-Hexanone	473	25	500	0	95	20	182	437.1	7.8(20)	
Dibromochloromethane	60.4	2.5	50	0	121	42	155	56.5	6.6(20)	
1,2-Dibromoethane (EDB)	129	5	100	0	129	70	130	121.2	6.0(20)	
Tetrachloroethene	62.7	2.5	50	0	125	65	130	60.27	3.9(20)	
1,1,1,2-Tetrachloroethane	69.8	2.5	50	0	140	70	130	65.64	6.1(20)	M1
Chlorobenzene	62.4	2.5	50	0	125	70	130	60.19	3.6(20)	
Ethylbenzene	60.6	1.3	50	0	121	68	130	58.43	3.7(20)	
m,p-Xylene	59.6	1.3	50	0	119	68	131	57.21	4.1(20)	
Bromoform	61	2.5	50	0	122	65	143	57.03	6.7(20)	
Styrene	55.4	2.5	50	0	111	59	153	52.43	5.4(37)	
o-Xylene	60.1	1.3	50	0	120	70	130	57.04	5.2(20)	
1,1,2,2-Tetrachloroethane	66.8	2.5	50	0	134	67	130	62.79	6.2(20)	M1
1,2,3-Trichloropropane	137	10	100	0	137	70	130	129.2	6.0(20)	M1
Isopropylbenzene	60.5	2.5	50	0	121	55	138	57.03	6.0(20)	
Bromobenzene	63.2	2.5	50	0	126	70	130	59.44	6.1(20)	
n-Propylbenzene	61.2	2.5	50	0	122	67	133	58.33	4.8(30)	
4-Chlorotoluene	62.4	2.5	50	0	125	70	130	59.54	4.7(20)	
2-Chlorotoluene	60.7	2.5	50	0	121	70	130	57.37	5.6(20)	
1,3,5-Trimethylbenzene	62.2	2.5	50	0	124	67	134	58.69	5.8(21)	
tert-Butylbenzene	60.9	2.5	50	0	122	55	147	57.44	5.9(20)	
1,2,4-Trimethylbenzene	62.2	2.5	50	0	124	65	135	58.99	5.3(25)	
sec-Butylbenzene	61.1	2.5	50	0	122	68	135	57.73	5.7(20)	
1,3-Dichlorobenzene	58.8	2.5	50	0	118	70	130	55.81	5.3(20)	
1,4-Dichlorobenzene	62.2	2.5	50	0	124	70	130	58.52	6.1(20)	
4-Isopropyltoluene	61.7	2.5	50	0	123	68	132	58.54	5.2(20)	
1,2-Dichlorobenzene	60.2	2.5	50	0	120	70	130	57.07	5.3(20)	
n-Butylbenzene	59.2	2.5	50	0	118	62	134	56.52	4.7(21)	
1,2-Dibromo-3-chloropropane (DBCP)	342	15	250	0	137	64	130	314.3	8.4(20)	M1
1,2,4-Trichlorobenzene	61.8	10	50	0	124	62	133	58.49	5.4(29)	
Naphthalene	58.4	10	50	0	117	32	166	54.54	6.9(40)	
Hexachlorobutadiene	116	10	100	0	116	63	130	108.1	7.5(21)	

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Date: *25-May-12*

QC Summary Report

Work Order: 12051503

1,2,3-Trichlorobenzene	55.4	10	50	0	111	55	138	51.91	6.4(36)
Surr: 1,2-Dichloroethane-d4	52.2		50		104	70	130		
Surr: Toluene-d8	49		50		98	70	130		
Surr: 4-Bromofluorobenzene	47.5		50		95	70	130		

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

L50 = Analyte recovery was below acceptance limits for the LCS, but was acceptable in the MS/MSD.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12051503

Report Due By : 5:00 PM On : 29-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiec@batelle.org

EDD Required : **Yes**

Sampled by : Chase Brogden

PO : 286215

Client's COC # : 53767 Job : 100006114/ JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
2 °C	15-May-12	**15-May-12**

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12051503-01A	MW-25-5	AQ	05/14/12 09:42	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051503-02A	MW-25-4	AQ	05/14/12 10:15	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051503-03A	MW-25-3	AQ	05/14/12 10:48	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051503-04A	MW-25-2	AQ	05/14/12 11:20	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051503-05A	MW-25-1	AQ	05/14/12 11:58	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051503-06A	EB-13-5/14/12	AQ	05/14/12 11:43	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051503-07A	TB-13-5/14/12	AQ	05/14/12 07:00	1	0	10							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 4/2/12

Comments: No security seals. Frozen Ice. Temp. Blank #7197 received @ 2°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Penelope	Sara Coffee	**Alpha Analytical, Inc.**	5/15/12 9:51

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

53767

Billing Information:

Company Name: BATTELLE
Attn: GERALD TOMPKINS
Address: 505 KING AVE
City, State, Zip: COLUMBUS, OH 43201
Phone Number: _____ Fax: _____

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ___ CA X NV ___ WA ___ DOD Site ___
ID ___ OR ___ OTHER ___

Page # 1 of 1

Consultant / Client Name: BATTELLE / DAVID CONNER
Address: 3990 OLD TOWN AVE., C-205
City, State, Zip: SAN DIEGO, CA 92110

Job #: 100006114 / PO# 286479
Job Name: JPL GW MON. 2012
Report Attention / Project Manager
Name: DAVID CONNER
Email: connerd@battelle.org
Phone: _____ Mobile: (619) 726-7311

Data Validation Level: II / III or IV
EDD / EDF? YES ___ NO ___
Global ID # ___

Time Sampled	Date Sampled	Matrix* See Key Below	P.O. # 286 215 (Office Use Only) / Lab ID Number	Sample Description	TAT	Field Filtered	# Containers**	Analyses Required: VOA (524.2)	200.8 (*)	PERCHLORATE (314.0)	SM2320B; SM2540C; 150.2 (*)	300.0 (*)			REMARKS
0942	5/14/12	AQ	BMI1205150 3-01A	MW-25-5			3v, 2p	X	X	X	X	X			
1015	↓		-02A	MW-25-4			↓	X	X	X	X	X			
1048			-03A	MW-25-3				X	X	X	X	X			
1120			-04A	MW-25-2				X	X	X	X	X			
1158	5/14/12		-05A	MW-25-1			3v, 2p	X	X	X	X	X			
1143	5/14/12		-06A	EB-13-5/14/12			3v, 2p	X	X	X	X	X			EQUIP. BLANK
0700	5/14/12	AQ	-07A	TB-13-5/14/12			1v	X							TRIP BLANK

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: (*) 200.8 = TOTAL Cr, LEAD, ARSENIC, [GEN CHEM: Na, K, Ca, Mg, Fe]; (*) SM2320B, SM2540C, 150.2 CO_3, HCO_3, TDS, PH, ALK. (*) 300.0 = CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: CHASE BRANDON

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:
[signature] / ENSIGHT	FED-EX TRACKING #: 8989 1206 8565	5/14/12	1500
Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:
	[signature] / alpha	5/15/12	7:46
Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *06-Jun-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)
Work Order: BMI12051602 **Cooler Temp:** 2 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12051602-01A	MW-17-5	Aqueous
12051602-02A	MW-17-4	Aqueous
12051602-03A	MW-17-3	Aqueous
12051602-04A	MW-17-2	Aqueous
12051602-05A	MW-17-1	Aqueous
12051602-06A	EB-14-5/15/12	Aqueous
12051602-07A	TB-14-5/15/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/16/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-17-5**					
Lab ID : BMI12051602-01A	Chloride	9.8	0.50 mg/L	05/16/12 08:53	05/16/12 12:10
Date Sampled 05/15/12 08:25	Nitrite (NO2) - N	ND	0.25 mg/L	05/16/12 08:53	05/16/12 12:10
	Nitrate (NO3) - N	ND	0.25 mg/L	05/16/12 08:53	05/16/12 12:10
	Phosphate, ortho - P	ND	0.50 mg/L	05/16/12 08:53	05/16/12 12:10
	Sulfate (SO4)	20	0.50 mg/L	05/16/12 08:53	05/16/12 12:10
Client ID: **MW-17-4**					
Lab ID : BMI12051602-02A	Chloride	13	0.50 mg/L	05/16/12 08:53	05/16/12 12:28
Date Sampled 05/15/12 09:12	Nitrite (NO2) - N	ND	0.25 mg/L	05/16/12 08:53	05/16/12 12:28
	Nitrate (NO3) - N	ND	0.25 mg/L	05/16/12 08:53	05/16/12 12:28
	Phosphate, ortho - P	ND	0.50 mg/L	05/16/12 08:53	05/16/12 12:28
	Sulfate (SO4)	21	0.50 mg/L	05/16/12 08:53	05/16/12 12:28
Client ID: **MW-17-3**					
Lab ID : BMI12051602-03A	Chloride	43	0.50 mg/L	05/16/12 08:53	05/16/12 13:24
Date Sampled 05/15/12 11:12	Nitrite (NO2) - N	ND	0.25 mg/L	05/16/12 08:53	05/16/12 13:24
	Nitrate (NO3) - N	8.2	0.25 mg/L	05/16/12 08:53	05/16/12 13:24
	Phosphate, ortho - P	ND	0.50 mg/L	05/16/12 08:53	05/16/12 13:24
	Sulfate (SO4)	50	0.50 mg/L	05/16/12 08:53	05/16/12 13:24
Client ID: **MW-17-2**					
Lab ID : BMI12051602-04A	Chloride	16	0.50 mg/L	05/16/12 08:53	05/16/12 13:42
Date Sampled 05/15/12 13:06	Nitrite (NO2) - N	ND	0.25 mg/L	05/16/12 08:53	05/16/12 13:42
	Nitrate (NO3) - N	1.5	0.25 mg/L	05/16/12 08:53	05/16/12 13:42
	Phosphate, ortho - P	ND	0.50 mg/L	05/16/12 08:53	05/16/12 13:42
	Sulfate (SO4)	47	0.50 mg/L	05/16/12 08:53	05/16/12 13:42
Client ID: **MW-17-1**					
Lab ID : BMI12051602-05A	Chloride	8.0	0.50 mg/L	05/16/12 08:53	05/16/12 14:01
Date Sampled 05/15/12 13:38	Nitrite (NO2) - N	ND	0.25 mg/L	05/16/12 08:53	05/16/12 14:01
	Nitrate (NO3) - N	0.28	0.25 mg/L	05/16/12 08:53	05/16/12 14:01
	Phosphate, ortho - P	ND	0.50 mg/L	05/16/12 08:53	05/16/12 14:01
	Sulfate (SO4)	25	0.50 mg/L	05/16/12 08:53	05/16/12 14:01
Client ID: **EB-14-5/15/12**					
Lab ID : BMI12051602-06A	Chloride	ND	0.50 mg/L	05/16/12 08:53	05/16/12 14:19
Date Sampled 05/15/12 13:24	Nitrite (NO2) - N	ND	0.25 mg/L	05/16/12 08:53	05/16/12 14:19
	Nitrate (NO3) - N	ND	0.25 mg/L	05/16/12 08:53	05/16/12 14:19
	Phosphate, ortho - P	ND	0.50 mg/L	05/16/12 08:53	05/16/12 14:19
	Sulfate (SO4)	ND	0.50 mg/L	05/16/12 08:53	05/16/12 14:19

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 • Las Vegas, NV • (702) 281-4848 • Carson, CA • (714) 386-2901 • info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/29/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/16/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-17-5**				
Lab ID : BMI12051602-01A Perchlorate	ND	1.00 µg/L	05/22/12 16:24	05/22/12 20:25
Date Sampled 05/15/12 08:25				
Client ID: **MW-17-4**				
Lab ID : BMI12051602-02A Perchlorate	1.02	1.00 µg/L	05/22/12 16:24	05/22/12 20:43
Date Sampled 05/15/12 09:12				
Client ID: **MW-17-3**				
Lab ID : BMI12051602-03A Perchlorate	7.86	1.00 µg/L	05/22/12 16:24	05/22/12 21:38
Date Sampled 05/15/12 11:12				
Client ID: **MW-17-2**				
Lab ID : BMI12051602-04A Perchlorate	13.1	1.00 µg/L	05/22/12 16:24	05/22/12 22:33
Date Sampled 05/15/12 13:06				
Client ID: **MW-17-1**				
Lab ID : BMI12051602-05A Perchlorate	ND	1.00 µg/L	05/22/12 16:24	05/22/12 22:52
Date Sampled 05/15/12 13:38				
Client ID: **EB-14-5/15/12**				
Lab ID : BMI12051602-06A Perchlorate	ND	1.00 µg/L	05/22/12 16:24	05/22/12 23:10
Date Sampled 05/15/12 13:24				

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ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/29/12
Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/16/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-17-5**					
Lab ID : BMI12051602-01A	Alkalinity, Bicarbonate (As CaCO3)	140	10 mg/L	05/18/12 07:10	05/18/12 07:10
Date Sampled 05/15/12 08:25	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 07:10	05/18/12 07:10
	Alkalinity, Total (As CaCO3 at pH 4.5)	140	10 mg/L	05/18/12 07:10	05/18/12 07:10
Client ID: **MW-17-4**					
Lab ID : BMI12051602-02A	Alkalinity, Bicarbonate (As CaCO3)	140	10 mg/L	05/18/12 07:20	05/18/12 07:20
Date Sampled 05/15/12 09:12	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 07:20	05/18/12 07:20
	Alkalinity, Total (As CaCO3 at pH 4.5)	140	10 mg/L	05/18/12 07:20	05/18/12 07:20
Client ID: **MW-17-3**					
Lab ID : BMI12051602-03A	Alkalinity, Bicarbonate (As CaCO3)	180	10 mg/L	05/18/12 07:25	05/18/12 07:25
Date Sampled 05/15/12 11:12	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 07:25	05/18/12 07:25
	Alkalinity, Total (As CaCO3 at pH 4.5)	180	10 mg/L	05/18/12 07:25	05/18/12 07:25
Client ID: **MW-17-2**					
Lab ID : BMI12051602-04A	Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	05/18/12 07:31	05/18/12 07:31
Date Sampled 05/15/12 13:06	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 07:31	05/18/12 07:31
	Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	05/18/12 07:31	05/18/12 07:31
Client ID: **MW-17-1**					
Lab ID : BMI12051602-05A	Alkalinity, Bicarbonate (As CaCO3)	190	10 mg/L	05/18/12 07:36	05/18/12 07:36
Date Sampled 05/15/12 13:38	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 07:36	05/18/12 07:36
	Alkalinity, Total (As CaCO3 at pH 4.5)	190	10 mg/L	05/18/12 07:36	05/18/12 07:36
Client ID: **EB-14-5/15/12**					
Lab ID : BMI12051602-06A	Alkalinity, Bicarbonate (As CaCO3)	12	10 mg/L	05/18/12 07:40	05/18/12 07:40
Date Sampled 05/15/12 13:24	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 07:40	05/18/12 07:40
	Alkalinity, Total (As CaCO3 at pH 4.5)	12	10 mg/L	05/18/12 07:40	05/18/12 07:40

Alpha Analytical, Inc.

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ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/29/12

Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/16/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-17-5**					
Lab ID : BMI12051602-01A	Sodium (Na)	58	0.50 mg/L	05/31/12 11:35	05/31/12 23:19
Date Sampled 05/15/12 08:25	Magnesium (Mg)	3.1	0.50 mg/L	05/31/12 11:35	06/04/12 18:37
	Potassium (K)	0.99	0.50 mg/L	05/31/12 11:35	06/04/12 18:37
	Calcium (Ca)	14	0.50 mg/L	05/31/12 11:35	06/04/12 18:37
	Chromium (Cr)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:37
	Iron (Fe)	0.88	0.30 mg/L	05/31/12 11:35	06/04/12 18:37
	Arsenic (As)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:37
	Lead (Pb)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:37
Client ID: **MW-17-4**					
Lab ID : BMI12051602-02A	Sodium (Na)	49	0.50 mg/L	05/31/12 11:35	05/31/12 22:56
Date Sampled 05/15/12 09:12	Magnesium (Mg)	5.7	0.50 mg/L	05/31/12 11:35	06/04/12 18:14
	Potassium (K)	1.3	0.50 mg/L	05/31/12 11:35	06/04/12 18:14
	Calcium (Ca)	18	0.50 mg/L	05/31/12 11:35	06/04/12 18:14
	Chromium (Cr)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:14
	Iron (Fe)	ND	0.30 mg/L	05/31/12 11:35	06/04/12 18:14
	Arsenic (As)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:14
	Lead (Pb)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:14
Client ID: **MW-17-3**					
Lab ID : BMI12051602-03A	Sodium (Na)	26	0.50 mg/L	05/31/12 11:35	05/31/12 23:25
Date Sampled 05/15/12 11:12	Magnesium (Mg)	27	0.50 mg/L	05/31/12 11:35	06/04/12 18:43
	Potassium (K)	2.3	0.50 mg/L	05/31/12 11:35	06/04/12 18:43
	Calcium (Ca)	63	0.50 mg/L	05/31/12 11:35	06/04/12 18:43
	Chromium (Cr)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:43
	Iron (Fe)	1.0	0.30 mg/L	05/31/12 11:35	06/04/12 18:43
	Arsenic (As)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:43
	Lead (Pb)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:43
Client ID: **MW-17-2**					
Lab ID : BMI12051602-04A	Sodium (Na)	20	0.50 mg/L	05/31/12 11:35	05/31/12 23:31
Date Sampled 05/15/12 13:06	Magnesium (Mg)	21	0.50 mg/L	05/31/12 11:35	06/04/12 18:49
	Potassium (K)	2.8	0.50 mg/L	05/31/12 11:35	06/04/12 18:49
	Calcium (Ca)	51	0.50 mg/L	05/31/12 11:35	06/04/12 18:49
	Chromium (Cr)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:49
	Iron (Fe)	0.63	0.30 mg/L	05/31/12 11:35	06/04/12 18:49
	Arsenic (As)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:49
	Lead (Pb)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:49

Alpha Analytical, Inc.

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Client ID: **MW-17-1**					
Lab ID : BMI12051602-05A	Sodium (Na)	17	0.50 mg/L	05/31/12 11:35	05/31/12 23:31
Date Sampled 05/15/12 13:38	Magnesium (Mg)	16	0.50 mg/L	05/31/12 11:35	06/04/12 18:54
	Potassium (K)	2.1	0.50 mg/L	05/31/12 11:35	06/04/12 18:54
	Calcium (Ca)	46	0.50 mg/L	05/31/12 11:35	06/04/12 18:54
	Chromium (Cr)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:54
	Iron (Fe)	0.68	0.30 mg/L	05/31/12 11:35	06/04/12 18:54
	Arsenic (As)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:54
	Lead (Pb)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 18:54
Client ID: **EB-14-5/15/12**					
Lab ID : BMI12051602-06A	Sodium (Na)	ND	0.50 mg/L	05/31/12 11:35	05/31/12 23:43
Date Sampled 05/15/12 13:24	Magnesium (Mg)	ND	0.50 mg/L	05/31/12 11:35	06/04/12 17:00
	Potassium (K)	ND	0.50 mg/L	05/31/12 11:35	06/04/12 17:00
	Calcium (Ca)	ND	0.50 mg/L	05/31/12 11:35	06/04/12 17:00
	Chromium (Cr)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 17:00
	Iron (Fe)	ND	0.30 mg/L	05/31/12 11:35	06/04/12 17:00
	Arsenic (As)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 17:00
	Lead (Pb)	ND	0.0050 mg/L	05/31/12 11:35	06/04/12 17:00

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

6/6/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/16/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-17-5**				
Lab ID : BMI12051602-01A pH	8.3	1.7 pH Units	05/16/12 14:36	05/16/12 14:36
Date Sampled 05/15/12 08:25 pH - Temperature	20	1.0 °C	05/16/12 14:36	05/16/12 14:36
Client ID: **MW-17-4**				
Lab ID : BMI12051602-02A pH	8.2	1.7 pH Units	05/16/12 14:39	05/16/12 14:39
Date Sampled 05/15/12 09:12 pH - Temperature	19	1.0 °C	05/16/12 14:39	05/16/12 14:39
Client ID: **MW-17-3**				
Lab ID : BMI12051602-03A pH	7.8	1.7 pH Units	05/16/12 14:41	05/16/12 14:41
Date Sampled 05/15/12 11:12 pH - Temperature	19	1.0 °C	05/16/12 14:41	05/16/12 14:41
Client ID: **MW-17-2**				
Lab ID : BMI12051602-04A pH	7.6	1.7 pH Units	05/16/12 14:42	05/16/12 14:42
Date Sampled 05/15/12 13:06 pH - Temperature	19	1.0 °C	05/16/12 14:42	05/16/12 14:42
Client ID: **MW-17-1**				
Lab ID : BMI12051602-05A pH	7.3	1.7 pH Units	05/16/12 14:44	05/16/12 14:44
Date Sampled 05/15/12 13:38 pH - Temperature	20	1.0 °C	05/16/12 14:44	05/16/12 14:44
Client ID: **EB-14-5/15/12**				
Lab ID : BMI12051602-06A pH	6.7	1.7 pH Units	05/16/12 14:52	05/16/12 14:52
Date Sampled 05/15/12 13:24 pH - Temperature	20	1.0 °C	05/16/12 14:52	05/16/12 14:52

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Information regarding the estimate of the uncertainty of measurement is available upon client request.

The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.

The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/29/12

Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/16/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-17-5**					
Lab ID : BMI12051602-01A	Solids, Total Dissolved (TDS)	180	10 mg/L	05/23/12	05/23/12
Date Sampled 05/15/12 08:25					
Client ID: **MW-17-4**					
Lab ID : BMI12051602-02A	Solids, Total Dissolved (TDS)	200	10 mg/L	05/23/12	05/23/12
Date Sampled 05/15/12 09:12					
Client ID: **MW-17-3**					
Lab ID : BMI12051602-03A	Solids, Total Dissolved (TDS)	350	10 mg/L	05/23/12	05/23/12
Date Sampled 05/15/12 11:12					
Client ID: **MW-17-2**					
Lab ID : BMI12051602-04A	Solids, Total Dissolved (TDS)	280	10 mg/L	05/23/12	05/23/12
Date Sampled 05/15/12 13:06					
Client ID: **MW-17-1**					
Lab ID : BMI12051602-05A	Solids, Total Dissolved (TDS)	230	10 mg/L	05/23/12	05/23/12
Date Sampled 05/15/12 13:38					
Client ID: **EB-14-5/15/12**					
Lab ID : BMI12051602-06A	Solids, Total Dissolved (TDS)	ND	10 mg/L	05/23/12	05/23/12
Date Sampled 05/15/12 13:24					

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com
Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and availahle California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/29/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
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Date: *29-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)
Work Order: BMI12051602 **Cooler Temp:** 2 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12051602-01A	MW-17-5	Aqueous
12051602-02A	MW-17-4	Aqueous
12051602-03A	MW-17-3	Aqueous
12051602-04A	MW-17-2	Aqueous
12051602-05A	MW-17-1	Aqueous
12051602-06A	EB-14-5/15/12	Aqueous
12051602-07A	TB-14-5/15/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/16/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-17-5**					
Lab ID : BMI12051602-01A	Acrylonitrile	ND	10 µg/L	05/22/12 16:08	05/22/12 16:08
Date Sampled 05/15/12 08:25	Allyl chloride	ND	2.0 µg/L	05/22/12 16:08	05/22/12 16:08
	Carbon disulfide	ND	2.0 µg/L	05/22/12 16:08	05/22/12 16:08
	Chloroacetonitrile	ND	10 µg/L	05/22/12 16:08	05/22/12 16:08
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 16:08	05/22/12 16:08
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 16:08	05/22/12 16:08
	Diethyl ether	ND	2.0 µg/L	05/22/12 16:08	05/22/12 16:08
	Ethyl methacrylate	ND	10 µg/L	05/22/12 16:08	05/22/12 16:08
	Hexachloroethane	ND	10 µg/L	05/22/12 16:08	05/22/12 16:08
	Methacrylonitrile	ND	10 µg/L	05/22/12 16:08	05/22/12 16:08
	Methyl acrylate	ND	10 µg/L	05/22/12 16:08	05/22/12 16:08
	Methyl iodide	ND	2.0 µg/L	05/22/12 16:08	05/22/12 16:08
	Methyl methacrylate	ND	10 µg/L	05/22/12 16:08	05/22/12 16:08
	Nitrobenzene	ND	10 µg/L	05/22/12 16:08	05/22/12 16:08
	2-Nitropropane	ND	2.0 µg/L	05/22/12 16:08	05/22/12 16:08
	Pentachloroethane	ND	2.0 µg/L	05/22/12 16:08	05/22/12 16:08
	Propionitrile	ND	50 µg/L	05/22/12 16:08	05/22/12 16:08
	Tetrahydrofuran	ND	10 µg/L	05/22/12 16:08	05/22/12 16:08
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 16:08	05/22/12 16:08
Client ID: **MW-17-4**					
Lab ID : BMI12051602-02A	Acrylonitrile	ND	10 µg/L	05/22/12 16:30	05/22/12 16:30
Date Sampled 05/15/12 09:12	Allyl chloride	ND	2.0 µg/L	05/22/12 16:30	05/22/12 16:30
	Carbon disulfide	ND	2.0 µg/L	05/22/12 16:30	05/22/12 16:30
	Chloroacetonitrile	ND	10 µg/L	05/22/12 16:30	05/22/12 16:30
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 16:30	05/22/12 16:30
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 16:30	05/22/12 16:30
	Diethyl ether	ND	2.0 µg/L	05/22/12 16:30	05/22/12 16:30
	Ethyl methacrylate	ND	10 µg/L	05/22/12 16:30	05/22/12 16:30
	Hexachloroethane	ND	10 µg/L	05/22/12 16:30	05/22/12 16:30
	Methacrylonitrile	ND	10 µg/L	05/22/12 16:30	05/22/12 16:30
	Methyl acrylate	ND	10 µg/L	05/22/12 16:30	05/22/12 16:30
	Methyl iodide	ND	2.0 µg/L	05/22/12 16:30	05/22/12 16:30
	Methyl methacrylate	ND	10 µg/L	05/22/12 16:30	05/22/12 16:30
	Nitrobenzene	ND	10 µg/L	05/22/12 16:30	05/22/12 16:30
	2-Nitropropane	ND	2.0 µg/L	05/22/12 16:30	05/22/12 16:30
	Pentachloroethane	ND	2.0 µg/L	05/22/12 16:30	05/22/12 16:30
	Propionitrile	ND	50 µg/L	05/22/12 16:30	05/22/12 16:30
	Tetrahydrofuran	ND	10 µg/L	05/22/12 16:30	05/22/12 16:30
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 16:30	05/22/12 16:30

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Client ID: **MW-17-3**					
Lab ID : BMI12051602-03A	Acrylonitrile	ND	10 µg/L	05/22/12 16:52	05/22/12 16:52
Date Sampled 05/15/12 11:12	Allyl chloride	ND	2.0 µg/L	05/22/12 16:52	05/22/12 16:52
	Carbon disulfide	ND	2.0 µg/L	05/22/12 16:52	05/22/12 16:52
	Chloroacetonitrile	ND	10 µg/L	05/22/12 16:52	05/22/12 16:52
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 16:52	05/22/12 16:52
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 16:52	05/22/12 16:52
	Diethyl ether	ND	2.0 µg/L	05/22/12 16:52	05/22/12 16:52
	Ethyl methacrylate	ND	10 µg/L	05/22/12 16:52	05/22/12 16:52
	Hexachloroethane	ND	10 µg/L	05/22/12 16:52	05/22/12 16:52
	Methacrylonitrile	ND	10 µg/L	05/22/12 16:52	05/22/12 16:52
	Methyl acrylate	ND	10 µg/L	05/22/12 16:52	05/22/12 16:52
	Methyl iodide	ND	2.0 µg/L	05/22/12 16:52	05/22/12 16:52
	Methyl methacrylate	ND	10 µg/L	05/22/12 16:52	05/22/12 16:52
	Nitrobenzene	ND	10 µg/L	05/22/12 16:52	05/22/12 16:52
	2-Nitropropane	ND	2.0 µg/L	05/22/12 16:52	05/22/12 16:52
	Pentachloroethane	ND	2.0 µg/L	05/22/12 16:52	05/22/12 16:52
	Propionitrile	ND	50 µg/L	05/22/12 16:52	05/22/12 16:52
	Tetrahydrofuran	ND	10 µg/L	05/22/12 16:52	05/22/12 16:52
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 16:52	05/22/12 16:52
Client ID: **MW-17-2**					
Lab ID : BMI12051602-04A	Acrylonitrile	ND	10 µg/L	05/22/12 17:13	05/22/12 17:13
Date Sampled 05/15/12 13:06	Allyl chloride	ND	2.0 µg/L	05/22/12 17:13	05/22/12 17:13
	Carbon disulfide	ND	2.0 µg/L	05/22/12 17:13	05/22/12 17:13
	Chloroacetonitrile	ND	10 µg/L	05/22/12 17:13	05/22/12 17:13
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 17:13	05/22/12 17:13
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 17:13	05/22/12 17:13
	Diethyl ether	ND	2.0 µg/L	05/22/12 17:13	05/22/12 17:13
	Ethyl methacrylate	ND	10 µg/L	05/22/12 17:13	05/22/12 17:13
	Hexachloroethane	ND	10 µg/L	05/22/12 17:13	05/22/12 17:13
	Methacrylonitrile	ND	10 µg/L	05/22/12 17:13	05/22/12 17:13
	Methyl acrylate	ND	10 µg/L	05/22/12 17:13	05/22/12 17:13
	Methyl iodide	ND	2.0 µg/L	05/22/12 17:13	05/22/12 17:13
	Methyl methacrylate	ND	10 µg/L	05/22/12 17:13	05/22/12 17:13
	Nitrobenzene	ND	10 µg/L	05/22/12 17:13	05/22/12 17:13
	2-Nitropropane	ND	2.0 µg/L	05/22/12 17:13	05/22/12 17:13
	Pentachloroethane	ND	2.0 µg/L	05/22/12 17:13	05/22/12 17:13
	Propionitrile	ND	50 µg/L	05/22/12 17:13	05/22/12 17:13
	Tetrahydrofuran	ND	10 µg/L	05/22/12 17:13	05/22/12 17:13
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 17:13	05/22/12 17:13
Client ID: **MW-17-1**					
Lab ID : BMI12051602-05A	Acrylonitrile	ND	10 µg/L	05/22/12 17:35	05/22/12 17:35
Date Sampled 05/15/12 13:38	Allyl chloride	ND	2.0 µg/L	05/22/12 17:35	05/22/12 17:35
	Carbon disulfide	ND	2.0 µg/L	05/22/12 17:35	05/22/12 17:35
	Chloroacetonitrile	ND	10 µg/L	05/22/12 17:35	05/22/12 17:35
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 17:35	05/22/12 17:35
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 17:35	05/22/12 17:35
	Diethyl ether	ND	2.0 µg/L	05/22/12 17:35	05/22/12 17:35
	Ethyl methacrylate	ND	10 µg/L	05/22/12 17:35	05/22/12 17:35
	Hexachloroethane	ND	10 µg/L	05/22/12 17:35	05/22/12 17:35
	Methacrylonitrile	ND	10 µg/L	05/22/12 17:35	05/22/12 17:35
	Methyl acrylate	ND	10 µg/L	05/22/12 17:35	05/22/12 17:35
	Methyl iodide	ND	2.0 µg/L	05/22/12 17:35	05/22/12 17:35
	Methyl methacrylate	ND	10 µg/L	05/22/12 17:35	05/22/12 17:35
	Nitrobenzene	ND	10 µg/L	05/22/12 17:35	05/22/12 17:35
	2-Nitropropane	ND	2.0 µg/L	05/22/12 17:35	05/22/12 17:35
	Pentachloroethane	ND	2.0 µg/L	05/22/12 17:35	05/22/12 17:35
	Propionitrile	ND	50 µg/L	05/22/12 17:35	05/22/12 17:35
	Tetrahydrofuran	ND	10 µg/L	05/22/12 17:35	05/22/12 17:35
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 17:35	05/22/12 17:35

Alpha Analytical, Inc.

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Client ID: **EB-14-5/15/12**					
Lab ID : BMI12051602-06A	Acrylonitrile	ND	10 µg/L	05/22/12 17:57	05/22/12 17:57
Date Sampled 05/15/12 13:24	Allyl chloride	ND	2.0 µg/L	05/22/12 17:57	05/22/12 17:57
	Carbon disulfide	ND	2.0 µg/L	05/22/12 17:57	05/22/12 17:57
	Chloroacetonitrile	ND	10 µg/L	05/22/12 17:57	05/22/12 17:57
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 17:57	05/22/12 17:57
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 17:57	05/22/12 17:57
	Diethyl ether	ND	2.0 µg/L	05/22/12 17:57	05/22/12 17:57
	Ethyl methacrylate	ND	10 µg/L	05/22/12 17:57	05/22/12 17:57
	Hexachloroethane	ND	10 µg/L	05/22/12 17:57	05/22/12 17:57
	Methacrylonitrile	ND	10 µg/L	05/22/12 17:57	05/22/12 17:57
	Methyl acrylate	ND	10 µg/L	05/22/12 17:57	05/22/12 17:57
	Methyl iodide	ND	2.0 µg/L	05/22/12 17:57	05/22/12 17:57
	Methyl methacrylate	ND	10 µg/L	05/22/12 17:57	05/22/12 17:57
	Nitrobenzene	ND	10 µg/L	05/22/12 17:57	05/22/12 17:57
	2-Nitropropane	ND	2.0 µg/L	05/22/12 17:57	05/22/12 17:57
	Pentachloroethane	ND	2.0 µg/L	05/22/12 17:57	05/22/12 17:57
	Propionitrile	ND	50 µg/L	05/22/12 17:57	05/22/12 17:57
	Tetrahydrofuran	ND	10 µg/L	05/22/12 17:57	05/22/12 17:57
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 17:57	05/22/12 17:57
Client ID: **TB-14-5/15/12**					
Lab ID : BMI12051602-07A	Acrylonitrile	ND	10 µg/L	05/22/12 18:19	05/22/12 18:19
Date Sampled 05/15/12 07:00	Allyl chloride	ND	2.0 µg/L	05/22/12 18:19	05/22/12 18:19
	Carbon disulfide	ND	2.0 µg/L	05/22/12 18:19	05/22/12 18:19
	Chloroacetonitrile	ND	10 µg/L	05/22/12 18:19	05/22/12 18:19
	1-Chlorobutane	ND	2.0 µg/L	05/22/12 18:19	05/22/12 18:19
	1,1-Dichloropropanone	ND	10 µg/L	05/22/12 18:19	05/22/12 18:19
	Diethyl ether	ND	2.0 µg/L	05/22/12 18:19	05/22/12 18:19
	Ethyl methacrylate	ND	10 µg/L	05/22/12 18:19	05/22/12 18:19
	Hexachloroethane	ND	10 µg/L	05/22/12 18:19	05/22/12 18:19
	Methacrylonitrile	ND	10 µg/L	05/22/12 18:19	05/22/12 18:19
	Methyl acrylate	ND	10 µg/L	05/22/12 18:19	05/22/12 18:19
	Methyl iodide	ND	2.0 µg/L	05/22/12 18:19	05/22/12 18:19
	Methyl methacrylate	ND	10 µg/L	05/22/12 18:19	05/22/12 18:19
	Nitrobenzene	ND	10 µg/L	05/22/12 18:19	05/22/12 18:19
	2-Nitropropane	ND	2.0 µg/L	05/22/12 18:19	05/22/12 18:19
	Pentachloroethane	ND	2.0 µg/L	05/22/12 18:19	05/22/12 18:19
	Propionitrile	ND	50 µg/L	05/22/12 18:19	05/22/12 18:19
	Tetrahydrofuran	ND	10 µg/L	05/22/12 18:19	05/22/12 18:19
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/22/12 18:19	05/22/12 18:19

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/29/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051602-01A
Client I.D. Number: MW-17-5

Sampled: 05/15/12 08:25
Received: 05/16/12
Extracted: 05/22/12 16:08
Analyzed: 05/22/12 16:08

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37 Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051602-02A
Client I.D. Number: MW-17-4

Sampled: 05/15/12 09:12
Received: 05/16/12
Extracted: 05/22/12 16:30
Analyzed: 05/22/12 16:30

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37 Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/29/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051602-03A
Client I.D. Number: MW-17-3

Sampled: 05/15/12 11:12
Received: 05/16/12
Extracted: 05/22/12 16:52
Analyzed: 05/22/12 16:52

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37 Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • Randy Gardner, Laboratory Manager • Walter Hinchman, Quality Assurance Officer

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5/29/12
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051602-04A
Client I.D. Number: MW-17-2

Sampled: 05/15/12 13:06
Received: 05/16/12
Extracted: 05/22/12 17:13
Analyzed: 05/22/12 17:13

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37 Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	103	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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5/29/12
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

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Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051602-05A
Client I.D. Number: MW-17-1

Sampled: 05/15/12 13:38
Received: 05/16/12
Extracted: 05/22/12 17:35
Analyzed: 05/22/12 17:35

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37 Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • Randy Gardner, Laboratory Manager • Walter Hinchman, Quality Assurance Officer

Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/29/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051602-06A
Client I.D. Number: EB-14-5/15/12

Sampled: 05/15/12 13:24
Received: 05/16/12
Extracted: 05/22/12 17:57
Analyzed: 05/22/12 17:57

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/29/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051602-07A
Client I.D. Number: TB-14-5/15/12

Sampled: 05/15/12 07:00
Received: 05/16/12
Extracted: 05/22/12 18:19
Analyzed: 05/22/12 18:19

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	1.0	µg/L	37 Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	1.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	1.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	1.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	1.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	1.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	1.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	1.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	101	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/29/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

VOC Sample Preservation Report

Work Order: BMI12051602 **Job:** 100006114/ JPL Groundwater Monitoring

Alpha's Sample ID	Client's Sample ID	Matrix	pH
12051602-01A	MW-17-5	Aqueous	2
12051602-02A	MW-17-4	Aqueous	2
12051602-03A	MW-17-3	Aqueous	2
12051602-04A	MW-17-2	Aqueous	2
12051602-05A	MW-17-1	Aqueous	2
12051602-06A	EB-14-5/15/12	Aqueous	2
12051602-07A	TB-14-5/15/12	Aqueous	2

5/29/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: 25-May-12

QC Summary Report

Work Order: 12051602

Method Blank

Type: **MBLK** Test Code: **EPA Method 300.0**

File ID: **25** Batch ID: **28741K** Analysis Date: **05/16/2012 09:59**

Sample ID: **MB-28741** Units : **mg/L** Run ID: **IC_1_120516B** Prep Date: **05/16/2012 08:53**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 300.0**

File ID: **26** Batch ID: **28741K** Analysis Date: **05/16/2012 10:18**

Sample ID: **LFB-28741** Units : **mg/L** Run ID: **IC_1_120516B** Prep Date: **05/16/2012 08:53**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	49.2	0.5	50		98	90	110			
Nitrite (NO2) - N	5.03	0.25	5		101	90	110			
Nitrate (NO3) - N	5.34	0.25	5		107	90	110			
Phosphate, ortho - P	5.06	0.5	5		101	90	110			
Sulfate (SO4)	100	0.5	100		100	90	110			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 300.0**

File ID: **34** Batch ID: **28741K** Analysis Date: **05/16/2012 12:47**

Sample ID: **12051602-02ALFM** Units : **mg/L** Run ID: **IC_1_120516B** Prep Date: **05/16/2012 08:53**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	257	1.3	250	12.58	98	90	110			
Nitrite (NO2) - N	25.5	0.63	25	0	102	90	110			
Nitrate (NO3) - N	26.1	0.63	25	0	104	90	110			
Phosphate, ortho - P	26	1.3	25	0	104	90	110			
Sulfate (SO4)	519	1.3	500	21.42	99	90	110			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 300.0**

File ID: **35** Batch ID: **28741K** Analysis Date: **05/16/2012 13:05**

Sample ID: **12051602-02ALFMD** Units : **mg/L** Run ID: **IC_1_120516B** Prep Date: **05/16/2012 08:53**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	258	1.3	250	12.58	98	90	110	256.8	0.3(15)	
Nitrite (NO2) - N	25.4	0.63	25	0	102	90	110	25.54	0.4(15)	
Nitrate (NO3) - N	26.7	0.63	25	0	107	90	110	26.1	2.1(15)	
Phosphate, ortho - P	26.6	1.3	25	0	106	90	110	26.01	2.1(15)	
Sulfate (SO4)	520	1.3	500	21.42	99.6	90	110	518.7	0.2(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: 25-May-12

QC Summary Report

Work Order: 12051602

Method Blank

Type: **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **28790K** Analysis Date: **05/22/2012 17:20**

Sample ID: **MB-28790** Units : **µg/L** Run ID: **IC_3_120522A** Prep Date: **05/22/2012 16:24**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **28790K** Analysis Date: **05/22/2012 17:39**

Sample ID: **LFB-28790** Units : **µg/L** Run ID: **IC_3_120522A** Prep Date: **05/22/2012 16:24**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.1	2	25		100	85	115			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 314.0**

File ID: **26** Batch ID: **28790K** Analysis Date: **05/22/2012 21:01**

Sample ID: **12051602-02ALFM** Units : **µg/L** Run ID: **IC_3_120522A** Prep Date: **05/22/2012 16:24**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.8	2	25	1.02	99	85	115			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 314.0**

File ID: **27** Batch ID: **28790K** Analysis Date: **05/22/2012 21:20**

Sample ID: **12051602-02ALFMD** Units : **µg/L** Run ID: **IC_3_120522A** Prep Date: **05/22/2012 16:24**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	28.1	2	25	1.02	108	85	115	25.77	8.8(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *29-May-12*

QC Summary Report

Work Order: 12051602

Laboratory Control Spike Type: **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0518AL** Analysis Date: **05/18/2012 06:08**

Sample ID: **LCS-W0518AL** Units : **mg/L** Run ID: **WETLAB_120518E** Prep Date: **05/18/2012 06:08**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	264.4	10	250		106	80	120			
Alkalinity, Carbonate (As CaCO3)	264.4	10	250		106	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	264	10	250		106	80	120			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *06-Jun-12*

QC Summary Report

Work Order: 12051602

Method Blank

Type: **MBLK** Test Code: **EPA Method 200.8**

File ID: **060412.B\016_M1.D** Batch ID: **28840K** Analysis Date: **06/04/2012 17:36**

Sample ID: **MB-28840K** Units : **mg/L** Run ID: **ICP/MS_120604A** Prep Date: **05/31/2012 11:35**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 200.8**

File ID: **060412.B\016_M2.D** Batch ID: **28840K** Analysis Date: **06/04/2012 17:51**

Sample ID: **LCS-28840K** Units : **mg/L** Run ID: **ICP/MS_120604A** Prep Date: **05/31/2012 11:35**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	5.35	0.5	5		107	80	120			
Magnesium (Mg)	4.99	0.5	5		99.7	80	120			
Potassium (K)	4.91	0.5	5		98	80	120			
Calcium (Ca)	4.77	0.5	5		95	80	120			
Chromium (Cr)	0.0473	0.01	0.05		95	80	120			
Iron (Fe)	4.68	0.3	5		94	80	120			
Arsenic (As)	0.0461	0.005	0.05		92	80	120			
Lead (Pb)	0.0487	0.005	0.05		97	80	120			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method 200.8**

File ID: **060412.B\018_M7.D** Batch ID: **28840K** Analysis Date: **06/04/2012 18:20**

Sample ID: **12051602-02AMS** Units : **mg/L** Run ID: **ICP/MS_120604A** Prep Date: **05/31/2012 11:35**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	50.6	0.5	5	48.75	37	80	120			M3
Magnesium (Mg)	10.9	0.5	5	5.683	104	80	120			
Potassium (K)	7.02	0.5	5	1.326	114	80	120			
Calcium (Ca)	24.4	0.5	5	18.41	121	80	120			M1
Chromium (Cr)	0.0473	0.01	0.05	0	95	80	120			
Iron (Fe)	4.91	0.3	5	0	98	80	120			
Arsenic (As)	0.0578	0.005	0.05	0	116	80	120			
Lead (Pb)	0.0569	0.005	0.05	0	114	80	120			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method 200.8**

File ID: **060412.B\018_M8.D** Batch ID: **28840K** Analysis Date: **06/04/2012 18:26**

Sample ID: **12051602-02AMSD** Units : **mg/L** Run ID: **ICP/MS_120604A** Prep Date: **05/31/2012 11:35**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	52	0.5	5	48.75	65	80	120	50.62	2.7(20)	M3
Magnesium (Mg)	11.5	0.5	5	5.683	116	80	120	10.9	5.3(20)	
Potassium (K)	7.41	0.5	5	1.326	122	80	120	7.022	5.4(20)	M1
Calcium (Ca)	25	0.5	5	18.41	132	80	120	24.44	2.4(20)	M1
Chromium (Cr)	0.0483	0.01	0.05	0	97	80	120	0.04732	2.1(20)	
Iron (Fe)	4.98	0.3	5	0	99.5	80	120	4.907	1.4(20)	
Arsenic (As)	0.0614	0.005	0.05	0	123	80	120	0.05776	6.1(20)	M1
Lead (Pb)	0.0574	0.005	0.05	0	115	80	120	0.05685	1.0(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

M3 = The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to the spike level. The method control sample recovery was acceptable.

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Date: *25-May-12*

QC Summary Report

Work Order: 12051602

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0516PH** Analysis Date: **05/16/2012 14:31**

Sample ID: **LCS-W0516PH** Units : **pH Units** Run ID: **WETLAB_120516C** Prep Date: **05/16/2012 14:31**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	5	1.7	5		100	90	110			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *29-May-12*

QC Summary Report

Work Order: 12051602

Method Blank

Type: **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0522DS** Analysis Date: **05/23/2012 00:00**

Sample ID: **MBLK-W0522DS** Units : **mg/L** Run ID: **WETLAB_120522D** Prep Date: **05/23/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type: **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0522DS** Analysis Date: **05/23/2012 00:00**

Sample ID: **LCS-W0522DS** Units : **mg/L** Run ID: **WETLAB_120522D** Prep Date: **05/23/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	97	10	100		97	70	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: 25-May-12

QC Summary Report

Work Order: 12051602

Method Blank Type: **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12052207.D** Batch ID: **MS15W0522M** Analysis Date: **05/22/2012 12:31**

Sample ID: **MBLK MS15W0522M** Units : **µg/L** Run ID: **MSD_15_120522A** Prep Date: **05/22/2012 12:31**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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Date: *25-May-12*

QC Summary Report

Work Order: 12051602

Surr: 1,2-Dichloroethane-d4	10.2	10	102	70	130
Surr: Toluene-d8	10.1	10	101	70	130
Surr: 4-Bromofluorobenzene	9.29	10	93	70	130

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Date: 25-May-12

QC Summary Report

Work Order: 12051602

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method SW8260B**

File ID: **12052203.D** Batch ID: **MS15W0522M** Analysis Date: **05/22/2012 11:04**

Sample ID: **LCS MS15W0522M** Units : **µg/L** Run ID: **MSD_15_120522A** Prep Date: **05/22/2012 11:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	11	1	10		110	70	130			
Chloromethane	5.34	2	10		53	70(70)	130			L50
Vinyl chloride	11.6	1	10		116	70	130			
Chloroethane	10	1	10		100	70	130			
Bromomethane	8.7	2	10		87	70	130			
Trichlorofluoromethane	11	1	10		110	70	130			
Acetone	266	10	200		133	36	171			
1,1-Dichloroethene	10.7	1	10		107	70	130			
Dichloromethane	9.18	2	10		92	70	130			
Freon-113	11.2	1	10		112	70	137			
trans-1,2-Dichloroethene	10.6	1	10		106	70	130			
Methyl tert-butyl ether (MTBE)	9.09	0.5	10		91	70	130			
1,1-Dichloroethane	10.4	1	10		104	70	130			
2-Butanone (MEK)	235	10	200		118	70	130			
cis-1,2-Dichloroethene	10.3	1	10		103	70	130			
Bromochloromethane	10.4	1	10		104	70	130			
Chloroform	9.42	1	10		94	70	130			
2,2-Dichloropropane	10.4	1	10		104	70	130			
1,2-Dichloroethane	10.1	1	10		101	70	130			
1,1,1-Trichloroethane	10.9	1	10		109	70	130			
1,1-Dichloropropene	11.3	1	10		113	70	130			
Carbon tetrachloride	10	1	10		100	70	130			
Benzene	10.3	0.5	10		103	70	130			
Dibromomethane	10.1	1	10		101	70	130			
1,2-Dichloropropane	9.48	1	10		95	70	130			
Trichloroethene	10.6	1	10		106	70	130			
Bromodichloromethane	9.57	1	10		96	70	130			
4-Methyl-2-pentanone (MIBK)	23.3	2.5	25		93	20	182			
cis-1,3-Dichloropropene	9.7	1	10		97	70	130			
trans-1,3-Dichloropropene	9.4	1	10		94	70	130			
1,1,2-Trichloroethane	10.1	1	10		101	70	130			
Toluene	10.1	0.5	10		101	70	130			
1,3-Dichloropropane	10.2	1	10		102	70	130			
2-Hexanone	114	5	100		114	20	182			
Dibromochloromethane	9.5	1	10		95	70	130			
1,2-Dibromoethane (EDB)	19.9	2	20		99.7	70	130			
Tetrachloroethene	10.9	1	10		109	70	130			
1,1,1,2-Tetrachloroethane	11.2	1	10		112	70	130			
Chlorobenzene	10.5	1	10		105	70	130			
Ethylbenzene	10.3	0.5	10		103	70	130			
m,p-Xylene	10.1	0.5	10		101	70	130			
Bromoform	9.25	1	10		93	70	130			
Styrene	9.18	1	10		92	70	130			
o-Xylene	10.1	0.5	10		101	70	130			
1,1,2,2-Tetrachloroethane	9.88	1	10		99	70	130			
1,2,3-Trichloropropane	20.5	2	20		103	70	130			
Isopropylbenzene	10.5	1	10		105	70	130			
Bromobenzene	10.5	1	10		105	70	130			
n-Propylbenzene	10.9	1	10		109	70	130			
4-Chlorotoluene	10.8	1	10		108	70	130			
2-Chlorotoluene	10.6	1	10		106	70	130			
1,3,5-Trimethylbenzene	10.8	1	10		108	70	130			
tert-Butylbenzene	10.6	1	10		106	70	130			
1,2,4-Trimethylbenzene	10.7	1	10		107	70	130			
sec-Butylbenzene	10.7	1	10		107	70	130			
1,3-Dichlorobenzene	10.1	1	10		101	70	130			
1,4-Dichlorobenzene	10.5	1	10		105	70	130			
4-Isopropyltoluene	11	1	10		110	70	130			
1,2-Dichlorobenzene	9.89	1	10		99	70	130			
n-Butylbenzene	10.9	1	10		109	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	50.9	3	50		102	67	130			
1,2,4-Trichlorobenzene	10	2	10		100	70	130			
Naphthalene	8.52	2	10		85	70	130			
Hexachlorobutadiene	21	2	20		105	70	130			
1,2,3-Trichlorobenzene	8.46	2	10		85	70	130			

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Date: *25-May-12*

QC Summary Report

Work Order: 12051602

Surr: 1,2-Dichloroethane-d4	9.98	10	99.8	70	130
Surr: Toluene-d8	10.1	10	101	70	130
Surr: 4-Bromofluorobenzene	9.65	10	97	70	130

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Date: 25-May-12

QC Summary Report

Work Order: 12051602

Sample Matrix Spike Type: **MS** Test Code: **EPA Method SW8260B**

File ID: **12052215.D** Batch ID: **MS15W0522M** Analysis Date: **05/22/2012 15:25**

Sample ID: **12051602-02AMS** Units : **µg/L** Run ID: **MSD_15_120522A** Prep Date: **05/22/2012 15:25**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	59.7	2.5	50	0	119	21	138			
Chloromethane	29	10	50	0	58	23	144			
Vinyl chloride	65.4	2.5	50	0	131	49	136			
Chloroethane	57	2.5	50	0	114	21	159			
Bromomethane	32.5	10	50	0	65	10	174			
Trichlorofluoromethane	66.1	2.5	50	0	132	32	154			
Acetone	738	50	1000	0	74	10	171			
1,1-Dichloroethene	61.4	2.5	50	0	123	64	130			
Dichloromethane	53.7	10	50	0	107	69	130			
Freon-113	60.8	2.5	50	0	122	55	141			
trans-1,2-Dichloroethene	60.7	2.5	50	0	121	63	130			
Methyl tert-butyl ether (MTBE)	58	1.3	50	0	116	47	150			
1,1-Dichloroethane	60	2.5	50	0	120	66	130			
2-Butanone (MEK)	911	50	1000	0	91	23	182			
cis-1,2-Dichloroethene	61.4	2.5	50	0	123	70	130			
Bromochloromethane	60.6	2.5	50	0	121	70	132			
Chloroform	55.4	2.5	50	0	111	70	130			
2,2-Dichloropropane	55.5	2.5	50	0	111	38	154			
1,2-Dichloroethane	61.6	2.5	50	0	123	65	134			
1,1,1-Trichloroethane	63.6	2.5	50	0	127	65	136			
1,1-Dichloropropene	64.7	2.5	50	0	129	68	132			
Carbon tetrachloride	57.9	2.5	50	0	116	58	148			
Benzene	59.6	1.3	50	0	119	59	138			
Dibromomethane	62.6	2.5	50	0	125	70	130			
1,2-Dichloropropane	56.7	2.5	50	0	113	70	131			
Trichloroethene	61.6	2.5	50	0	123	65	144			
Bromodichloromethane	57.2	2.5	50	0	114	50	157			
4-Methyl-2-pentanone (MIBK)	141	13	125	0	113	20	182			
cis-1,3-Dichloropropene	54.9	2.5	50	0	110	63	131			
trans-1,3-Dichloropropene	56.1	2.5	50	0	112	65	136			
1,1,2-Trichloroethane	63.4	2.5	50	0	127	70	131			
Toluene	56.6	1.3	50	0	113	68	130			
1,3-Dichloropropane	61.6	2.5	50	0	123	70	130			
2-Hexanone	437	25	500	0	87	20	182			
Dibromochloromethane	56.5	2.5	50	0	113	42	155			
1,2-Dibromoethane (EDB)	121	5	100	0	121	70	130			
Tetrachloroethene	60.3	2.5	50	0	121	65	130			
1,1,1,2-Tetrachloroethane	65.6	2.5	50	0	131	70	130			M1
Chlorobenzene	60.2	2.5	50	0	120	70	130			
Ethylbenzene	58.4	1.3	50	0	117	68	130			
m,p-Xylene	57.2	1.3	50	0	114	68	131			
Bromoform	57	2.5	50	0	114	65	143			
Styrene	52.4	2.5	50	0	105	59	153			
o-Xylene	57	1.3	50	0	114	70	130			
1,1,2,2-Tetrachloroethane	62.8	2.5	50	0	126	67	130			
1,2,3-Trichloropropane	129	10	100	0	129	70	130			
Isopropylbenzene	57	2.5	50	0	114	55	138			
Bromobenzene	59.4	2.5	50	0	119	70	130			
n-Propylbenzene	58.3	2.5	50	0	117	67	133			
4-Chlorotoluene	59.5	2.5	50	0	119	70	130			
2-Chlorotoluene	57.4	2.5	50	0	115	70	130			
1,3,5-Trimethylbenzene	58.7	2.5	50	0	117	67	134			
tert-Butylbenzene	57.4	2.5	50	0	115	55	147			
1,2,4-Trimethylbenzene	59	2.5	50	0	118	65	135			
sec-Butylbenzene	57.7	2.5	50	0	115	68	135			
1,3-Dichlorobenzene	55.8	2.5	50	0	112	70	130			
1,4-Dichlorobenzene	58.5	2.5	50	0	117	70	130			
4-Isopropyltoluene	58.5	2.5	50	0	117	68	132			
1,2-Dichlorobenzene	57.1	2.5	50	0	114	70	130			
n-Butylbenzene	56.5	2.5	50	0	113	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	314	15	250	0	126	64	130			
1,2,4-Trichlorobenzene	58.5	10	50	0	117	62	133			
Naphthalene	54.5	10	50	0	109	32	166			
Hexachlorobutadiene	108	10	100	0	108	63	130			
1,2,3-Trichlorobenzene	51.9	10	50	0	104	55	138			

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *25-May-12*

QC Summary Report

Work Order: 12051602

Surr: 1,2-Dichloroethane-d4	52.5	50	105	70	130
Surr: Toluene-d8	49.1	50	98	70	130
Surr: 4-Bromofluorobenzene	46.7	50	93	70	130

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: 25-May-12

QC Summary Report

Work Order: 12051602

Sample Matrix Spike Duplicate Type: **MSD** Test Code: **EPA Method SW8260B**

File ID: **12052216.D** Batch ID: **MS15W0522M** Analysis Date: **05/22/2012 15:47**

Sample ID: **12051602-02AMSD** Units : **µg/L** Run ID: **MSD_15_120522A** Prep Date: **05/22/2012 15:47**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	59.7	2.5	50	0	119	21	138	59.67	0.1(33)	
Chloromethane	33	10	50	0	66	23	144	28.99	13.1(27)	
Vinyl chloride	69.1	2.5	50	0	138	49	136	65.35	5.6(21)	M1
Chloroethane	58.9	2.5	50	0	118	21	159	57	3.3(40)	
Bromomethane	39.7	10	50	0	79	10	174	32.49	19.9(40)	
Trichlorofluoromethane	67.5	2.5	50	0	135	32	154	66.13	2.1(37)	
Acetone	776	50	1000	0	78	10	171	737.6	5.1(23)	
1,1-Dichloroethene	63.4	2.5	50	0	127	64	130	61.35	3.3(21)	
Dichloromethane	55.5	10	50	0	111	69	130	53.69	3.3(20)	
Freon-113	61.6	2.5	50	0	123	55	141	60.8	1.3(40)	
trans-1,2-Dichloroethene	62.9	2.5	50	0	126	63	130	60.7	3.5(20)	
Methyl tert-butyl ether (MTBE)	62.9	1.3	50	0	126	47	150	58.04	8.0(40)	
1,1-Dichloroethane	62.8	2.5	50	0	126	66	130	59.98	4.6(20)	
2-Butanone (MEK)	971	50	1000	0	97	23	182	911.1	6.4(22)	
cis-1,2-Dichloroethene	64.2	2.5	50	0	128	70	130	61.39	4.5(20)	
Bromochloromethane	65.8	2.5	50	0	132	70	132	60.55	8.4(20)	
Chloroform	58	2.5	50	0	116	70	130	55.4	4.6(20)	
2,2-Dichloropropane	59.1	2.5	50	0	118	38	154	55.48	6.4(22)	
1,2-Dichloroethane	64.6	2.5	50	0	129	65	134	61.57	4.8(20)	
1,1,1-Trichloroethane	66.5	2.5	50	0	133	65	136	63.59	4.4(20)	
1,1-Dichloropropene	67.4	2.5	50	0	135	68	132	64.71	4.1(20)	M1
Carbon tetrachloride	61.6	2.5	50	0	123	58	148	57.93	6.2(20)	
Benzene	61.8	1.3	50	0	124	59	138	59.59	3.7(21)	
Dibromomethane	66.5	2.5	50	0	133	70	130	62.57	6.1(20)	M1
1,2-Dichloropropane	59.4	2.5	50	0	119	70	131	56.74	4.5(20)	
Trichloroethene	64.2	2.5	50	0	128	65	144	61.55	4.3(20)	
Bromodichloromethane	60.2	2.5	50	0	120	50	157	57.16	5.1(20)	
4-Methyl-2-pentanone (MIBK)	153	13	125	0	122	20	182	141	7.9(20)	
cis-1,3-Dichloropropene	58.4	2.5	50	0	117	63	131	54.89	6.3(20)	
trans-1,3-Dichloropropene	60.2	2.5	50	0	120	65	136	56.05	7.1(20)	
1,1,2-Trichloroethane	66.5	2.5	50	0	133	70	131	63.4	4.8(20)	M1
Toluene	59.1	1.3	50	0	118	68	130	56.55	4.3(20)	
1,3-Dichloropropane	65.2	2.5	50	0	130	70	130	61.6	5.7(20)	
2-Hexanone	473	25	500	0	95	20	182	437.1	7.8(20)	
Dibromochloromethane	60.4	2.5	50	0	121	42	155	56.5	6.6(20)	
1,2-Dibromoethane (EDB)	129	5	100	0	129	70	130	121.2	6.0(20)	
Tetrachloroethene	62.7	2.5	50	0	125	65	130	60.27	3.9(20)	
1,1,1,2-Tetrachloroethane	69.8	2.5	50	0	140	70	130	65.64	6.1(20)	M1
Chlorobenzene	62.4	2.5	50	0	125	70	130	60.19	3.6(20)	
Ethylbenzene	60.6	1.3	50	0	121	68	130	58.43	3.7(20)	
m,p-Xylene	59.6	1.3	50	0	119	68	131	57.21	4.1(20)	
Bromoform	61	2.5	50	0	122	65	143	57.03	6.7(20)	
Styrene	55.4	2.5	50	0	111	59	153	52.43	5.4(37)	
o-Xylene	60.1	1.3	50	0	120	70	130	57.04	5.2(20)	
1,1,2,2-Tetrachloroethane	66.8	2.5	50	0	134	67	130	62.79	6.2(20)	M1
1,2,3-Trichloropropane	137	10	100	0	137	70	130	129.2	6.0(20)	M1
Isopropylbenzene	60.5	2.5	50	0	121	55	138	57.03	6.0(20)	
Bromobenzene	63.2	2.5	50	0	126	70	130	59.44	6.1(20)	
n-Propylbenzene	61.2	2.5	50	0	122	67	133	58.33	4.8(30)	
4-Chlorotoluene	62.4	2.5	50	0	125	70	130	59.54	4.7(20)	
2-Chlorotoluene	60.7	2.5	50	0	121	70	130	57.37	5.6(20)	
1,3,5-Trimethylbenzene	62.2	2.5	50	0	124	67	134	58.69	5.8(21)	
tert-Butylbenzene	60.9	2.5	50	0	122	55	147	57.44	5.9(20)	
1,2,4-Trimethylbenzene	62.2	2.5	50	0	124	65	135	58.99	5.3(25)	
sec-Butylbenzene	61.1	2.5	50	0	122	68	135	57.73	5.7(20)	
1,3-Dichlorobenzene	58.8	2.5	50	0	118	70	130	55.81	5.3(20)	
1,4-Dichlorobenzene	62.2	2.5	50	0	124	70	130	58.52	6.1(20)	
4-Isopropyltoluene	61.7	2.5	50	0	123	68	132	58.54	5.2(20)	
1,2-Dichlorobenzene	60.2	2.5	50	0	120	70	130	57.07	5.3(20)	
n-Butylbenzene	59.2	2.5	50	0	118	62	134	56.52	4.7(21)	
1,2-Dibromo-3-chloropropane (DBCP)	342	15	250	0	137	64	130	314.3	8.4(20)	M1
1,2,4-Trichlorobenzene	61.8	10	50	0	124	62	133	58.49	5.4(29)	
Naphthalene	58.4	10	50	0	117	32	166	54.54	6.9(40)	
Hexachlorobutadiene	116	10	100	0	116	63	130	108.1	7.5(21)	

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *25-May-12*

QC Summary Report

Work Order: 12051602

1,2,3-Trichlorobenzene	55.4	10	50	0	111	55	138	51.91	6.4(36)
Surr: 1,2-Dichloroethane-d4	52.2		50		104	70	130		
Surr: Toluene-d8	49		50		98	70	130		
Surr: 4-Bromofluorobenzene	47.5		50		95	70	130		

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

L50 = Analyte recovery was below acceptance limits for the LCS, but was acceptable in the MS/MSD.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

Billing Information :

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder : BMIS12051602

Report Due By : 5:00 PM On : 30-May-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : Chase Brogden

PO : 286215

Client's COC # : 53776 Job : 100006114/ JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
2 °C	16-May-12	16-May-12

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12051602-01A	MW-17-5	AQ	05/15/12 08:25	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	Level IV QC
BMI12051602-02A	MW-17-4	AQ	05/15/12 09:12	10	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	MS/MSD
BMI12051602-03A	MW-17-3	AQ	05/15/12 11:12	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051602-04A	MW-17-2	AQ	05/15/12 13:06	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051602-05A	MW-17-1	AQ	05/15/12 13:38	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051602-06A	EB-14-5/15/12	AQ	05/15/12 13:24	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051602-07A	TB-14-5/15/12	AQ	05/15/12 07:00	1	0	10							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 4/2/12

Comments: Security seals intact. Frozen Ice. Temp. Blank #6908 received @ 2°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC on sample -01A. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Coffee	Sara Coffee	Alpha Analytical, Inc.	5/16/12 10:00

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

53776

Billing Information:
Company Name: BATTELLE
Attn: GERALD TOMPKINS
Address: 505 KING AVE
City, State, Zip: COLUMBUS, OH 43201
Phone Number: _____ Fax: _____

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ___ CA X NV ___ WA ___ DOD Site ___
ID ___ OR ___ OTHER ___ Page # 1 of 1

Consultant / Client Name: BATTELLE / DAVID CONNER
Address: 3990 OLD TOWN AVE, C-205
City, State, Zip: SAN DIEGO, CA 92110
Job #: 100006114 / PO# 286779
Job Name: JPL GW MON. 2012
Report Attention / Project Manager
Name: DAVID CONNER
Email: Conner@battelle.org
Phone: _____ Mobile: (619) 726-7311
Data Validation Level: (III) or IV
EDD / EDF? YES ___ NO ___
Global ID # _____

Time Sampled	Date Sampled	Matrix* See Key Below	P.O. # / Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	# Containers**	(524.2) VOCs	(200.8) *	PERCHLORATE (314.0)	(SM2320B, SM2540C, 150.2) *	(300.0) *	REMARKS
0825	5/15/12	AQ	286215 BMJ120516602-01A	MW-17-5			3v, 2p	X	X	X	X	X	QC IV, EFFLUENT PORT
0912			-02A	MW-17-4			6v, 4p	X	X	X	X	X	MS/MSD
1112			-03A	MW-17-3			3v, 2p	X	X	X	X	X	
1306			-04A	MW-17-2			3v, 2p	X	X	X	X	X	
1338			-05A	MW-17-1			3v, 2p	X	X	X	X	X	
			-06	VOID									
1324			-06A	EB-14-5/15/12			3v, 2p	X	X	X	X	X	EQUIP BLANK
0700	5/15/12	AQ	-07A	TB-14-5/15/12			1v	X					TRIP BLANK

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: *(200.8)-TOTAL Cr, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320B, SM2540C, 150.2)-CO3, HCO3, TDS, PH, ALK. *(300.0)-CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: CHASE BRANDON

Relinquished by: (Signature/Affiliation) [signature] / INSIGHT	Received by: (Signature/Affiliation) FED-EX TRACKING # 8989 1206 8587	Date: 5/15/12	Time: 1500
Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation) [signature]	Date: 5/16/12	Time: 9:53
Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *31-May-12*

David Conner
Battelle Memorial Institute
655 West Broadway Suite 1420
San Diego, CA 92101
(619) 726-7311

CASE NARRATIVE

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)
Work Order: BMI12051703 **Cooler Temp:** 2 °C

Alpha's Sample ID	Client's Sample ID	Matrix
12051703-01A	MW-26-2	Aqueous
12051703-02A	MW-26-1	Aqueous
12051703-03A	EB-15-5/16/12	Aqueous
12051703-04A	TB-15-5/16/12	Aqueous

Manually Integrated Analytes

Alpha's Sample ID	Test Reference	Analyte
NONE		

Enclosed please find the analytical results of the samples received by Alpha Analytical, Inc. under the above mentioned Work Order/Chain-of-Custody.

Alpha Analytical, Inc. has a formal Quality Assurance/Quality Control program, which is designed to meet or exceed the EPA requirements. All relevant QC met quality assurance objectives for this project unless otherwise stated in the footnotes.

If you have any questions with regards to this report, please contact Randy Gardner, Project Manager, at (800) 283-1183.

Note : The final report format has been altered from the DOD QSM to meet client instructions.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/17/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Anions by IC
EPA Method 300.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-26-2**				
Lab ID : BMI12051703-01A Chloride	26	0.50 mg/L	05/17/12 15:40	05/17/12 21:59
Date Sampled 05/15/12 08:27 Nitrite (NO2) - N	0.60	0.25 mg/L	05/17/12 15:40	05/17/12 21:59
Nitrate (NO3) - N	0.47	0.25 mg/L	05/17/12 15:40	05/17/12 21:59
Phosphate, ortho - P	ND	0.50 mg/L	05/17/12 15:40	05/17/12 21:59
Sulfate (SO4)	19	0.50 mg/L	05/17/12 15:40	05/17/12 21:59
Client ID: **MW-26-1**				
Lab ID : BMI12051703-02A Chloride	78	50 mg/L	05/17/12 15:40	05/17/12 22:17
Date Sampled 05/15/12 08:56 Nitrite (NO2) - N	ND	0.25 mg/L	05/17/12 15:40	05/17/12 22:17
Nitrate (NO3) - N	9.4	0.25 mg/L	05/17/12 15:40	05/17/12 22:17
Phosphate, ortho - P	ND	0.50 mg/L	05/17/12 15:40	05/17/12 22:17
Sulfate (SO4)	110	0.50 mg/L	05/17/12 15:40	05/17/12 22:17
Client ID: **EB-15-5/16/12**				
Lab ID : BMI12051703-03A Chloride	ND	0.50 mg/L	05/17/12 15:40	05/17/12 22:36
Date Sampled 05/15/12 08:45 Nitrite (NO2) - N	ND	0.25 mg/L	05/17/12 15:40	05/17/12 22:36
Nitrate (NO3) - N	ND	0.25 mg/L	05/17/12 15:40	05/17/12 22:36
Phosphate, ortho - P	ND	0.50 mg/L	05/17/12 15:40	05/17/12 22:36
Sulfate (SO4)	ND	0.50 mg/L	05/17/12 15:40	05/17/12 22:36

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.

Alpha Analytical, Inc. currently holds appropriate and available California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/31/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/17/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Perchlorate by Ion Chromatography
EPA Method 314.0

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-26-2**				
Lab ID : BMI12051703-01A Perchlorate	ND	1.00 µg/L	05/22/12 16:24	05/22/12 23:29
Date Sampled 05/15/12 08:27				
Client ID: **MW-26-1**				
Lab ID : BMI12051703-02A Perchlorate	3.89	1.00 µg/L	05/22/12 16:24	05/22/12 23:47
Date Sampled 05/15/12 08:56				
Client ID: **EB-15-5/16/12**				
Lab ID : BMI12051703-03A Perchlorate	ND	1.00 µg/L	05/22/12 16:24	05/23/12 00:05
Date Sampled 05/15/12 08:45				

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com
Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and availahle California (#2019) and NELAC (01154CA) certifications for the data reported. Test results relate only to reported samples.

5/31/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/17/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alkalinity
SM2320B

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-26-2**					
Lab ID : BMI12051703-01A	Alkalinity, Bicarbonate (As CaCO3)	230	10 mg/L	05/18/12 08:52	05/18/12 08:52
Date Sampled 05/15/12 08:27	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 08:52	05/18/12 08:52
	Alkalinity, Total (As CaCO3 at pH 4.5)	230	10 mg/L	05/18/12 08:52	05/18/12 08:52
Client ID: **MW-26-1**					
Lab ID : BMI12051703-02A	Alkalinity, Bicarbonate (As CaCO3)	250	10 mg/L	05/18/12 09:02	05/18/12 09:02
Date Sampled 05/15/12 08:56	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 09:02	05/18/12 09:02
	Alkalinity, Total (As CaCO3 at pH 4.5)	250	10 mg/L	05/18/12 09:02	05/18/12 09:02
Client ID: **EB-15-5/16/12**					
Lab ID : BMI12051703-03A	Alkalinity, Bicarbonate (As CaCO3)	ND	10 mg/L	05/18/12 09:12	05/18/12 09:12
Date Sampled 05/15/12 08:45	Alkalinity, Carbonate (As CaCO3)	ND	10 mg/L	05/18/12 09:12	05/18/12 09:12
	Alkalinity, Total (As CaCO3 at pH 4.5)	ND	10 mg/L	05/18/12 09:12	05/18/12 09:12

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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5/31/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/17/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Metals by ICPMS
EPA Method 200.8

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-26-2**					
Lab ID : BMI12051703-01A	Sodium (Na)	42	0.50 mg/L	05/24/12 12:57	05/25/12 14:51
Date Sampled 05/15/12 08:27	Magnesium (Mg)	15	0.50 mg/L	05/24/12 12:57	05/25/12 14:51
	Potassium (K)	2.0	0.50 mg/L	05/24/12 12:57	05/25/12 14:51
	Calcium (Ca)	46	0.50 mg/L	05/24/12 12:57	05/25/12 14:51
	Chromium (Cr)	ND	0.0050 mg/L	05/24/12 12:57	05/25/12 14:51
	Iron (Fe)	0.68	0.30 mg/L	05/24/12 12:57	05/25/12 14:51
	Arsenic (As)	ND	0.0020 mg/L	05/24/12 12:57	05/25/12 14:51
	Lead (Pb)	ND	0.0050 mg/L	05/24/12 12:57	05/25/12 14:51
Client ID: **MW-26-1**					
Lab ID : BMI12051703-02A	Sodium (Na)	29	0.50 mg/L	05/24/12 12:57	05/25/12 15:15
Date Sampled 05/15/12 08:56	Magnesium (Mg)	37	0.50 mg/L	05/24/12 12:57	05/25/12 15:15
	Potassium (K)	2.6	0.50 mg/L	05/24/12 12:57	05/25/12 15:15
	Calcium (Ca)	100	0.50 mg/L	05/24/12 12:57	05/25/12 15:15
	Chromium (Cr)	ND	0.0050 mg/L	05/24/12 12:57	05/25/12 15:15
	Iron (Fe)	1.3	0.30 mg/L	05/24/12 12:57	05/25/12 15:15
	Arsenic (As)	ND	0.0020 mg/L	05/24/12 12:57	05/25/12 15:15
	Lead (Pb)	ND	0.0050 mg/L	05/24/12 12:57	05/25/12 15:15
Client ID: **EB-15-5/16/12**					
Lab ID : BMI12051703-03A	Sodium (Na)	ND	0.50 mg/L	05/24/12 12:57	05/25/12 15:20
Date Sampled 05/15/12 08:45	Magnesium (Mg)	ND	0.50 mg/L	05/24/12 12:57	05/25/12 15:20
	Potassium (K)	ND	0.50 mg/L	05/24/12 12:57	05/25/12 15:20
	Calcium (Ca)	ND	0.50 mg/L	05/24/12 12:57	05/25/12 15:20
	Chromium (Cr)	ND	0.0050 mg/L	05/24/12 12:57	05/25/12 15:20
	Iron (Fe)	ND	0.30 mg/L	05/24/12 12:57	05/25/12 15:20
	Arsenic (As)	ND	0.0020 mg/L	05/24/12 12:57	05/25/12 15:20
	Lead (Pb)	ND	0.0050 mg/L	05/24/12 12:57	05/25/12 15:20

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ND = Not Detected

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ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
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Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/17/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

pH (Range 1.7 to 12.4)
EPA Method 150.1 / SM4500HB / SW9040C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-26-2**				
Lab ID : BMI12051703-01A pH	7.9	1.7 pH Units	05/17/12 16:26	05/17/12 16:26
Date Sampled 05/15/12 08:27 pH - Temperature	20	1.0 °C	05/17/12 16:26	05/17/12 16:26
Client ID: **MW-26-1**				
Lab ID : BMI12051703-02A pH	7.0	1.7 pH Units	05/17/12 16:28	05/17/12 16:28
Date Sampled 05/15/12 08:56 pH - Temperature	20	1.0 °C	05/17/12 16:28	05/17/12 16:28
Client ID: **EB-15-5/16/12**				
Lab ID : BMI12051703-03A pH	6.5	1.7 pH Units	05/17/12 16:37	05/17/12 16:37
Date Sampled 05/15/12 08:45 pH - Temperature	20	1.0 °C	05/17/12 16:37	05/17/12 16:37

Information regarding the estimate of the uncertainty of measurement is available upon client request.

The EPA has established an analytical holding time of 15 minutes for pH as documented in the Methods Update Rule, Federal Register, Vol 72, No 47, March 2007. This holding time will always be exceeded, unless samples are analyzed in the field.
The laboratory performed the pH analysis in the shortest practical holding time after sample receipt.

Roger Scholl Randy Gardner Walter Hinchman

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Date Received : 05/17/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Total Dissolved Solids (TDS)
SM2540C

Parameter		Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-26-2**					
Lab ID : BMI12051703-01A	Solids, Total Dissolved (TDS)	300	10 mg/L	05/23/12	05/23/12
Date Sampled 05/15/12 08:27					
Client ID: **MW-26-1**					
Lab ID : BMI12051703-02A	Solids, Total Dissolved (TDS)	540	10 mg/L	05/23/12	05/23/12
Date Sampled 05/15/12 08:56					
Client ID: **EB-15-5/16/12**					
Lab ID : BMI12051703-03A	Solids, Total Dissolved (TDS)	ND	10 mg/L	05/23/12	05/23/12
Date Sampled 05/15/12 08:45					

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

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San Diego, CA 92101

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Phone: (619) 726-7311
Fax: (614) 458-6641
Date Received : 05/17/12

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Special BMI TICs
EPA Method SW8260B

	Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **MW-26-2**					
Lab ID : BMI12051703-01A	Acrylonitrile	ND	10 µg/L	05/25/12 16:56	05/25/12 16:56
Date Sampled 05/15/12 08:27	Allyl chloride	ND	2.0 µg/L	05/25/12 16:56	05/25/12 16:56
	Carbon disulfide	ND	2.5 µg/L	05/25/12 16:56	05/25/12 16:56
	Chloroacetonitrile	ND	10 µg/L	05/25/12 16:56	05/25/12 16:56
	1-Chlorobutane	ND	2.0 µg/L	05/25/12 16:56	05/25/12 16:56
	1,1-Dichloropropanone	ND	10 µg/L	05/25/12 16:56	05/25/12 16:56
	Diethyl ether	ND	2.0 µg/L	05/25/12 16:56	05/25/12 16:56
	Ethyl methacrylate	ND	10 µg/L	05/25/12 16:56	05/25/12 16:56
	Hexachloroethane	ND	10 µg/L	05/25/12 16:56	05/25/12 16:56
	Methacrylonitrile	ND	10 µg/L	05/25/12 16:56	05/25/12 16:56
	Methyl acrylate	ND	10 µg/L	05/25/12 16:56	05/25/12 16:56
	Methyl iodide	ND	2.0 µg/L	05/25/12 16:56	05/25/12 16:56
	Methyl methacrylate	ND	10 µg/L	05/25/12 16:56	05/25/12 16:56
	Nitrobenzene	ND	10 µg/L	05/25/12 16:56	05/25/12 16:56
	2-Nitropropane	ND	2.0 µg/L	05/25/12 16:56	05/25/12 16:56
	Pentachloroethane	ND	2.0 µg/L	05/25/12 16:56	05/25/12 16:56
	Propionitrile	ND	50 µg/L	05/25/12 16:56	05/25/12 16:56
	Tetrahydrofuran	ND	10 µg/L	05/25/12 16:56	05/25/12 16:56
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/25/12 16:56	05/25/12 16:56
Client ID: **MW-26-1**					
Lab ID : BMI12051703-02A	Acrylonitrile	ND	10 µg/L	05/25/12 17:17	05/25/12 17:17
Date Sampled 05/15/12 08:56	Allyl chloride	ND	2.0 µg/L	05/25/12 17:17	05/25/12 17:17
	Carbon disulfide	ND	2.5 µg/L	05/25/12 17:17	05/25/12 17:17
	Chloroacetonitrile	ND	10 µg/L	05/25/12 17:17	05/25/12 17:17
	1-Chlorobutane	ND	2.0 µg/L	05/25/12 17:17	05/25/12 17:17
	1,1-Dichloropropanone	ND	10 µg/L	05/25/12 17:17	05/25/12 17:17
	Diethyl ether	ND	2.0 µg/L	05/25/12 17:17	05/25/12 17:17
	Ethyl methacrylate	ND	10 µg/L	05/25/12 17:17	05/25/12 17:17
	Hexachloroethane	ND	10 µg/L	05/25/12 17:17	05/25/12 17:17
	Methacrylonitrile	ND	10 µg/L	05/25/12 17:17	05/25/12 17:17
	Methyl acrylate	ND	10 µg/L	05/25/12 17:17	05/25/12 17:17
	Methyl iodide	ND	2.0 µg/L	05/25/12 17:17	05/25/12 17:17
	Methyl methacrylate	ND	10 µg/L	05/25/12 17:17	05/25/12 17:17
	Nitrobenzene	ND	10 µg/L	05/25/12 17:17	05/25/12 17:17
	2-Nitropropane	ND	2.0 µg/L	05/25/12 17:17	05/25/12 17:17
	Pentachloroethane	ND	2.0 µg/L	05/25/12 17:17	05/25/12 17:17
	Propionitrile	ND	50 µg/L	05/25/12 17:17	05/25/12 17:17
	Tetrahydrofuran	ND	10 µg/L	05/25/12 17:17	05/25/12 17:17
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/25/12 17:17	05/25/12 17:17

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Client ID: **EB-15-5/16/12**					
Lab ID : BMI12051703-03A	Acrylonitrile	ND	10 µg/L	05/25/12 16:12	05/25/12 16:12
Date Sampled 05/15/12 08:45	Allyl chloride	ND	2.0 µg/L	05/25/12 16:12	05/25/12 16:12
	Carbon disulfide	ND	2.5 µg/L	05/25/12 16:12	05/25/12 16:12
	Chloroacetonitrile	ND	10 µg/L	05/25/12 16:12	05/25/12 16:12
	1-Chlorobutane	ND	2.0 µg/L	05/25/12 16:12	05/25/12 16:12
	1,1-Dichloropropanone	ND	10 µg/L	05/25/12 16:12	05/25/12 16:12
	Diethyl ether	ND	2.0 µg/L	05/25/12 16:12	05/25/12 16:12
	Ethyl methacrylate	ND	10 µg/L	05/25/12 16:12	05/25/12 16:12
	Hexachloroethane	ND	10 µg/L	05/25/12 16:12	05/25/12 16:12
	Methacrylonitrile	ND	10 µg/L	05/25/12 16:12	05/25/12 16:12
	Methyl acrylate	ND	10 µg/L	05/25/12 16:12	05/25/12 16:12
	Methyl iodide	ND	2.0 µg/L	05/25/12 16:12	05/25/12 16:12
	Methyl methacrylate	ND	10 µg/L	05/25/12 16:12	05/25/12 16:12
	Nitrobenzene	ND	10 µg/L	05/25/12 16:12	05/25/12 16:12
	2-Nitropropane	ND	2.0 µg/L	05/25/12 16:12	05/25/12 16:12
	Pentachloroethane	ND	2.0 µg/L	05/25/12 16:12	05/25/12 16:12
	Propionitrile	ND	50 µg/L	05/25/12 16:12	05/25/12 16:12
	Tetrahydrofuran	ND	10 µg/L	05/25/12 16:12	05/25/12 16:12
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/25/12 16:12	05/25/12 16:12
Client ID: **TB-15-5/16/12**					
Lab ID : BMI12051703-04A	Acrylonitrile	ND	10 µg/L	05/25/12 16:34	05/25/12 16:34
Date Sampled 05/15/12 07:00	Allyl chloride	ND	2.0 µg/L	05/25/12 16:34	05/25/12 16:34
	Carbon disulfide	ND	2.5 µg/L	05/25/12 16:34	05/25/12 16:34
	Chloroacetonitrile	ND	10 µg/L	05/25/12 16:34	05/25/12 16:34
	1-Chlorobutane	ND	2.0 µg/L	05/25/12 16:34	05/25/12 16:34
	1,1-Dichloropropanone	ND	10 µg/L	05/25/12 16:34	05/25/12 16:34
	Diethyl ether	ND	2.0 µg/L	05/25/12 16:34	05/25/12 16:34
	Ethyl methacrylate	ND	10 µg/L	05/25/12 16:34	05/25/12 16:34
	Hexachloroethane	ND	10 µg/L	05/25/12 16:34	05/25/12 16:34
	Methacrylonitrile	ND	10 µg/L	05/25/12 16:34	05/25/12 16:34
	Methyl acrylate	ND	10 µg/L	05/25/12 16:34	05/25/12 16:34
	Methyl iodide	ND	2.0 µg/L	05/25/12 16:34	05/25/12 16:34
	Methyl methacrylate	ND	10 µg/L	05/25/12 16:34	05/25/12 16:34
	Nitrobenzene	ND	10 µg/L	05/25/12 16:34	05/25/12 16:34
	2-Nitropropane	ND	2.0 µg/L	05/25/12 16:34	05/25/12 16:34
	Pentachloroethane	ND	2.0 µg/L	05/25/12 16:34	05/25/12 16:34
	Propionitrile	ND	50 µg/L	05/25/12 16:34	05/25/12 16:34
	Tetrahydrofuran	ND	10 µg/L	05/25/12 16:34	05/25/12 16:34
	trans-1,4-Dichloro-2-butene	ND	2.5 µg/L	05/25/12 16:34	05/25/12 16:34

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Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

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ANALYTICAL REPORT

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Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051703-01A
Client I.D. Number: MW-26-2

Sampled: 05/15/12 08:27
Received: 05/17/12
Extracted: 05/25/12 16:56
Analyzed: 05/25/12 16:56

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit		Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36 1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37 Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38 1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39 Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40 Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41 m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42 Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43 Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44 o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45 1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46 1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47 Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48 Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49 n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50 4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51 2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52 1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53 tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54 1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55 sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56 1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57 1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58 4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59 1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60 n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61 1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62 1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63 Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64 Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65 1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66 Surr: 1,2-Dichloroethane-d4	104	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67 Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68 Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L				
35	Dibromochloromethane	ND	0.50	µg/L				

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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5/31/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051703-02A
Client I.D. Number: MW-26-1

Sampled: 05/15/12 08:56
Received: 05/17/12
Extracted: 05/25/12 17:17
Analyzed: 05/25/12 17:17

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	105	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	103	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	91	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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5/31/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051703-03A
Client I.D. Number: EB-15-5/16/12

Sampled: 05/15/12 08:45
Received: 05/17/12
Extracted: 05/25/12 16:12
Analyzed: 05/25/12 16:12

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	98	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	105	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	92	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Battelle Memorial Institute
655 West Broadway
San Diego, CA 92101

Attn: David Conner
Phone: (619) 726-7311
Fax: (614) 458-6641

Job: 100006114/ JPL Groundwater Monitoring : (No DOD Detailed Site Information)

Alpha Analytical Number: BMI12051703-04A
Client I.D. Number: TB-15-5/16/12

Sampled: 05/15/12 07:00
Received: 05/17/12
Extracted: 05/25/12 16:34
Analyzed: 05/25/12 16:34

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	0.50	µg/L	36	1,2-Dibromoethane (EDB)	ND	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Tetrachloroethene	ND	0.50	µg/L
3	Vinyl chloride	ND	0.50	µg/L	38	1,1,1,2-Tetrachloroethane	ND	0.50	µg/L
4	Chloroethane	ND	0.50	µg/L	39	Chlorobenzene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	Ethylbenzene	ND	0.50	µg/L
6	Trichlorofluoromethane	ND	0.50	µg/L	41	m,p-Xylene	ND	0.50	µg/L
7	Acetone	ND	10	µg/L	42	Bromoform	ND	0.50	µg/L
8	1,1-Dichloroethene	ND	0.50	µg/L	43	Styrene	ND	0.50	µg/L
9	Dichloromethane	ND	2.0	µg/L	44	o-Xylene	ND	0.50	µg/L
10	Freon-113	ND	0.50	µg/L	45	1,1,2,2-Tetrachloroethane	ND	0.50	µg/L
11	trans-1,2-Dichloroethene	ND	0.50	µg/L	46	1,2,3-Trichloropropane	ND	2.0	µg/L
12	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	47	Isopropylbenzene	ND	0.50	µg/L
13	1,1-Dichloroethane	ND	0.50	µg/L	48	Bromobenzene	ND	0.50	µg/L
14	2-Butanone (MEK)	ND	10	µg/L	49	n-Propylbenzene	ND	0.50	µg/L
15	cis-1,2-Dichloroethene	ND	0.50	µg/L	50	4-Chlorotoluene	ND	0.50	µg/L
16	Bromochloromethane	ND	0.50	µg/L	51	2-Chlorotoluene	ND	0.50	µg/L
17	Chloroform	ND	0.50	µg/L	52	1,3,5-Trimethylbenzene	ND	0.50	µg/L
18	2,2-Dichloropropane	ND	0.50	µg/L	53	tert-Butylbenzene	ND	0.50	µg/L
19	1,2-Dichloroethane	ND	0.50	µg/L	54	1,2,4-Trimethylbenzene	ND	0.50	µg/L
20	1,1,1-Trichloroethane	ND	0.50	µg/L	55	sec-Butylbenzene	ND	0.50	µg/L
21	1,1-Dichloropropene	ND	0.50	µg/L	56	1,3-Dichlorobenzene	ND	0.50	µg/L
22	Carbon tetrachloride	ND	0.50	µg/L	57	1,4-Dichlorobenzene	ND	0.50	µg/L
23	Benzene	ND	0.50	µg/L	58	4-Isopropyltoluene	ND	0.50	µg/L
24	Dibromomethane	ND	0.50	µg/L	59	1,2-Dichlorobenzene	ND	0.50	µg/L
25	1,2-Dichloropropane	ND	0.50	µg/L	60	n-Butylbenzene	ND	0.50	µg/L
26	Trichloroethene	ND	0.50	µg/L	61	1,2-Dibromo-3-chloropropane (DBCP)	ND	3.0	µg/L
27	Bromodichloromethane	ND	0.50	µg/L	62	1,2,4-Trichlorobenzene	ND	2.0	µg/L
28	4-Methyl-2-pentanone (MIBK)	ND	2.5	µg/L	63	Naphthalene	ND	2.0	µg/L
29	cis-1,3-Dichloropropene	ND	0.50	µg/L	64	Hexachlorobutadiene	ND	2.0	µg/L
30	trans-1,3-Dichloropropene	ND	0.50	µg/L	65	1,2,3-Trichlorobenzene	ND	2.0	µg/L
31	1,1,2-Trichloroethane	ND	0.50	µg/L	66	Surr: 1,2-Dichloroethane-d4	102	(70-130)	%REC
32	Toluene	ND	0.50	µg/L	67	Surr: Toluene-d8	102	(70-130)	%REC
33	1,3-Dichloropropane	ND	0.50	µg/L	68	Surr: 4-Bromofluorobenzene	90	(70-130)	%REC
34	2-Hexanone	ND	5.0	µg/L					
35	Dibromochloromethane	ND	0.50	µg/L					

Note: Analysis conducted using EPA Method 524.2 criteria.

Information regarding the estimate of the uncertainty of measurement is available upon client request.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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5/31/12
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

VOC Sample Preservation Report

Work Order: BMI12051703 **Job:** 100006114/ JPL Groundwater Monitoring

Alpha's Sample ID	Client's Sample ID	Matrix	pH
12051703-01A	MW-26-2	Aqueous	2
12051703-02A	MW-26-1	Aqueous	2
12051703-03A	EB-15-5/16/12	Aqueous	2
12051703-04A	TB-15-5/16/12	Aqueous	2

5/31/12

Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: 31-May-12

QC Summary Report

Work Order: 12051703

Method Blank

Type: **MBLK** Test Code: **EPA Method 300.0**

File ID: **48** Batch ID: **28756K** Analysis Date: **05/17/2012 20:07**

Sample ID: **MB-28756** Units : **mg/L** Run ID: **IC_1_120517B** Prep Date: **05/17/2012 15:40**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	ND	0.5								
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 300.0**

File ID: **49** Batch ID: **28756K** Analysis Date: **05/17/2012 20:26**

Sample ID: **LFB-28756** Units : **mg/L** Run ID: **IC_1_120517B** Prep Date: **05/17/2012 15:40**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	47.7	0.5	50		95	90	110			
Nitrite (NO2) - N	5	0.25	5		99.9	90	110			
Nitrate (NO3) - N	5.17	0.25	5		103	90	110			
Phosphate, ortho - P	5.23	0.5	5		105	90	110			
Sulfate (SO4)	97.3	0.5	100		97	90	110			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 300.0**

File ID: **52** Batch ID: **28756K** Analysis Date: **05/17/2012 21:21**

Sample ID: **12051702-01ALFM** Units : **mg/L** Run ID: **IC_1_120517B** Prep Date: **05/17/2012 15:40**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	296	1.3	250	59.07	95	90	110			
Nitrite (NO2) - N	24.9	0.63	25	0	99	90	110			
Nitrate (NO3) - N	34.3	0.63	25	9.659	98	90	110			
Phosphate, ortho - P	28.5	1.3	25	0	114	90	110			M1
Sulfate (SO4)	567	1.3	500	82	97	90	110			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 300.0**

File ID: **53** Batch ID: **28756K** Analysis Date: **05/17/2012 21:40**

Sample ID: **12051702-01ALFMD** Units : **mg/L** Run ID: **IC_1_120517B** Prep Date: **05/17/2012 15:40**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Chloride	296	1.3	250	59.07	95	90	110	295.5	0.0(15)	
Nitrite (NO2) - N	25.4	0.63	25	0	102	90	110	24.87	2.2(15)	
Nitrate (NO3) - N	34.5	0.63	25	9.659	99	90	110	34.28	0.7(15)	
Phosphate, ortho - P	29.4	1.3	25	0	118	90	110	28.48	3.1(15)	M1
Sulfate (SO4)	570	1.3	500	82	98	90	110	567.4	0.5(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *31-May-12*

QC Summary Report

Work Order: 12051703

Method Blank

Type: **MBLK** Test Code: **EPA Method 314.0**

File ID: **14** Batch ID: **28790K** Analysis Date: **05/22/2012 17:20**

Sample ID: **MB-28790** Units : **µg/L** Run ID: **IC_3_120522A** Prep Date: **05/22/2012 16:24**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	ND	1								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 314.0**

File ID: **15** Batch ID: **28790K** Analysis Date: **05/22/2012 17:39**

Sample ID: **LFB-28790** Units : **µg/L** Run ID: **IC_3_120522A** Prep Date: **05/22/2012 16:24**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.1	2	25		100	85	115			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 314.0**

File ID: **26** Batch ID: **28790K** Analysis Date: **05/22/2012 21:01**

Sample ID: **12051602-02ALFM** Units : **µg/L** Run ID: **IC_3_120522A** Prep Date: **05/22/2012 16:24**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	25.8	2	25	1.02	99	85	115			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 314.0**

File ID: **27** Batch ID: **28790K** Analysis Date: **05/22/2012 21:20**

Sample ID: **12051602-02ALFMD** Units : **µg/L** Run ID: **IC_3_120522A** Prep Date: **05/22/2012 16:24**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Perchlorate	28.1	2	25	1.02	108	85	115	25.77	8.8(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *31-May-12*

QC Summary Report

Work Order: 12051703

Laboratory Control Spike Type: **LCS** Test Code: **SM2320B**

File ID: Batch ID: **W0518ALA** Analysis Date: **05/18/2012 08:46**

Sample ID: **LCS-W0518ALA** Units : **mg/L** Run ID: **WETLAB_120518F** Prep Date: **05/18/2012 08:46**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Bicarbonate (As CaCO3)	231.3	10	250		93	80	120			
Alkalinity, Carbonate (As CaCO3)	231.3	10	250		93	80	120			
Alkalinity, Total (As CaCO3 at pH 4.5)	231	10	250		93	80	120			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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QC Summary Report

Work Order: 12051703

Method Blank

Type: **MBLK** Test Code: **EPA Method 200.8**

File ID: **052512.B\017_M.D** Batch ID: **28811K** Analysis Date: **05/25/2012 14:23**

Sample ID: **MB-28811** Units : **mg/L** Run ID: **ICP/MS_120525A** Prep Date: **05/24/2012 12:57**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	ND	0.5								
Magnesium (Mg)	ND	0.5								
Potassium (K)	ND	0.5								
Calcium (Ca)	ND	0.5								
Chromium (Cr)	ND	0.005								
Iron (Fe)	ND	0.3								
Arsenic (As)	ND	0.002								
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 200.8**

File ID: **052512.B\018_M.D** Batch ID: **28811K** Analysis Date: **05/25/2012 14:28**

Sample ID: **LCS-28811** Units : **mg/L** Run ID: **ICP/MS_120525A** Prep Date: **05/24/2012 12:57**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	4.97	0.5	5		99	80	120			
Magnesium (Mg)	4.91	0.5	5		98	80	120			
Potassium (K)	4.87	0.5	5		97	80	120			
Calcium (Ca)	4.95	0.5	5		99	80	120			
Chromium (Cr)	0.0469	0.005	0.05		94	80	120			
Iron (Fe)	4.87	0.3	5		97	80	120			
Arsenic (As)	0.0458	0.002	0.05		92	80	120			
Lead (Pb)	0.0484	0.005	0.05		97	80	120			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method 200.8**

File ID: **052512.B\023_M.D** Batch ID: **28811K** Analysis Date: **05/25/2012 14:57**

Sample ID: **12051703-01AMS** Units : **mg/L** Run ID: **ICP/MS_120525A** Prep Date: **05/24/2012 12:57**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	48	0.5	5	42.11	118	80	120			
Magnesium (Mg)	20.5	0.5	5	15.1	109	80	120			
Potassium (K)	7.05	0.5	5	2.031	100	80	120			
Calcium (Ca)	52.3	0.5	5	45.94	126	80	120			M3
Chromium (Cr)	0.0478	0.005	0.05	0	96	80	120			
Iron (Fe)	5.88	0.3	5	0.6772	104	80	120			
Arsenic (As)	0.0511	0.002	0.05	0	102	80	120			
Lead (Pb)	0.0491	0.005	0.05	0	98	80	120			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method 200.8**

File ID: **052512.B\024_M.D** Batch ID: **28811K** Analysis Date: **05/25/2012 15:03**

Sample ID: **12051703-01AMSD** Units : **mg/L** Run ID: **ICP/MS_120525A** Prep Date: **05/24/2012 12:57**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Sodium (Na)	45.6	0.5	5	42.11	69	80	120	47.99	5.2(20)	M3
Magnesium (Mg)	19.5	0.5	5	15.1	89	80	120	20.53	4.9(20)	
Potassium (K)	6.69	0.5	5	2.031	93	80	120	7.052	5.3(20)	
Calcium (Ca)	48.7	0.5	5	45.94	56	80	120	52.26	7.0(20)	M3
Chromium (Cr)	0.043	0.005	0.05	0	86	80	120	0.04783	10.6(20)	
Iron (Fe)	5.5	0.3	5	0.6772	96	80	120	5.88	6.8(20)	
Arsenic (As)	0.046	0.002	0.05	0	92	80	120	0.0511	10.4(20)	
Lead (Pb)	0.0475	0.005	0.05	0	95	80	120	0.04914	3.4(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha uses descriptive data qualifier flags, which could be replaced with either a DOD Q or J flag.

M3 = The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to the spike level. The method control sample recovery was acceptable.

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QC Summary Report

Work Order: 12051703

Laboratory Control Spike Type **LCS** Test Code: **EPA Method 150.1 / SM4500HB / SW9040C**

File ID: Batch ID: **W0517PH** Analysis Date: **05/17/2012 16:18**

Sample ID: **LCS-W0517PH** Units : **pH Units** Run ID: **WETLAB_120517C** Prep Date: **05/17/2012 16:18**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
pH	4.96	1.7	5		99	90	110			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *30-May-12*

QC Summary Report

Work Order: 12051703

Method Blank

Type: **MBLK** Test Code: **SM2540C**

File ID: Batch ID: **W0522DS** Analysis Date: **05/23/2012 00:00**

Sample ID: **MBLK-W0522DS** Units : **mg/L** Run ID: **WETLAB_120522D** Prep Date: **05/23/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type: **LCS** Test Code: **SM2540C**

File ID: Batch ID: **W0522DS** Analysis Date: **05/23/2012 00:00**

Sample ID: **LCS-W0522DS** Units : **mg/L** Run ID: **WETLAB_120522D** Prep Date: **05/23/2012 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	97	10	100		97	70	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *31-May-12*

QC Summary Report

Work Order: 12051703

Method Blank Type: **MBLK** Test Code: **EPA Method SW8260B**

File ID: **12052508.D** Batch ID: **MS15W0525M** Analysis Date: **05/25/2012 13:30**

Sample ID: **MBLK MS15W0525M** Units : **µg/L** Run ID: **MSD_15_120525B** Prep Date: **05/25/2012 13:30**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	0.5								
Chloromethane	ND	1								
Vinyl chloride	ND	0.5								
Chloroethane	ND	0.5								
Bromomethane	ND	1								
Trichlorofluoromethane	ND	0.5								
Acetone	ND	10								
1,1-Dichloroethene	ND	0.5								
Dichloromethane	ND	1								
Freon-113	ND	0.5								
trans-1,2-Dichloroethene	ND	0.5								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	0.5								
2-Butanone (MEK)	ND	10								
cis-1,2-Dichloroethene	ND	0.5								
Bromochloromethane	ND	0.5								
Chloroform	ND	0.5								
2,2-Dichloropropane	ND	0.5								
1,2-Dichloroethane	ND	0.5								
1,1,1-Trichloroethane	ND	0.5								
1,1-Dichloropropene	ND	0.5								
Carbon tetrachloride	ND	0.5								
Benzene	ND	0.5								
Dibromomethane	ND	0.5								
1,2-Dichloropropane	ND	0.5								
Trichloroethene	ND	0.5								
Bromodichloromethane	ND	0.5								
4-Methyl-2-pentanone (MIBK)	ND	2.5								
cis-1,3-Dichloropropene	ND	0.5								
trans-1,3-Dichloropropene	ND	0.5								
1,1,2-Trichloroethane	ND	0.5								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	0.5								
2-Hexanone	ND	5								
Dibromochloromethane	ND	0.5								
1,2-Dibromoethane (EDB)	ND	1								
Tetrachloroethene	ND	0.5								
1,1,1,2-Tetrachloroethane	ND	0.5								
Chlorobenzene	ND	0.5								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	0.5								
Styrene	ND	0.5								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	0.5								
1,2,3-Trichloropropane	ND	1								
Isopropylbenzene	ND	0.5								
Bromobenzene	ND	0.5								
n-Propylbenzene	ND	0.5								
4-Chlorotoluene	ND	0.5								
2-Chlorotoluene	ND	0.5								
1,3,5-Trimethylbenzene	ND	0.5								
tert-Butylbenzene	ND	0.5								
1,2,4-Trimethylbenzene	ND	0.5								
sec-Butylbenzene	ND	0.5								
1,3-Dichlorobenzene	ND	0.5								
1,4-Dichlorobenzene	ND	0.5								
4-Isopropyltoluene	ND	0.5								
1,2-Dichlorobenzene	ND	0.5								
n-Butylbenzene	ND	0.5								
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.5								
1,2,4-Trichlorobenzene	ND	1								
Naphthalene	ND	1								
Hexachlorobutadiene	ND	1								
1,2,3-Trichlorobenzene	ND	1								

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Date: *31-May-12*

QC Summary Report

Work Order: 12051703

Surr: 1,2-Dichloroethane-d4	10.2	10	102	70	130
Surr: Toluene-d8	10.4	10	104	70	130
Surr: 4-Bromofluorobenzene	9.21	10	92	70	130

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Date: 31-May-12

QC Summary Report

Work Order: 12051703

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method SW8260B**

File ID: **12052506.D** Batch ID: **MS15W0525M** Analysis Date: **05/25/2012 12:47**

Sample ID: **LCS MS15W0525M** Units : **µg/L** Run ID: **MSD_15_120525B** Prep Date: **05/25/2012 12:47**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	12.4	1	10		124	70	130			
Chloromethane	8.44	2	10		84	70	130			
Vinyl chloride	10.6	1	10		106	70	130			
Chloroethane	8.98	1	10		90	70	130			
Bromomethane	7.3	2	10		73	70	130			
Trichlorofluoromethane	9.92	1	10		99	70	130			
Acetone	253	10	200		126	36	171			
1,1-Dichloroethene	10.1	1	10		101	70	130			
Dichloromethane	8.62	2	10		86	70	130			
Freon-113	10.7	1	10		107	70	137			
trans-1,2-Dichloroethene	9.91	1	10		99	70	130			
Methyl tert-butyl ether (MTBE)	8.42	0.5	10		84	70	130			
1,1-Dichloroethane	9.59	1	10		96	70	130			
2-Butanone (MEK)	240	10	200		120	70	130			
cis-1,2-Dichloroethene	9.7	1	10		97	70	130			
Bromochloromethane	9.72	1	10		97	70	130			
Chloroform	8.74	1	10		87	70	130			
2,2-Dichloropropane	9.15	1	10		92	70	130			
1,2-Dichloroethane	9.4	1	10		94	70	130			
1,1,1-Trichloroethane	10.1	1	10		101	70	130			
1,1-Dichloropropene	10.6	1	10		106	70	130			
Carbon tetrachloride	9.2	1	10		92	70	130			
Benzene	9.53	0.5	10		95	70	130			
Dibromomethane	9.27	1	10		93	70	130			
1,2-Dichloropropane	8.75	1	10		88	70	130			
Trichloroethene	9.92	1	10		99	70	130			
Bromodichloromethane	8.71	1	10		87	70	130			
4-Methyl-2-pentanone (MIBK)	22.5	2.5	25		90	20	182			
cis-1,3-Dichloropropene	8.7	1	10		87	70	130			
trans-1,3-Dichloropropene	8.46	1	10		85	70	130			
1,1,2-Trichloroethane	9.41	1	10		94	70	130			
Toluene	9.28	0.5	10		93	70	130			
1,3-Dichloropropane	9.29	1	10		93	70	130			
2-Hexanone	116	5	100		116	20	182			
Dibromochloromethane	8.54	1	10		85	70	130			
1,2-Dibromoethane (EDB)	18.2	2	20		91	70	130			
Tetrachloroethene	10.2	1	10		102	70	130			
1,1,1,2-Tetrachloroethane	10.2	1	10		102	70	130			
Chlorobenzene	9.73	1	10		97	70	130			
Ethylbenzene	9.51	0.5	10		95	70	130			
m,p-Xylene	9.37	0.5	10		94	70	130			
Bromoform	8.19	1	10		82	70	130			
Styrene	8.34	1	10		83	70	130			
o-Xylene	9.25	0.5	10		93	70	130			
1,1,2,2-Tetrachloroethane	8.98	1	10		90	70	130			
1,2,3-Trichloropropane	19.1	2	20		95	70	130			
Isopropylbenzene	9.43	1	10		94	70	130			
Bromobenzene	9.54	1	10		95	70	130			
n-Propylbenzene	9.8	1	10		98	70	130			
4-Chlorotoluene	9.71	1	10		97	70	130			
2-Chlorotoluene	9.56	1	10		96	70	130			
1,3,5-Trimethylbenzene	9.82	1	10		98	70	130			
tert-Butylbenzene	9.64	1	10		96	70	130			
1,2,4-Trimethylbenzene	9.8	1	10		98	70	130			
sec-Butylbenzene	9.85	1	10		99	70	130			
1,3-Dichlorobenzene	9.05	1	10		91	70	130			
1,4-Dichlorobenzene	9.47	1	10		95	70	130			
4-Isopropyltoluene	10	1	10		100	70	130			
1,2-Dichlorobenzene	9.03	1	10		90	70	130			
n-Butylbenzene	9.83	1	10		98	70	130			
1,2-Dibromo-3-chloropropane (DBCP)	45.1	3	50		90	67	130			
1,2,4-Trichlorobenzene	9.08	2	10		91	70	130			
Naphthalene	7.64	2	10		76	70	130			
Hexachlorobutadiene	19.6	2	20		98	70	130			
1,2,3-Trichlorobenzene	7.93	2	10		79	70	130			

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QC Summary Report

Work Order: 12051703

Surr: 1,2-Dichloroethane-d4	10.9	10	109	70	130
Surr: Toluene-d8	10	10	100	70	130
Surr: 4-Bromofluorobenzene	9.29	10	93	70	130

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Date: 31-May-12

QC Summary Report

Work Order: 12051703

Sample Matrix Spike Type: **MS** Test Code: **EPA Method SW8260B**

File ID: **12052520.D** Batch ID: **MS15W0525M** Analysis Date: **05/25/2012 18:00**

Sample ID: **12051703-01AMS** Units : **µg/L** Run ID: **MSD_15_120525B** Prep Date: **05/25/2012 18:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	65.1	2.5	50	0	130	21	138			
Chloromethane	50.2	10	50	0	100	23	144			
Vinyl chloride	62.1	2.5	50	0	124	49	136			
Chloroethane	51.8	2.5	50	0	104	21	159			
Bromomethane	42.3	10	50	0	85	10	174			
Trichlorofluoromethane	60.1	2.5	50	0	120	32	154			
Acetone	630	50	1000	0	63	10	171			
1,1-Dichloroethene	54.5	2.5	50	0	109	64	130			
Dichloromethane	47.2	10	50	0	94	69	130			
Freon-113	58.4	2.5	50	0	117	55	141			
trans-1,2-Dichloroethene	53.2	2.5	50	0	106	63	130			
Methyl tert-butyl ether (MTBE)	49.4	1.3	50	0	99	47	150			
1,1-Dichloroethane	52.2	2.5	50	0	104	66	130			
2-Butanone (MEK)	771	50	1000	0	77	23	182			
cis-1,2-Dichloroethene	53.3	2.5	50	0	107	70	130			
Bromochloromethane	54.4	2.5	50	0	109	70	132			
Chloroform	47.5	2.5	50	0	95	70	130			
2,2-Dichloropropane	49.6	2.5	50	0	99	38	154			
1,2-Dichloroethane	53.3	2.5	50	0	107	65	134			
1,1,1-Trichloroethane	55.7	2.5	50	0	111	65	136			
1,1-Dichloropropene	57.1	2.5	50	0	114	68	132			
Carbon tetrachloride	50	2.5	50	0	100	58	148			
Benzene	51.6	1.3	50	0	103	59	138			
Dibromomethane	52.7	2.5	50	0	105	70	130			
1,2-Dichloropropane	48.3	2.5	50	0	97	70	131			
Trichloroethene	53.1	2.5	50	0	106	65	144			
Bromodichloromethane	48.1	2.5	50	0	96	50	157			
4-Methyl-2-pentanone (MIBK)	116	13	125	0	93	20	182			
cis-1,3-Dichloropropene	46.8	2.5	50	0	94	63	131			
trans-1,3-Dichloropropene	47.4	2.5	50	0	95	65	136			
1,1,2-Trichloroethane	52.4	2.5	50	0	105	70	131			
Toluene	49.5	1.3	50	0	99	68	130			
1,3-Dichloropropane	52.7	2.5	50	0	105	70	130			
2-Hexanone	367	25	500	0	73	20	182			
Dibromochloromethane	48	2.5	50	0	96	42	155			
1,2-Dibromoethane (EDB)	103	5	100	0	103	70	130			
Tetrachloroethene	53.6	2.5	50	0	107	65	130			
1,1,1,2-Tetrachloroethane	56.1	2.5	50	0	112	70	130			
Chlorobenzene	51.9	2.5	50	0	104	70	130			
Ethylbenzene	50.6	1.3	50	0	101	68	130			
m,p-Xylene	49.7	1.3	50	0	99	68	131			
Bromoform	46.5	2.5	50	0	93	65	143			
Styrene	44	2.5	50	0	88	59	153			
o-Xylene	48.8	1.3	50	0	98	70	130			
1,1,2,2-Tetrachloroethane	51.3	2.5	50	0	103	67	130			
1,2,3-Trichloropropane	108	10	100	0	108	70	130			
Isopropylbenzene	50.2	2.5	50	0	100	55	138			
Bromobenzene	51.4	2.5	50	0	103	70	130			
n-Propylbenzene	51.7	2.5	50	0	103	67	133			
4-Chlorotoluene	51.5	2.5	50	0	103	70	130			
2-Chlorotoluene	50.4	2.5	50	0	101	70	130			
1,3,5-Trimethylbenzene	51.4	2.5	50	0	103	67	134			
tert-Butylbenzene	50.6	2.5	50	0	101	55	147			
1,2,4-Trimethylbenzene	51.5	2.5	50	0	103	65	135			
sec-Butylbenzene	51.3	2.5	50	0	103	68	135			
1,3-Dichlorobenzene	48.4	2.5	50	0	97	70	130			
1,4-Dichlorobenzene	51	2.5	50	0	102	70	130			
4-Isopropyltoluene	51.7	2.5	50	0	103	68	132			
1,2-Dichlorobenzene	48.8	2.5	50	0	98	70	130			
n-Butylbenzene	50.9	2.5	50	0	102	62	134			
1,2-Dibromo-3-chloropropane (DBCP)	262	15	250	0	105	64	130			
1,2,4-Trichlorobenzene	49	10	50	0	98	62	133			
Naphthalene	44.2	10	50	0	88	32	166			
Hexachlorobutadiene	98.4	10	100	0	98	63	130			
1,2,3-Trichlorobenzene	42.3	10	50	0	85	55	138			

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *31-May-12*

QC Summary Report

Work Order: 12051703

Surr: 1,2-Dichloroethane-d4	53.2	50	106	70	130
Surr: Toluene-d8	49.6	50	99	70	130
Surr: 4-Bromofluorobenzene	47	50	94	70	130

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: 31-May-12

QC Summary Report

Work Order: 12051703

Sample Matrix Spike Duplicate Type: **MSD** Test Code: **EPA Method SW8260B**

File ID: **12052521.D** Batch ID: **MS15W0525M** Analysis Date: **05/25/2012 18:22**

Sample ID: **12051703-01AMSD** Units : **µg/L** Run ID: **MSD_15_120525B** Prep Date: **05/25/2012 18:22**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	61.9	2.5	50	0	124	21	138	65.06	5.0(33)	
Chloromethane	44.9	10	50	0	90	23	144	50.2	11.3(27)	
Vinyl chloride	59.9	2.5	50	0	120	49	136	62.07	3.5(21)	
Chloroethane	48.2	2.5	50	0	96	21	159	51.75	7.2(40)	
Bromomethane	44.2	10	50	0	88	10	174	42.33	4.3(40)	
Trichlorofluoromethane	56.6	2.5	50	0	113	32	154	60.13	6.1(37)	
Acetone	597	50	1000	0	60	10	171	630.4	5.4(23)	
1,1-Dichloroethene	51.7	2.5	50	0	103	64	130	54.5	5.2(21)	
Dichloromethane	44.7	10	50	0	89	69	130	47.2	5.5(20)	
Freon-113	55	2.5	50	0	110	55	141	58.4	6.0(40)	
trans-1,2-Dichloroethene	51.4	2.5	50	0	103	63	130	53.24	3.5(20)	
Methyl tert-butyl ether (MTBE)	46.4	1.3	50	0	93	47	150	49.38	6.3(40)	
1,1-Dichloroethane	49.5	2.5	50	0	99	66	130	52.2	5.3(20)	
2-Butanone (MEK)	730	50	1000	0	73	23	182	771.4	5.5(22)	
cis-1,2-Dichloroethene	51.1	2.5	50	0	102	70	130	53.26	4.2(20)	
Bromochloromethane	51.8	2.5	50	0	104	70	132	54.44	5.0(20)	
Chloroform	45.4	2.5	50	0	91	70	130	47.47	4.5(20)	
2,2-Dichloropropane	47.1	2.5	50	0	94	38	154	49.55	5.1(22)	
1,2-Dichloroethane	50.4	2.5	50	0	101	65	134	53.27	5.6(20)	
1,1,1-Trichloroethane	52.7	2.5	50	0	105	65	136	55.65	5.4(20)	
1,1-Dichloropropene	54.6	2.5	50	0	109	68	132	57.06	4.3(20)	
Carbon tetrachloride	48.8	2.5	50	0	98	58	148	50.04	2.5(20)	
Benzene	49	1.3	50	0	98	59	138	51.57	5.0(21)	
Dibromomethane	50.1	2.5	50	0	100	70	130	52.73	5.1(20)	
1,2-Dichloropropane	46.5	2.5	50	0	93	70	131	48.32	3.9(20)	
Trichloroethene	50.9	2.5	50	0	102	65	144	53.07	4.2(20)	
Bromodichloromethane	46.4	2.5	50	0	93	50	157	48.11	3.7(20)	
4-Methyl-2-pentanone (MIBK)	109	13	125	0	87	20	182	115.9	5.9(20)	
cis-1,3-Dichloropropene	45	2.5	50	0	90	63	131	46.79	3.9(20)	
trans-1,3-Dichloropropene	45.3	2.5	50	0	91	65	136	47.41	4.6(20)	
1,1,2-Trichloroethane	50.2	2.5	50	0	100	70	131	52.37	4.3(20)	
Toluene	47.1	1.3	50	0	94	68	130	49.49	5.0(20)	
1,3-Dichloropropane	49.7	2.5	50	0	99	70	130	52.68	5.8(20)	
2-Hexanone	346	25	500	0	69	20	182	367.5	5.9(20)	
Dibromochloromethane	45.5	2.5	50	0	91	42	155	47.95	5.4(20)	
1,2-Dibromoethane (EDB)	97.6	5	100	0	98	70	130	103.3	5.7(20)	
Tetrachloroethene	51.8	2.5	50	0	104	65	130	53.63	3.5(20)	
1,1,1,2-Tetrachloroethane	54.1	2.5	50	0	108	70	130	56.06	3.6(20)	
Chlorobenzene	49.9	2.5	50	0	99.8	70	130	51.85	3.8(20)	
Ethylbenzene	48.7	1.3	50	0	97	68	130	50.58	3.8(20)	
m,p-Xylene	47.7	1.3	50	0	95	68	131	49.66	4.1(20)	
Bromoform	44.7	2.5	50	0	89	65	143	46.47	3.9(20)	
Styrene	42.7	2.5	50	0	85	59	153	44.03	3.1(37)	
o-Xylene	47.1	1.3	50	0	94	70	130	48.8	3.5(20)	
1,1,2,2-Tetrachloroethane	48.9	2.5	50	0	98	67	130	51.27	4.8(20)	
1,2,3-Trichloropropane	102	10	100	0	102	70	130	107.7	5.9(20)	
Isopropylbenzene	48.7	2.5	50	0	97	55	138	50.21	3.0(20)	
Bromobenzene	50.2	2.5	50	0	100	70	130	51.44	2.5(20)	
n-Propylbenzene	50.6	2.5	50	0	101	67	133	51.65	2.1(30)	
4-Chlorotoluene	50.3	2.5	50	0	101	70	130	51.53	2.4(20)	
2-Chlorotoluene	49.1	2.5	50	0	98	70	130	50.39	2.5(20)	
1,3,5-Trimethylbenzene	50.1	2.5	50	0	100	67	134	51.4	2.6(21)	
tert-Butylbenzene	49.4	2.5	50	0	99	55	147	50.63	2.5(20)	
1,2,4-Trimethylbenzene	49.9	2.5	50	0	99.8	65	135	51.46	3.1(25)	
sec-Butylbenzene	50.3	2.5	50	0	101	68	135	51.31	2.0(20)	
1,3-Dichlorobenzene	46.9	2.5	50	0	94	70	130	48.42	3.2(20)	
1,4-Dichlorobenzene	49.3	2.5	50	0	99	70	130	51.03	3.5(20)	
4-Isopropyltoluene	51.2	2.5	50	0	102	68	132	51.73	1.1(20)	
1,2-Dichlorobenzene	47	2.5	50	0	94	70	130	48.84	3.8(20)	
n-Butylbenzene	50.2	2.5	50	0	100	62	134	50.88	1.3(21)	
1,2-Dibromo-3-chloropropane (DBCP)	251	15	250	0	100	64	130	262.3	4.6(20)	
1,2,4-Trichlorobenzene	47.6	10	50	0	95	62	133	49.03	2.9(29)	
Naphthalene	42.2	10	50	0	84	32	166	44.2	4.7(40)	
Hexachlorobutadiene	98.9	10	100	0	99	63	130	98.35	0.6(21)	
1,2,3-Trichlorobenzene	40.7	10	50	0	81	55	138	42.25	3.8(36)	

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *31-May-12*

QC Summary Report

Work Order: 12051703

Surr: 1,2-Dichloroethane-d4	56		50	112	70	130
Surr: Toluene-d8	49.3		50	99	70	130
Surr: 4-Bromofluorobenzene	47.2		50	94	70	130

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

CA

WorkOrder : BMIS12051703

Report Due By : 5:00 PM On : 01-Jun-12

Client:
Battelle Memorial Institute
655 West Broadway
Suite 1420
San Diego, CA 92101

Report Attention	Phone Number	EMail Address
David Conner	(619) 726-7311 x	connerd@battelle.org
Betsy Cutie	(614) 424-4899 x	cutiee@batelle.org
Shane Walton	(614) 424-4117 x	waltons@battelle.org

EDD Required : **Yes**

Sampled by : Chase Brogden

PO : 286215

Client's COC # : 53771 Job : 100006114/ JPL Groundwater Monitoring

Cooler Temp	Samples Received	Date Printed
2 °C	17-May-12	17-May-12

QC Level : DS4 = DOD QC Required : Final Rpt, MBLK, InitCal/ConCal data, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	314_W	ALKALINITY_W	METALS_DW	PH_W	TDS_W	VOC_BMI_TIC_W	VOC_W	Sample Remarks
BMI12051703-01A	MW-26-2	AQ	05/15/12 08:27	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051703-02A	MW-26-1	AQ	05/15/12 08:56	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051703-03A	EB-15-5/16/12	AQ	05/15/12 08:45	5	0	10	Cl, NO3, NO2,SO4, P	Perchlorate	Alk (Bicarb/ carb)	Cr, Pb, Ca, Mg, As, Fe, Na, K	pH	TDS	VOC by 524 Criteria	VOC by 524 Criteria	
BMI12051703-04A	TB-15-5/16/12	AQ	05/15/12 07:00	1	0	10							VOC by 524 Criteria	VOC by 524 Criteria	Reno Trip Blank 4/2/12

Comments: No Security Seals. Frozen Ice. Temp. Blank #8966 received @ 2°C. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Level IV QC. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Sara Coffee	Sara Coffee	Alpha Analytical, Inc.	5/17/12 10:52

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

53771

Billing Information:
Company Name BATTELLE
Attn: GERALD TOMPKINS
Address 505 KING AVE
City, State, Zip COLUMBUS, OH 43201
Phone Number _____ Fax _____

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
Phone (775) 355-1044
Fax (775) 355-0406

Samples Collected From Which State?
AZ ____ CA X NV ____ WA ____ DOD Site ____
ID ____ OR ____ OTHER ____ Page # 1 of 1

Consultant / Client Name BATTELLE / DAVID CONNEN
Address 3990 OLD TOWN AVE, C-205
City, State, Zip SAN DIEGO, CA 92110

Job # 400006114 / PO# 286479
Job Name JPL GW MON. 2012

Report Attention / Project Manager
Name: DAVID CONNEN
Email: Connend@battelle.org
Phone: _____ Mobile (619) 726-7311

Data Validation Level: II / III or IV

EDD / EDF? YES ____ NO ____
Global ID # _____

Time Sampled	Date Sampled	Matrix* See Key Below	Lab ID Number (Office Use Only)	Sample Description	TAT	Field Filtered	# Containers**	(624.2) VOCs	(200.8) *	(314.0) Perchlorate	(SM2320B, SM2540C, 150.2) *	(300.0) *			REMARKS
0927	5/15/12	AQ	BMI1205170 3-01A	MW-26-2			3v, 2p	X	X	X	X	X			
0856	5/15/12	AQ	-02A	MW-26-1			3v, 2p	X	X	X	X	X			
0845	5/15/12	AQ	-03A	EB-15-5/16/12			3v, 2p	X	X	X	X	X			EQUIP BLANK
0700	5/15/12	AQ	-04A	TB-15-5/16/12			1v	X							TRIP BLANK

FOR LAB USE ONLY

ADDITIONAL INSTRUCTIONS: *(200.8) - TOTAL Cr, LEAD, ARSENIC, [GENCHEM: Na, K, Ca, Mg, Fe]. *(SM2320B, SM2540C, 150.2) - CO_3, HCO_3, TDS, PH, ALK. *(300.0) - CHLORIDE, NITRATE, NITRITE, SULFATE, O-PHOSPHATE.

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled By: CHASE BRADDON

Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:
[signature] / INSIGHT	FED-EX tracking # 8989 1206 8576	5/15/12	1200
Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:
	[signature] / alpha	5/17/12	10:47
Relinquished by: (Signature/Affiliation)	Received by: (Signature/Affiliation)	Date:	Time:

*Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

CAS

LABORATORY REPORT

May 9, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on April 23, 2012. For your reference, these analyses have been assigned our service request number P1201572.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 9:47 am, May 09, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114
Service Request No: P1201572

CASE NARRATIVE

The samples were received intact under chain of custody on April 23, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q12 / 100006114
Service Request: P1201572

Date Received: 4/23/2012
Time Received: 15:23

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-14-5	P1201572-001	Water	4/23/2012	09:34	X
MW-14-4	P1201572-002	Water	4/23/2012	10:12	X
MW-14-3	P1201572-003	Water	4/23/2012	11:21	X
MW-14-2	P1201572-004	Water	4/23/2012	11:55	X
MW-14-1	P1201572-005	Water	4/23/2012	12:28	X
EB-1-4/23/12	P1201572-006	Water	4/23/2012	12:15	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P1201572

CAS Contact:

Company Name & Address (Reporting Information)	Project Name	P.O. # / Billing Information
BATTELLE 3990 OLD TOWN AVE., C-205 SAN DIEGO, CA 92110	JPL GW MON. 2012 Project Number 100006114	#285651/BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS OH 43201

Project Manager	Phone	Fax
DAVID CONNER	(619) 726-7311	(619) 458-6641

Email Address for Result Reporting	Sampler (Print & Sign)
Connerd@battelle.org	CHASE BROWN

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 Cr VI (7196A)	0 1,4-Dioxane (8270 Sim)	7 NDMA (521)	Remarks
MW-14-5	1	4/23/12	0934	GW	1							X			
MW-14-4	2		1012		2							X			MS/MSD
MW-14-3	3		1121		1							X			
MW-14-2	4		1155		1							X			
MW-14-1	5	4/23/12	1228		1							X			
EB-1-4/23/12	6	4/23/12	1215	GW	1							X			EQUIP BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 4/23/12	Time: 1840	Received by: (Signature)	Date: 4/23/12	Time: 1747
Relinquished by: (Signature)	Date: 4/23/12	Time: 1523	Received by: (Signature)	Date: 4/23/12	Time: 1523
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 2 °C

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Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Service Request: P1201572

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201572-001.01					
	7196A				
		4/23/12	1529	SMO / MZAMORA	
		4/23/12	1530	P-37 / MZAMORA	
		4/23/12	1549	In Lab / EIBARRA	
		4/24/12	0857	P-37 / EIBARRA	
P1201572-002.01					
	7196A				
		4/23/12	1529	SMO / MZAMORA	
		4/23/12	1530	P-37 / MZAMORA	
		4/23/12	1550	In Lab / EIBARRA	
		4/24/12	0857	P-37 / EIBARRA	
P1201572-002.02					
		4/23/12	1529	SMO / MZAMORA	
		4/23/12	1530	P-37 / MZAMORA	
		4/23/12	1550	In Lab / EIBARRA	
		4/24/12	0857	P-37 / EIBARRA	
P1201572-003.01					
	7196A				
		4/23/12	1529	SMO / MZAMORA	
		4/23/12	1530	P-37 / MZAMORA	
		4/23/12	1549	In Lab / EIBARRA	
		4/24/12	0857	P-37 / EIBARRA	
P1201572-004.01					
	7196A				
		4/23/12	1529	SMO / MZAMORA	
		4/23/12	1530	P-37 / MZAMORA	
		4/23/12	1549	In Lab / EIBARRA	
		4/24/12	0857	P-37 / EIBARRA	
P1201572-005.01					
	7196A				
		4/23/12	1529	SMO / MZAMORA	
		4/23/12	1530	P-37 / MZAMORA	
		4/23/12	1549	In Lab / EIBARRA	
		4/24/12	0857	P-37 / EIBARRA	
P1201572-006.01					
	7196A				
		4/23/12	1529	SMO / MZAMORA	
		4/23/12	1530	P-37 / MZAMORA	
		4/23/12	1550	In Lab / EIBARRA	
		4/24/12	0857	P-37 / EIBARRA	

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Sample Acceptance Check Form

Client: Battelle Work order: P1201572

Project: JPL GW Mon 2Q12 / 100006114

Sample(s) received on: 4/23/12 Date opened: 4/23/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 2° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201572-001.01	125mL Plastic NP					
P1201572-002.01	125mL Plastic NP					
P1201572-002.02	125mL Plastic NP					
P1201572-003.01	125mL Plastic NP					
P1201572-004.01	125mL Plastic NP					
P1201572-005.01	125mL Plastic NP					
P1201572-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201572
Date Collected : 04/23/12
Date Received : 04/23/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-14-5	P1201572-001	0.010	0.003	1	NA	04/23/12 19:00	ND	
MW-14-4	P1201572-002	0.010	0.003	1	NA	04/23/12 19:00	ND	
MW-14-3	P1201572-003	0.010	0.003	1	NA	04/23/12 19:00	ND	
MW-14-2	P1201572-004	0.010	0.003	1	NA	04/23/12 19:00	ND	
MW-14-1	P1201572-005	0.010	0.003	1	NA	04/23/12 19:00	ND	
EB-1-4/23/12	P1201572-006	0.010	0.003	1	NA	04/23/12 19:00	ND	
Method Blank	P1201572-MB	0.010	0.003	1	NA	04/23/12 19:00	ND	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201572
Date Analyzed: 04/23/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 5/9/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201572
Date Analyzed: 04/23/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0518	104	90-110
CCV1	0.0500	0.0510	102	90-110
CCV2	0.0500	0.0518	104	90-110

Approved By: Karen Ryan Date: 5/9/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201572
Date Collected : NA
Date Received : NA
Date Extracted : NA
Date Analyzed : 04/23/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name : Laboratory Control Sample
Lab Code : P1201572-LCS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0402	101	92-110	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201572
Date Collected : 04/23/12
Date Received : 04/23/12
Date Extracted : NA
Date Analyzed : 04/23/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-14-4
Lab Code : P1201572-002MS P1201572-002DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0448	0.0471	90	94	69-119	5	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P1201572 ; P1201573

Time: 1700

Sample	VWR lot #	Exp.
pH 2 Buffer	524-05201101	Dec 2012
pH 4 Buffer	524-10241101	2/18/2013
pH 7 Buffer	524-10211101	Jul 2013
pH 10 Buffer	524-10241103	2/18/2013

Slope	Prep.Run #
98.9%	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C	Sample	#	pH	Temp. °C
pH 2.000	3	2.007	22.5	pH 2.000	3	2.014	22.4
pH 4.000		4.003	23.0				
pH 7.000		7.002	22.9				
pH 10.000		10.000	22.8				
Ref#: pH738 Exp 8/2013 524-10241102		7.388 10.07	23.1				
PI		2.156	21.9				
P1201572 -1.01		1.866	17.8				
-2.01		2.112	18.0			SPACE NOT USED	
-3.01		2.191	17.9				
-4.01		2.233	18.1				
-5.01		2.174	18.4				
pH 2.000		2.004	22.4				
P1201572-6.01		2.030	18.8				
P1201573-1.01		2.157	18.7				
-2.02		2.083	18.6				
-3.03		2.126	19.0				
-4.01		2.087	19.1				

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 44284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

_____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 4/23/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: EI Date: 4/23/12

Reviewer: KR Date: 4/24/12

pH

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201572, P1201573 Run#: 284483

Stock#: S24-02231201 TV=10PPM Exp 8/13/12 Prep Run#: —

ICV/CCV#: S24-03271701 TV=100PPM Exp 7/2013 Conc. H_2SO_4 Lot#: EMD 49284 Exp 11/20/14

Coloring Reagent Ref#: S24-04161203 EXP: 5/16/12

Working Curve:

Prep Dilution	NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L	0.00	0.01	0.05	0.1	0.99981238
Absorbance @ 540 nm	0	0.011	0.063	0.129	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10mL	—	✓	0.000	0.000	0.000	0.000864	<0.003
2	ICV 0.05 PPM		—	✓	0.000	0.066	0.066	0.0518	104%
3	MB		—	✓	0.000	0.000	0.000	0.000864	<0.003
4	LCS 0.04 PPM		—	✓	0.000	0.051	0.051	0.0402	100%
5	P1201572-1.01		—	✓	0.000	~~0.037~~ 0.000 EI 4/23/12	0.000	0.000864	<0.003
6	-1.01 VS 0.03 PPM		—	✓	0.000	0.037	0.037	0.0294	98%
7	-2.01		—	✓	0.000	0.000	0.000	~~0.000~~ 0.000864 EI	<0.003
8	-2.01 MS 0.05 PPM		—	✓	0.000	~~0.045~~ 0.057	~~0.045~~ 0.057	~~0.045~~ 0.0448 4/23/12	90% 5%
9	-2.01 MSD		—	✓	0.000	0.060	0.060	0.0471	94% RPD
10	-3.01		—	✓	0.001	0.001	0.000	0.000864	<0.003
11	-4.01		—	✓	0.000	0.001	0.001	0.00164	<0.003
12	-5.01		—	✓	0.000	0.000	0.000	0.000864	<0.003
13	CCV 1 0.05 PPM		—	✓	0.000	~~0.0510~~ 0.065 EI 4/23/12	0.065	0.0510	102%
14	CCB 1		—	✓	0.000	0.000	0.000	0.000864	<0.003
15	P1201572-6.01		—	✓	0.000	0.000	0.000	0.000864	<0.003
16	P1201573-1.01		—	✓	0.000	0.001	0.001	0.00164	<0.003
17	P1201573-1.01 VS 0.03 PPM		—	✓	0.000	0.039	0.039	0.0309	103%

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of S24-03271701 @ 1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-02231201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of — ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of — @ 1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: LI Date/Time: 4/23/12 @ 1830

Analyzed By: EI Date/Time: 4/23/12 @ 1900

Reviewed By: KK Date: 4/24/12

Columbia Analytical Services

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201572 , P1201573 Run#: 289183

Stock#: 524-02231201 TV = 10 PPM Exp 8/23/12 Prep Run#: —

ICV/CCV#: 524-03271201 TV=100 PPM Exp 7/2013 Conc. H_2SO_4 Lot#: EMD 49284 Exp 11/20/14

Coloring Reagent Ref#: 524-04161203 Exp 5/16/12

Working Curve:

Prep Dilution	*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L	*0.00*	*0.01*	*0.05*	*0.1*	0.9998712 38
Absorbance @ 540 nm	0	0.011	0.063	0.129	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	P1201573 - 2.03	10mL	—	✓	0.000	0.000	0.000	0.000864	<0.003
2	-3.03		—	✓	0.000	0.001	0.001	0.00164	<0.003
3	-4.01		—	✓	0.000	0.000	0.000	0.000864	<0.003
4	-4.01 MS 0.05 PPM		—	✓	0.000	0.058	0.058	0.0456	91% } 2% RPD
5	-4.01 MSD		—	✓	0.000	0.059	0.059	0.0464	93% }
6	CCV 2		—	✓	0.000	0.066	0.066	0.0518	104%
7	CCB 2		—	✓	0.000	0.000	0.000	0.000864	<0.003
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of 524-03271201 @ 1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-02231201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of _____ ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @ 1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments: _____

Prepared By: EI Date/Time: 4/23/12 @ 1830

Analyzed By: EI Date/Time: 4/23/12 @ 1900

Reviewed By: KR Date: 4/24/12

Cr6LIQ.xls

5/19/11 JR

S24-05191103 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JT5064-1 exp: 6/15/14) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4928-4 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JR

S24-05201101 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT # 110225
EXP: 12/2013

5/20/11 JR

S24-05201103 pH 4.007 BUFFER
Purchased
JT Baker CAT # 5657-01 500mL
LOT # J36503
EXP: 9/30/13

5/20/11 JR

S24-05201103 pH 7.~~38~~ BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT # 1103361
EXP: 3/2013

10/17/11 SZ

S24-10171102 1000PPM NH3
0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL
10/ S24-10171101 (0.1N H_2SO_4 EXP. 10/17/12)
EXP: 4/17/12

10/17/11 SZ

S24-10171103 IC2 Eluent
100 mL of S24-09201103 (10x conc Eluent; EXP: 9/20/12
↑ 1L w/ DI. DEGASSED.
EXP. 10/31/11

10/21/11 SZ

S24-10311101 pH 7.000 Buffer
Purchased
BDH Cat No: BDH5046-500mL
LOT # 1107491
EXP: 7/2013

10/24/11 SZ

S24-10241101 pH 4.000 Buffer
Purchased
JT Baker Cat No: 5657-01 500ml
LOT # K04505
EXP: 2/28/13

10/24/11 SZ

S24-10241102 pH 7.38 Buffer
Purchased
BDH Cat No BDH6058-500ml
LOT # 1109034
EXP: 8/2013

10/24/11 SR

524-10241103 pH 10.000 Buffer
Purchased
JT Baker Cat no: 5655-01
Lot # K07507
Exp: 2/28/13

10/25/11 SR

524-10251101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 951211 475mL
Lot # PN1 P/N 207475-A01
Exp: 10/25/12

10/25/11 SR

524-10251102 A,B,C,D,E pH Filling Sln
Purchased
Thermo Scientific Orion 810007 .5gal/bottle
Lot: PS1
Exp: 10/25/12

11/1/11 SR

524-11011101 IC02 Eluent
100ml 524-09201103 (10x conc eluent. Exp. 9/20/12) T/L w/ DI H2O DEGASSED
Exp: 11/15/11

11/1/11 SR

524-11011102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JO564) exp: 6/15/15 in 100 mL Methanol (B&J AE932 exp: 10/12/16
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H2SO4 (EMD) [illegible] exp: [illegible]). Bring [illegible]

2/9/12 524-0209/202 Nitrite Soln
Sa 0.2500g N-1-Naphthylethylenediamine Dihydrochloride
(JT Baker; lot # 22487 EXP 10/19/14) T 250mL w/ DI
EXP: 8/9/12

2/9/12 524-0209/203 IC02 Eluent
Sa 100mL 524-0920 1103 (Dionex Eluent, EXP
9/20/12) T 2/9/12 1L w/ DI H2O. Degassed.
2/23/12

2/9/12 524-0209/204 IC02 PCR
Sa

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker 50566-11
exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 10/10/16)
Add to 1 L volumetric flask containing 500 mL DI water +
5.6 mL conc. H2SO4 (EMD 49284 exp: 11/20/14). Bring
up to volume w/ DI H2O; mix and degas.

EXP: 2/14/12

2/10/12 524-02/0120 995 ~~1000~~ ppm Cr6+
Sa 2/10/12
Purchased
INORGANIC VENTURES CCCR(6)1-1
LOT: 02-CR03049
EXP: 3/1/13

2/13/12 524-0213/201
Sa 5.6mL conc H_2SO_4 (EMD 49184, EXP: 11/20/14) T
to 1L DI H_2O
EXP: 2/13/13

2/14/12 SA 524-021412O3 pH Buffer 2.000
Purchased
BDH Cat No: BDH5310-500ml
LOT# 111214G
EXP: 11/2013

2/20/12 SA 524-0220/201 500ppm NO_2 STOCK
Purchased
RICCA CHEMICAL CO Cat# 5444.5-4 120ml Amber Gl
LOT# 1262292
EXP: 8/12

2/22/12 SA 524-0222/201 Alkaline DIGESTION Sol
30.0g ~~NaOH~~ $NaIO_3$ (EMD 4632715; EXP: 10/4/12) + 20.0g NaOH
(EMD 4702271BC; EXP: 10/4/12) ↑ 1L w/ DI
EXP: 3/22/12

2/23/12 SA 524-0223/201 10ppm Cr6+ STD
1.0ml 524-021012O1 (1000ppm Cr^{6+}; EXP: 3/1/13)
↑ 100ml w/ DI H_2O
EXP: 8/23/12

2/27/12 SA 524-0227/201 0.1N H_2SO_4
5.6ml conc H_2SO_4 (EMD 49284; EXP: 11/20/1
↑ 2L w/ DI H_2O
EXP: 2/27/13

3/23/12 SA 534-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 11C9034
EXP: 8/2013

3/27/12 SA 534-0327/201 100 PPM Cr^{6+} ICV
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
LOT # 1201701
EXP: 7/2013

3/28/12 SA 534-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # L04514 500ml plastic
EXP: 1/31/14

3/28/12 SA 534-0328/202 Methylene Blue 1% AR Sol.
100ml Purchased
Alfa Aesar stock # 42771
LOT # H04X026
EXP: 3/28/13

4/16/12 S24-0416/201 IC02 Eluent

100mL S24-0314/201 (10x Conc eluent, EXP: 10/11/12) ↑ 1L w/ DI H2O. Degassed

EXP: 4/30/12

4/16/12 S24-0416/202 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker JT5641 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 2/27/17). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4623847 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 4/21/12

4/16/12 S24-0416/203 Cr6+ Coloring Reagent

0.250g 1,5-Diphenylcarbohydrazide Powder (JT Baker JT5641; EXP: 6/15/15) ↑ 50mL w/ Acetone (EMD lot 47154; EXP 9/24/12)

EXP: 5/16/12

4/16/12 S24-0416/204 12.5 N NaOH

100g NaOH (EMD 47022713; EXP 10/1/12 + 100mL DI H2O

EXP: 10/11/12

0430 4/30/12

4/30/12 S24-~~0314~~/201 IC02 Eluent

100mL S24-0314/201 (10x conc eluent; EXP: 10/11/12) ↑ 1 w/ DI H2O. Degassed.

EXP: 5/14/12

LABORATORY REPORT

May 14, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL-GW-2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on April 23, 2012. The samples were sent out for partial analysis to our Kelso facility. Please find their report attached. For your reference, these analyses have been assigned our service request number P1201573.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 1:04 pm, May 14, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL-GW-2Q12 / 100006114
Service Request No: P1201573

CASE NARRATIVE

The samples were received intact under chain of custody on April 23, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL-GW-2Q12 / 100006114
Service Request: P1201573

Date Received: 4/23/2012
Time Received: 15:23

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6	521 - Nitrosamines - KLAB	8270D - 1,4-Dioxane - KLAB
MW-7	P1201573-001	Water	4/23/2012	10:16	X		
MW-16	P1201573-002	Water	4/23/2012	12:27	X	X	X
DUPE-8-2Q12	P1201573-003	Water	4/23/2012	12:27	X	X	X
MW-15	P1201573-004	Water	4/23/2012	13:36	X		

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No.: P120 1573

CAS Contact:

Company Name & Address (Reporting Information)	Project Name	Project Number
Battelle 505 King Ave Columbus, OH. 43201	JPL-GW-2012	100006114

Project Manager	P.O. # / Billing Information
David Conner	285651 / Battelle 505 King Ave Columbus, OH. 43201

Phone	Fax
614 726-7311	614 458-6641

Email Address for Result Reporting	Sampler (Print & Sign)
connerd@battelle.org	David Loera

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0																Remarks
												Hexavalent Cr 7196	NDMA (521)	1,4 Dioxane (8270C SIM)														
MW-7	1	4-23-12	10:16	AQ	1P							X																
MW-16	2	4-23-12	1227	AQ	1P,3G							X	X	X														
DUPE-8-2012	3	4-23-12	1227	AQ	1P,3G							X	X	X														
MW-15	5	4-23-12	1336	AQ	2P							X																

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge X
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature) David Loera	Date: 4-23-12	Time: 1400	Received by: (Signature)	Date: 4/23/12	Time: 1420	Cooler / Blank / Ice / No Ice Temperature ____ °C
Relinquished by: (Signature)	Date: 4-23-12	Time: 1440	Received by: (Signature)	Date: 4/23/12	Time: 1440	
Relinquished by: (Signature)	Date: 4/23/12	Time: 1523	Received by: (Signature)	Date: 4/24/12	Time: 1523	

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Chain of Custody Report

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201573

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201573-001.01					
	7196A				
		4/23/12	1539	SMO / MZAMORA	
		4/23/12	1540	P-37 / MZAMORA	
		4/23/12	1549	In Lab / EIBARRA	
		4/24/12	0857	P-37 / EIBARRA	
P1201573-002.01					
		4/23/12	1539	SMO / MZAMORA	
		4/23/12	1540	SUBBED / MZAMORA	
		4/25/12	1437	K-Delilah-13 / SWOLF	
		4/30/12	0907	Custodian / SDAVIS	
		4/30/12	0907	In Lab / RHAYES	
		4/30/12	1626	K-Delilah-13 / DMOORE	
P1201573-002.02					
	521				
		4/23/12	1539	SMO / MZAMORA	
		4/23/12	1540	SUBBED / MZAMORA	
		4/25/12	1437	K-Delilah-13 / SWOLF	
		4/30/12	0907	Custodian / SDAVIS	
		4/30/12	0907	In Lab / RHAYES	
		4/30/12	1626	K-Delilah-13 / DMOORE	
P1201573-002.03					
	7196A				
		4/23/12	1539	SMO / MZAMORA	
		4/23/12	1540	P-37 / MZAMORA	
		4/23/12	1549	In Lab / EIBARRA	
		4/24/12	0857	P-37 / EIBARRA	
P1201573-002.04					
	8270D				
		4/23/12	1539	SMO / MZAMORA	
		4/23/12	1540	SUBBED / MZAMORA	
		4/25/12	1437	K-Delilah-13 / SWOLF	
		4/30/12	1507	Custodian / DMOORE	
		4/30/12	1507	In Lab / DHONGEL	
		4/30/12	1853	K-Delilah-13 / KSMITH	
P1201573-003.01					
	521				
		4/23/12	1539	SMO / MZAMORA	
		4/23/12	1540	SUBBED / MZAMORA	
		4/25/12	1437	K-Delilah-13 / SWOLF	
		4/30/12	0907	Custodian / SDAVIS	
		4/30/12	0907	In Lab / RHAYES	
		4/30/12	1626	K-Delilah-13 / DMOORE	

Chain of Custody Report

Client: Battelle **Service Request:** P1201573
Project: JPL-GW-2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201573-003.02					
		4/23/12	1539	SMO / MZAMORA	
		4/23/12	1540	SUBBED / MZAMORA	
		4/25/12	1437	K-Delilah-13 / SWOLF	
		4/30/12	0907	Custodian / SDAVIS	
		4/30/12	0907	In Lab / RHAYES	
		4/30/12	1626	K-Delilah-13 / DMOORE	
P1201573-003.03					
	7196A				
		4/23/12	1539	SMO / MZAMORA	
		4/23/12	1540	P-37 / MZAMORA	
		4/23/12	1550	In Lab / EIBARRA	
		4/24/12	0857	P-37 / EIBARRA	
P1201573-003.04					
	8270D				
		4/23/12	1539	SMO / MZAMORA	
		4/23/12	1540	SUBBED / MZAMORA	
		4/25/12	1437	K-Delilah-13 / SWOLF	
		4/30/12	1507	Custodian / DMOORE	
		4/30/12	1507	In Lab / DHONGEL	
		4/30/12	1853	K-Delilah-13 / KSMITH	
P1201573-004.01					
	7196A				
		4/23/12	1539	SMO / MZAMORA	
		4/23/12	1540	P-37 / MZAMORA	
		4/23/12	1550	In Lab / EIBARRA	
		4/24/12	0857	P-37 / EIBARRA	
P1201573-004.02					
		4/23/12	1539	SMO / MZAMORA	
		4/23/12	1540	P-37 / MZAMORA	
		4/23/12	1550	In Lab / EIBARRA	
		4/24/12	0856	P-37 / EIBARRA	

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Sample Acceptance Check Form

Client: Battelle Work order: P1201573

Project: JPL-GW-2Q12 / 100006114

Sample(s) received on: 4/23/12 Date opened: 4/23/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 2° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☒	☐
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201573-001.01	125mL Plastic NP					
P1201573-002.01	1000ml AG NP					
P1201573-002.02	1000ml AG NP					
P1201573-002.03	125mL Plastic NP					
P1201573-002.04	500mL AG NP					
P1201573-003.01	1000ml AG NP					
P1201573-003.02	1000ml AG NP					
P1201573-003.03	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

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Sample Acceptance Check Form

Client: Battelle Work order: P1201573

Project: JPL-GW-2Q12 / 100006114

Sample(s) received on: 4/23/12 Date opened: 4/23/12 by: MZAMORA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201573-003.04	500mL AG NP					
P1201573-004.01	125mL Plastic NP					
P1201573-004.02	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL-GW-2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201573
Date Collected : 04/23/12
Date Received : 04/23/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-7	P1201573-001	0.010	0.003	1	NA	04/23/12 19:00	ND	
MW-16	P1201573-002	0.010	0.003	1	NA	04/23/12 19:00	ND	
DUPE-8-2Q12	P1201573-003	0.010	0.003	1	NA	04/23/12 19:00	ND	
MW-15	P1201573-004	0.010	0.003	1	NA	04/23/12 19:00	ND	
Method Blank	P1201573-MB	0.010	0.003	1	NA	04/23/12 19:00	ND	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12 / 100006114	**Date Analyzed:**	04/23/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Kam Rya Date: 5/9/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL-GW-2Q12 / 100006114

Service Request: P1201573
Date Analyzed: 04/23/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0518	104	90-110
CCV1	0.0500	0.0510	102	90-110
CCV2	0.0500	0.0518	104	90-110

Approved By: Karen Ryan Date: 5/9/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201573
Project Name :	JPL-GW-2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	04/23/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201573-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0402	101	92-110	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL-GW-2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201573
Date Collected : 04/23/12
Date Received : 04/23/12
Date Extracted : NA
Date Analyzed : 04/23/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-15
Lab Code : P1201573-004MS P1201573-004DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0456	0.0464	91	93	69-119	2	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P1201572 ; P1201573

Time: 1700

Sample	VWR lot #	Exp.
pH 2 Buffer	524-05201101	Dec 2012
pH 4 Buffer	524-10241101	2/18/2013
pH 7 Buffer	524-10211101	Jul 2013
pH 10 Buffer	524-10241103	2/18/2013

Slope	Prep.Run #
98.9%	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C	Sample	#	pH	Temp. °C
pH 2.000	3	2.007	22.5	pH 2.000	3	2.014	22.4
pH 4.000		4.003	23.0				
pH 7.000		7.002	22.9				
pH 10.000		10.000	22.8				
Ref#: pH738 Exp 8/2013 524-10241102		7.388 10.00	23.1				
PI		2.156	21.9				
P1201572-1.01		1.866	17.8				
-2.01		2.112	18.0			SPACE NOT USED	
-3.01		2.191	17.9				
-4.01		2.233	18.1				
-5.01		2.174	18.4				
pH 2.000		2.004	22.4				
P1201572-6.01		2.030	18.8				
P1201573-1.01		2.152	18.7				
-2.02		2.083	18.6				
-3.03		2.126	19.0				
-4.01	↓	2.087	19.1				

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 44284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

_____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 4/23/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: EI Date: 4/23/12

Reviewer: KR Date: 4/24/12

pH

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201572, P1201573 Run#: 284483

Stock#: S24-02231201 TV=10PPM Exp 8/13/12 Prep Run#: —

ICV/CCV#: S24-03271701 TV=100PPM Exp 7/2013 Conc. H_2SO_4 Lot#: EMD 49284 Exp 11/20/14

Coloring Reagent Ref#: S24-04161203 EXP: 5/16/12

Working Curve:

Prep Dilution	NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L	0.00	0.01	0.05	0.1	0.99981238
Absorbance @ 540 nm	0	0.011	0.063	0.129	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10mL	—	✓	0.000	0.000	0.000	0.000864	<0.003
2	ICV 0.05 PPM		—	✓	0.000	0.066	0.066	0.0518	104%
3	MB		—	✓	0.000	0.000	0.000	0.000864	<0.003
4	LCS 0.04 PPM		—	✓	0.000	0.051	0.051	0.0402	100%
5	P1201572-1.01		—	✓	0.000	~~0.037~~ 0.000 EI 4/23/12	0.000	0.000864	<0.003
6	-1.01 VS 0.03 PPM		—	✓	0.000	0.037	0.037	0.0294	98%
7	-2.01		—	✓	0.000	0.000	0.000	~~0.000~~ 0.000864 EI	<0.003
8	-2.01 MS 0.05 PPM		—	✓	0.000	~~0.045~~ 0.057	~~0.045~~ 0.057	~~0.045~~ 0.0448 4/23/12	90% 5%
9	-2.01 MSD		—	✓	0.000	0.060	0.060	0.0471	94% RPD
10	-3.01		—	✓	0.001	0.001	0.000	0.000864	<0.003
11	-4.01		—	✓	0.000	0.001	0.001	0.00164	<0.003
12	-5.01		—	✓	0.000	0.000	0.000	0.000864	<0.003
13	CCV 1 0.05 PPM		—	✓	0.000	~~0.0510~~ 0.065 EI 4/23/12	0.065	0.0510	102%
14	CCB 1		—	✓	0.000	0.000	0.000	0.000864	<0.003
15	P1201572-6.01		—	✓	0.000	0.000	0.000	0.000864	<0.003
16	P1201573-1.01		—	✓	0.000	0.001	0.001	0.00164	<0.003
17	P1201573-1.01 VS 0.03 PPM		—	✓	0.000	0.039	0.039	0.0309	103%

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of S24-03271701 @ 1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-02231201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of — ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of — @ 1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: LI Date/Time: 4/23/12 @ 1830

Analyzed By: EI Date/Time: 4/23/12 @ 1900

Reviewed By: KK Date: 4/24/12

Columbia Analytical Services

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201572 , P1201573 Run#: 289183

Stock#: 524-02231201 TV = 10 PPM Exp 8/23/12 Prep Run#: —

ICV/CCV#: 524-03271201 TV=100 PPM Exp 7/2013 Conc. H_2SO_4 Lot#: EMD 49284 Exp 11/20/14

Coloring Reagent Ref#: 524-04161203 Exp 5/16/12

Working Curve:

Prep Dilution	*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L	*0.00*	*0.01*	*0.05*	*0.1*	0.9998712 38
Absorbance @ 540 nm	0	0.011	0.063	0.129	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	P1201573 - 2.03	10mL	—	✓	0.000	0.000	0.000	0.000864	<0.003
2	-3.03		—	✓	0.000	0.001	0.001	0.00164	<0.003
3	-4.01		—	✓	0.000	0.000	0.000	0.000864	<0.003
4	-4.01 MS 0.05 PPM		—	✓	0.000	0.058	0.058	0.0456	91% } 2% RPD
5	-4.01 MSD		—	✓	0.000	0.059	0.059	0.0464	93% }
6	CCV 2		—	✓	0.000	0.066	0.066	0.0518	104%
7	CCB 2		—	✓	0.000	0.000	0.000	0.000864	<0.003
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of 524-03271201 @ 1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-02231201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of _____ ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @ 1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments: _____

Prepared By: EI Date/Time: 4/23/12 @ 1830

Analyzed By: EI Date/Time: 4/23/12 @ 1900

Reviewed By: KR Date: 4/24/12

Cr6LIQ.xls

5/19/11 JR

S24-05191103 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JT5064-1 exp: 6/15/14) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4928-4 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JR

S24-05201101 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT # 110225
EXP: 12/2013

5/20/11 JR

S24-05201103 pH 4.007 BUFFER
Purchased
JT Baker CAT # 3657-01 500mL
LOT # J36503
EXP: 9/30/13

5/20/11 JR

S24-05201103 pH 7.~~38~~ BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT # 1103361
EXP: 3/2013

10/17/11 SZ

S24-10171102 1000PPM NH3
0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL
10/ S24-10171101 (0.1N H_2SO_4 EXP. 10/17/12)
EXP: 4/17/12

10/17/11 SZ

S24-10171103 IC2 Eluent
100 mL of S24-09201103 (10x conc Eluent; EXP: 9/20/12
↑ 1L w/ DI. DEGASSED.
EXP. 10/31/11

10/21/11 SZ

S24-10311101 pH 7.000 Buffer
Purchased
BDH Cat No: BDH5046-500mL
LOT # 1107491
EXP: 7/2013

10/24/11 SZ

S24-10241101 pH 4.000 Buffer
Purchased
JT Baker Cat No: 5657-01 500ml
LOT # K04505
EXP: 2/28/13

10/24/11 SZ

S24-10241102 pH 7.38 Buffer
Purchased
BDH Cat No BDH6058-500ml
LOT # 1109034
EXP: 8/2013

10/24/11 SR

524-10241103 pH 10.000 Buffer
Purchased
JT Baker Cat no: 5655-01
LOT # K07507
EXP: 2/28/13

10/25/11 SR

524-10251101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 951211 475mL
LOT # PN1 P/N 207475-A01
EXP: 10/25/12

10/25/11 SR

524-10251102 A,B,C,D,E pH Filling Sln
Purchased
Thermo Scientific Orion 810007 .5pack 60mL
LOT: PS1
EXP: 10/25/12

11/1/11 SR

524-11011101 IC02 Eluent
100ml 524-09201103 (10X conc eluent. EXP. 9/20/12) T/L w/ DI H2O DEGASSED
EXP: 11/15/11

11/1/11 SR

524-11011102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JO564) exp: 6/15/15 in 100 mL Methanol (B&J AE932 exp: 10/12/16
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H2SO4 (EMD) [illegible] exp: [illegible]). Bring [illegible]

2/9/13 SR 524-0209/202 Nitrite Soln
0.2500g N-1-Naphthylethylene diamine Dihydrochloride
(TCI Water; Lot IT2U487 EXP 10/19/14) T 250mL w/ DI
EXP: 8/9/13

2/9/13 SR 524-0209/203 ICO2 Eluent
100mL 524-0920 1103 (Carbon Eluent, EXP
9/20/13) T 2/9/13 1L w/ DI H2O. Degassed.
2/23/13

2/9/13 SR 524-0209/204 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ J.T. BAKER 3056-11
exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 10/10/16)
Add to 1 L volumetric flask containing 500 mL DI water +
5.6 mL conc. H2SO4 (EMD 49284 exp: 11/20/14). Bring
up to volume w/ DI H2O; mix and degas.

EXP: 2/14/13

2/10/13 SR 524-02/0130/1 995 ~~1000~~ ppm Cr6+
Purchased 2/11/13
INORGANIC VENTURES CCCR(6)1-1
LOT: 02-CR03049
EXP: 3/1/13

2/13/12 SR 524-0213/201
5.6mL conc H_2SO_4 (EMD 49184, EXP: 11/20/14) T
to 1L DI H_2O
T/F 2/13/13

2/14/12 SK 524-022/4/203 pH Buffer 2.000
Purchased
BDH Cat No: BDH5310-500ml
LOT# 111214G
EXP. 11/2013

2/20/12 SK 524-0220/201 500ppm NO_2 STOCK
Purchased
RICCA CHEMICAL CO Cat# 5444.5-4 120ml Amber Gl
LOT# 1262292
EXP: 8/12

2/22/12 SK 524-0222/201 Alkaline DIGESTION Sol
30.0g ~~NaOH~~ $NaHCO_3$ (EMD 4632715; EXP: 10/4/12) + 20.0g Na_2
(EMD 4702271 3C; EXP: 10/4/12) ↑ 1L w/ DI
EXP: 3/22/12

2/23/12 SK 524-0223/201 10ppm Cr^{6+} Std
1.0ml 524-0210/201 (1000ppm Cr^{6+}; EXP: 3/1/13)
↑ 100ml w/ DI H_2O
EXP: 8/23/12

2/27/12 SK 524-0227/201 0.1N H_2SO_4
5.6ml conc H_2SO_4 (EMD 49284; EXP: 11/20/1
↑ 2L w/ DI H_2O
EXP: 2/27/13

3/23/12 SA 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 11C9034
EXP: 8/2013

3/27/12 SA 524-0327/201 100 PPM Cr6+ ICV
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
LOT # 1201701
EXP: 7/2013

3/28/12 SA 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # L04514 500ml plastic
EXP: 1/31/14

3/28/12 SA 524-0328/202 Methylene Blue 1% AR Sol.
100ml Purchased
Alfa Aesar stock # 42771
LOT # H04X026
EXP: 3/28/13

4/16/12 S24-0416201 IC02 Eluent
100mL S24-0314201 (10x Conc eluent, EXP: 10/11/12) ↑ 1L w/ DI H2O. Degassed
EXP: 4/30/12

4/16/12 S24-0416202 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker JC5641 exp: ~~6/14/15~~) in 100 mL Methanol (B&J DE932 exp: 2/27/17). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4621384 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 4/21/12

4/16/12 S24-0416203 Acid Coloring Reagent
0.25000g 1,5-Diphenylcarbohydrazide Powder (JT Baker JC5641; EXP: 6/15/15) ↑ 50mL w/ Acetone (EMD lot 47154; EXP 9/24/12)
EXP: 5/16/12

4/16/12 S24-0416204 12.5 N NaOH
100g NaOH (EMD 47022713; EXP 10/1/12 + 100mL DI H2O
EXP: 10/11/12

0430 4/30/12
4/30/12 S24-0314201 IC02 Eluent
100mL S24-0314201 (10x conc eluent, EXP: 10/11/12) ↑ 1 w/ DI H2O. Degassed
EXP: 5/14/12

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

May 11, 2012 Analytical Report for Service Request No: P1201573

Sue Anderson
Columbia Analytical Services
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

RE: JPL-GW-2Q12/100006114

Dear Sue:

Enclosed are the results of the samples submitted to our laboratory on April 23, 2012. For your reference, these analyses have been assigned our service request number P1201573.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3364. You may also contact me via Email at Howard.Holmes@alsglobal.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Howard Holmes
Project Chemist

HH/ln

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc. - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Louisiana DHH	Not available	LA110003
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
New Mexico ED	http://www.nmenv.state.nm.us/dwb/Index.htm	-
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.caslab.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	ALS/CAS Simi Valley, CA	**Service Request No.:**	P1201573
Project:	Battelle/JPL-GW-2Q12	**Date Received:**	4/23/12
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water sample was received for analysis at Columbia Analytical Services on 4/23/12. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Nitrosamines by EPA 521

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for NDMA in the replicate matrix spike analyses of sample MW-16 was outside control criteria. In general, the RPD was relatively high for all spiked compounds, which indicates a low bias in the Matrix Spike (MS)/Matrix Spike Duplicate (MSD). All spike recoveries in the MS, DMS, and associated Laboratory Control Sample (LCS) were within acceptance limits, indicating the analytical batch was in control. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

1,4-Dioxane by EPA Method 8270 SIM

No anomalies associated with the analysis of these samples were observed.

Approved by Howard Holmes **Date** 5-11-12

Chain of Custody

Intra-Network Chain of Custody

2655 Park Center Drive, Suite A • Simi Valley, CA 93065 • 805-526-7161 • FAX 805-526-0270

CAS Contact: Sue Anderson

Project Name: JPL-GW-2Q12
Project Number: 100006114
Project Manager: David Conner
Company: Battelle

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	14_DIOXANE 8270C SIM	Nitrosamines 521
P1201573-002	MW-16	3	Water	4/23/12	1227	4/23/12	KELSO	**IV**	**IV**
P1201573-003	DUPE-8-2Q12	3	Water	4/23/12	1227	4/23/12	KELSO	**IV**	**IV**

Test Comments

Nitrosamines - 521	P1201573-002,3	NDMA

8

Special Instructions/Comments	Turnaround Requirements	Report Requirements	Invoice Information
	_____**RUSH** (Surcharges Apply) **PLEASE CIRCLE WORK DAYS** 1 2 3 4 5 ____ **STANDARD** Requested FAX Date: _____ Requested Report Date: 05/10/12	____ I. Results Only ____ II. Results + QC Summaries ____ III. Results + QC and Calibration Summaries ____ IV. Data Validation Report with Raw Data PQL/MDL/J Y EDD Y	PO# P1201573 Bill to

Relinquished By: [signature] 4/24/12 1500 Received By: [signature] ALS 4/25/12 Airbill Number: _____

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC 412

Client / Project: ALS - Simi Valley Service Request *K12* 1201573

Received: 4/25/12 Opened: 4/25/12 By: BT Unloaded: 4/25/12 By: BT

1. Samples were received via? *Mail* *Fed Ex* *(UPS)* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *(Cooler)* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1-front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID (NA)	Tracking Number	NA	Filed
0.4	n/a	282		1Z78905X0140412867		

7. Packing material: *Inserts* *Baggies* *(Bubble Wrap)* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
15. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Nitrosamines

Organic Analysis:
Nitrosamines by EPA 521

Summary Package

Sample and QC Results

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573

Cover Page - Organic Analysis Data Package
Nitrosamines by EPA 521

Sample Name	Lab Code	Date Collected	Date Received
MW-16MS	KWG1204391-1	04/23/2012	04/23/2012
MW-16DMS	KWG1204391-2	04/23/2012	04/23/2012
MW-16	P1201573-002	04/23/2012	04/23/2012
DUPE-8-2Q12	P1201573-003	04/23/2012	04/23/2012

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Christina Cotnam

Date: 5/10/12 Title: Scientist

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	04/23/2012
Sample Matrix:	Water	**Date Received:**	04/23/2012

Nitrosamines by EPA 521

Sample Name:	MW-16	**Units:**	ng/L
Lab Code:	P1201573-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**0.96**	J	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	98	70-130	05/02/12	Acceptable

Comments:

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	04/23/2012
Sample Matrix:	Water	**Date Received:**	04/23/2012

Nitrosamines by EPA 521

Sample Name:	DUPE-8-2Q12	**Units:**	ng/L
Lab Code:	P1201573-003	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	74	70-130	05/01/12	Acceptable

Comments:

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201573
Date Collected: NA
Date Received: NA

Nitrosamines by EPA 521

Sample Name: Method Blank
Lab Code: KWG1204391-4

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	102	70-130	05/02/12	Acceptable

Comments:

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201573

Surrogate Recovery Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Level: Low

Sample Name	Lab Code	Sur1
MW-16	P1201573-002	98
DUPE-8-2Q12	P1201573-003	74
Method Blank	KWG1204391-4	102
MW-16MS	KWG1204391-1	93
MW-16DMS	KWG1204391-2	96
Lab Control Sample	KWG1204391-3	87

Surrogate Recovery Control Limits (%)

Sur1 = N-Nitrosodimethylamine-d6 70-130

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/01/2012
Time Analyzed: 17:04

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-2
Analysis Lot: KWG1204793

		-Nitrosodi-n-propylamine-d
		Area	**RT**
	Results ==>	32,908	20.53
	Upper Limit ==>	42,780	20.93
	Lower Limit ==>	23,036	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	28,060	20.52
MW-16DMS	KWG1204391-2	26,255	20.53
DUPE-8-2Q12	P1201573-003	29,010	20.53

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Analyzed:**	05/02/2012
		Time Analyzed:	01:33

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID:	J:\MS16\DATA\050112-521\0501013.D	**Lab Code:**	KWG1204793-3
Instrument ID:	MS16	**Analysis Lot:**	KWG1204793
Analysis Method:	521		

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	32,882	20.53
Upper Limit ==>	42,747	20.93
Lower Limit ==>	23,017	20.13
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/02/2012
Time Analyzed: 17:19

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050212-521\0502001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204794-2
Analysis Lot: KWG1204794

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	30,450	20.53
	Upper Limit ==>	39,585	20.93
	Lower Limit ==>	21,315	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Method Blank	KWG1204391-4	24,438	20.55
MW-16	P1201573-002	29,832	20.55
MW-16MS	KWG1204391-1	25,407	20.55

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Analyzed:**	05/02/2012
		Time Analyzed:	22:16

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID:	J:\MS16\DATA\050212-521\0502008.D	**Lab Code:**	KWG1204794-3
Instrument ID:	MS16	**Analysis Lot:**	KWG1204794
Analysis Method:	521		

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	27,043	20.55
Upper Limit ==>	35,156	20.95
Lower Limit ==>	18,930	20.15
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/08/2012
Time Analyzed: 21:22

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050812-521\0508013.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204795-2
Analysis Lot: KWG1204795

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	28,678	20.51
	Upper Limit ==>	37,281	20.91
	Lower Limit ==>	20,075	20.11
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	32,827	20.50
MW-16DMS	KWG1204391-2	31,082	20.51

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/09/2012
Time Analyzed: 08:53

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050812-521\0508024.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204795-3
Analysis Lot: KWG1204795

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	27,403	20.51
Upper Limit ==>	35,624	20.91
Lower Limit ==>	19,182	20.11
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012 - 05/02/2012

Matrix Spike/Duplicate Matrix Spike Summary
Nitrosamines by EPA 521

Sample Name:	MW-16	**Units:**	ng/L
Lab Code:	P1201573-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

Analyte Name	Sample Result	MW-16MS KWG1204391-1 Matrix Spike			MW-16DMS KWG1204391-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
N-Nitrosodimethylamine	0.96	24.2	20.0	116	17.5	20.0	83	70-130	32 *	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201573
Date Extracted: 04/30/2012
Date Analyzed: 05/01/2012

Lab Control Spike Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG1204391

Analyte Name	Lab Control Sample KWG1204391-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
N-Nitrosodimethylamine	15.6	20.0	78	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/02/2012
		Time Analyzed:	18:02

Method Blank Summary
Nitrosamines by EPA 521

Sample Name:	Method Blank	**Instrument ID:**	MS16
Lab Code:	KWG1204391-4	**File ID:**	J:\MS16\DATA\050212-521\0502002.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050112-521\0501004.D	05/01/12	19:12
MW-16DMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
DUPE-8-2Q12	P1201573-003	J:\MS16\DATA\050112-521\0501008.D	05/01/12	22:01
MW-16	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
MW-16MS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050812-521\0508016.D	05/08/12	23:29
MW-16DMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012
		Time Analyzed:	19:12

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050112-521\0501004.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
MW-16DMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
DUPE-8-2Q12	P1201573-003	J:\MS16\DATA\050112-521\0501008.D	05/01/12	22:01
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
MW-16	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
MW-16MS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
MW-16DMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/08/2012
		Time Analyzed:	23:29

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050812-521\0508016.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
MW-16DMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
DUPE-8-2Q12	P1201573-003	J:\MS16\DATA\050112-521\0501008.D	05/01/12	22:01
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
MW-16	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
MW-16MS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
MW-16DMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Level ID	File ID
A	J:\MS16\DATA\031112-521\0311005.D
B	J:\MS16\DATA\031112-521\0311006.D
C	J:\MS16\DATA\031112-521\0311007.D
D	J:\MS16\DATA\031112-521\0311008.D
E	J:\MS16\DATA\031112-521\0311009.D
F	J:\MS16\DATA\031112-521\0311010.D
G	J:\MS16\DATA\031112-521\0311011.D
H	J:\MS16\DATA\031112-521\0311012.D
I	J:\MS16\DATA\031112-521\0311013.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
N-Nitrosodimethylamine-d6							C	1.0	1.28	D	2.0	2.08	E	5.0	2.86
	F	7.0	3.66	G	10	4.73	H	15	4.42	I	20	5.18			
N-Nitrosodimethylamine				B	0.50	1.18	C	1.0	1.63	D	2.0	2.42	E	5.0	2.51
	F	7.0	3.11	G	10	3.75	H	15	3.50	I	20	3.88			

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201573
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16
Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
N-Nitrosodimethylamine-d6	SURR	Quadratic	COD	0.992		≥ 0.99	3.46		
N-Nitrosodimethylamine	MS	Quadratic	COD	0.994		≥ 0.99	2.75		

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Calibration Date: 03/11/2012
Date Analyzed: 03/12/2012

Second Source Calibration Verification
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration ID: CAL11326
Units: ug/L

File ID: J:\MS16\DATA\031112-521\0311014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine	10	7.7	2.75	2.42	NA	-23	± 30 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/01/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	0.98		3.46	0.816	NA	-2	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	0.89		2.75	1.53	NA	-11	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	4.3		3.46	2.75	NA	-15	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	5.4		2.75	3.21	NA	8	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.3		3.46	1.80	NA	25	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.3		2.75	2.78	NA	30	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502008.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.1		3.46	3.43	NA	1	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.3		2.75	3.88	NA	27	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/08/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.2		3.46	1.72	NA	23	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.2		2.75	2.36	NA	16	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/09/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508024.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.5		3.46	3.84	NA	10	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.6		2.75	4.04	NA	31	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201573

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1204793
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
521\0501.D	GC/MS Tuning - Decafluorotriphenylp	KWG1204793-1	5/1/2012	16:22		5/1/2012	16:48
\0501001.D	Continuing Calibration Verification	KWG1204793-2	5/1/2012	17:04		5/1/2012	17:30
\0501004.D	Lab Control Sample	KWG1204391-3	5/1/2012	19:12		5/1/2012	19:38
\0501007.D	MW-16DMS	KWG1204391-2	5/1/2012	21:19		5/1/2012	21:45
\0501008.D	DUPE-8-2Q12	P1201573-003	5/1/2012	22:01		5/1/2012	22:27
\0501009.D	ZZZZZZ	ZZZZZZ	5/1/2012	22:44		5/1/2012	23:10
\0501010.D	ZZZZZZ	ZZZZZZ	5/1/2012	23:26		5/1/2012	23:52
\0501011.D	ZZZZZZ	ZZZZZZ	5/2/2012	00:09		5/2/2012	00:35
\0501013.D	Continuing Calibration Verification	KWG1204793-3	5/2/2012	01:33		5/2/2012	01:59

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201573

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1204794
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
521\0502.D	GC/MS Tuning - Decafluorotriphenylp	KWG1204794-1	5/2/2012	16:37		5/2/2012	17:03
\0502001.D	Continuing Calibration Verification	KWG1204794-2	5/2/2012	17:19		5/2/2012	17:45
\0502002.D	Method Blank	KWG1204391-4	5/2/2012	18:02		5/2/2012	18:28
\0502004.D	MW-16	P1201573-002	5/2/2012	19:26		5/2/2012	19:52
\0502005.D	MW-16MS	KWG1204391-1	5/2/2012	20:09		5/2/2012	20:35
\0502008.D	Continuing Calibration Verification	KWG1204794-3	5/2/2012	22:16		5/2/2012	22:42

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201573

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1204795
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
\0508012.D	GC/MS Tuning - Decafluorotriphenylp	KWG1204795-1	5/8/2012	20:39		5/8/2012	21:05
\0508013.D	Continuing Calibration Verification	KWG1204795-2	5/8/2012	21:22		5/8/2012	21:48
\0508016.D	Lab Control Sample	KWG1204391-3	5/8/2012	23:29		5/8/2012	23:55
\0508019.D	MW-16DMS	KWG1204391-2	5/9/2012	01:36		5/9/2012	02:02
\0508024.D	Continuing Calibration Verification	KWG1204795-3	5/9/2012	08:53		5/9/2012	09:19

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201573
Date Extracted: 04/30/2012

Extraction Prep Log
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Extraction Lot: KWG1204391
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MW-16	P1201573-002	04/23/12	04/23/12	500ml	1ml	NA	
DUPE-8-2Q12	P1201573-003	04/23/12	04/23/12	500ml	1ml	NA	
Method Blank	KWG1204391-4	NA	NA	500ml	1ml	NA	
MW-16MS	KWG1204391-1	04/23/12	04/23/12	500ml	1ml	NA	
MW-16DMS	KWG1204391-2	04/23/12	04/23/12	500ml	1ml	NA	
Lab Control Sample	KWG1204391-3	NA	NA	500ml	1ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

QC Reports

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201573

Surrogate Recovery Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Level: Low

Sample Name	Lab Code	Sur1
MW-16	P1201573-002	98
DUPE-8-2Q12	P1201573-003	74
Method Blank	KWG1204391-4	102
MW-16MS	KWG1204391-1	93
MW-16DMS	KWG1204391-2	96
Lab Control Sample	KWG1204391-3	87

Surrogate Recovery Control Limits (%)

Sur1 =	N-Nitrosodimethylamine-d6	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/01/2012
Time Analyzed: 17:04

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-2
Analysis Lot: KWG1204793

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	32,908	20.53
	Upper Limit ==>	42,780	20.93
	Lower Limit ==>	23,036	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	28,060	20.52
MW-16DMS	KWG1204391-2	26,255	20.53
DUPE-8-2Q12	P1201573-003	29,010	20.53

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Analyzed:**	05/02/2012
		Time Analyzed:	01:33

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID:	J:\MS16\DATA\050112-521\0501013.D	**Lab Code:**	KWG1204793-3
Instrument ID:	MS16	**Analysis Lot:**	KWG1204793
Analysis Method:	521		

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	32,882	20.53
Upper Limit ==>	42,747	20.93
Lower Limit ==>	23,017	20.13
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/02/2012
Time Analyzed: 17:19

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050212-521\0502001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204794-2
Analysis Lot: KWG1204794

		-Nitrosodi-n-propylamine-d:	
		Area	**RT**
	Results ==>	30,450	20.53
	Upper Limit ==>	39,585	20.93
	Lower Limit ==>	21,315	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Method Blank	KWG1204391-4	24,438	20.55
MW-16	P1201573-002	29,832	20.55
MW-16MS	KWG1204391-1	25,407	20.55

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/02/2012
Time Analyzed: 22:16

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050212-521\0502008.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204794-3
Analysis Lot: KWG1204794

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	27,043	20.55
Upper Limit ==>	35,156	20.95
Lower Limit ==>	18,930	20.15
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Analyzed:**	05/08/2012
		Time Analyzed:	21:22

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID:	J:\MS16\DATA\050812-521\0508013.D	**Lab Code:**	KWG1204795-2
Instrument ID:	MS16	**Analysis Lot:**	KWG1204795
Analysis Method:	521		

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	28,678	20.51
	Upper Limit ==>	37,281	20.91
	Lower Limit ==>	20,075	20.11
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	32,827	20.50
MW-16DMS	KWG1204391-2	31,082	20.51

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Analyzed:**	05/09/2012
		Time Analyzed:	08:53

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID:	J:\MS16\DATA\050812-521\0508024.D	**Lab Code:**	KWG1204795-3
Instrument ID:	MS16	**Analysis Lot:**	KWG1204795
Analysis Method:	521		

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	27,403	20.51
Upper Limit ==>	35,624	20.91
Lower Limit ==>	19,182	20.11
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012 - 05/02/2012

Matrix Spike/Duplicate Matrix Spike Summary
Nitrosamines by EPA 521

Sample Name:	MW-16	**Units:**	ng/L
Lab Code:	P1201573-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

Analyte Name	Sample Result	MW-16MS KWG1204391-1 Matrix Spike			MW-16DMS KWG1204391-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
N-Nitrosodimethylamine	0.96	24.2	20.0	116	17.5	20.0	83	70-130	32 *	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201573
Date Extracted: 04/30/2012
Date Analyzed: 05/01/2012

Lab Control Spike Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG1204391

Analyte Name	Lab Control Sample KWG1204391-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
N-Nitrosodimethylamine	15.6	20.0	78	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/02/2012
		Time Analyzed:	18:02

Method Blank Summary
Nitrosamines by EPA 521

Sample Name:	Method Blank	**Instrument ID:**	MS16
Lab Code:	KWG1204391-4	**File ID:**	J:\MS16\DATA\050212-521\0502002.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050112-521\0501004.D	05/01/12	19:12
MW-16DMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
DUPE-8-2Q12	P1201573-003	J:\MS16\DATA\050112-521\0501008.D	05/01/12	22:01
MW-16	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
MW-16MS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050812-521\0508016.D	05/08/12	23:29
MW-16DMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012
		Time Analyzed:	19:12

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050112-521\0501004.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
MW-16DMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
DUPE-8-2Q12	P1201573-003	J:\MS16\DATA\050112-521\0501008.D	05/01/12	22:01
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
MW-16	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
MW-16MS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
MW-16DMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/08/2012
		Time Analyzed:	23:29

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050812-521\0508016.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
MW-16DMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
DUPE-8-2Q12	P1201573-003	J:\MS16\DATA\050112-521\0501008.D	05/01/12	22:01
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
MW-16	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
MW-16MS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
MW-16DMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Raw Data

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	04/23/2012
Sample Matrix:	Water	**Date Received:**	04/23/2012

Nitrosamines by EPA 521

Sample Name:	MW-16	**Units:**	ng/L
Lab Code:	P1201573-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**0.96**	J	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	98	70-130	05/02/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050212-521\0502004.D
Lab ID: P1201573-002
RunType: SMPL
Matrix: WATER

Date Acquired: 05/02/2012 19:26
Date Quantitated: 05/03/2012 13:49
Batch ID: KWG1204794
Analysis Method: 521
ListJoinID: LJ11419

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502004.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 19:26	**Quant Date:**	05/03/2012 13:49	**Vial:**	6
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201573-002			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**	04/23/2012	**Receive Date:**	04/23/2012

Analysis Lot:	KWG1204794	**Prep Lot:**	KWG1204391	**Report Group:**	P1201573
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121338	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:	Nitrosamines by EPA 521	**Report List ID:**	LJ11419
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	0.02	97	29832	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.84	0.01	0.00	50	23994	9.84	98	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.98	0.01	0.00	47	192	0.4800	0.96	J	

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502004.D Vial: 6
Acq On : 02 May 12 19:26 Operator: SVO-DW
Sample : P1201573-002 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:49:34 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

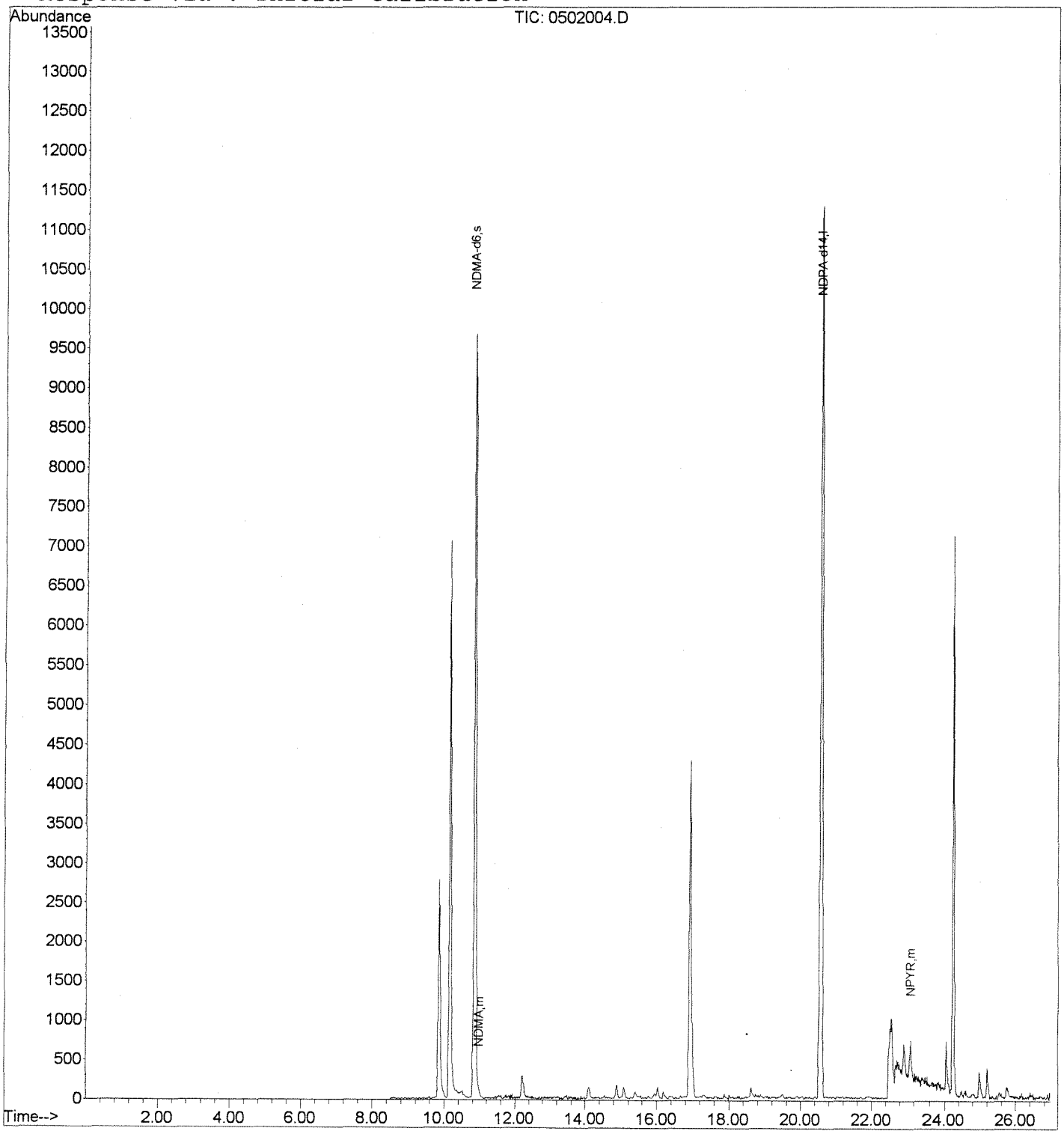
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	29832	50.00	ug/L	-0.03
System Monitoring Compounds						
3) NDMA-d6	10.84	50	23994	9.84	ug/L	-0.11
Target Compounds						Qvalue
4) NDMA	10.98	47	192	0.48	ug/L	72
8) NPYR	23.11	55	575	0.74	ug/L	94

(#) = qualifier out of range (m) = manual integration
0502004.D 031112_D14.M Wed May 09 12:11:56 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502004.D Vial: 6
Acq On : 02 May 12 19:26 Operator: SVO-DW
Sample : P1201573-002 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:49 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	04/23/2012
Sample Matrix:	Water	**Date Received:**	04/23/2012

Nitrosamines by EPA 521

Sample Name:	DUPE-8-2Q12	**Units:**	ng/L
Lab Code:	P1201573-003	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	74	70-130	05/01/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050112-521\0501008.D
Lab ID: P1201573-003
RunType: SMPL
Matrix: WATER

Date Acquired: 05/01/2012 22:01
Date Quantitated: 05/09/2012 11:52
Batch ID: KWG1204793
Analysis Method: 521
ListJoinID: LJ11419

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501008.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 22:01	**Quant Date:**	05/09/2012 11:52	**Vial:**	9
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201573-003			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**	04/23/2012	**Receive Date:**	04/23/2012

Analysis Lot:	KWG1204793	**Prep Lot:**	KWG1204391	**Report Group:**	P1201573
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121339	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:	Nitrosamines by EPA 521	**Report List ID:**	LJ11419
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	0.00	97	29010	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.84	-0.01	0.00	50	16158	7.38	74	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine				47	0d		0.32	U	

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501008.D Vial: 9
Acq On : 01 May 12 22:01 Operator: SVO-DW
Sample : P1201573-003 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:16:59 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

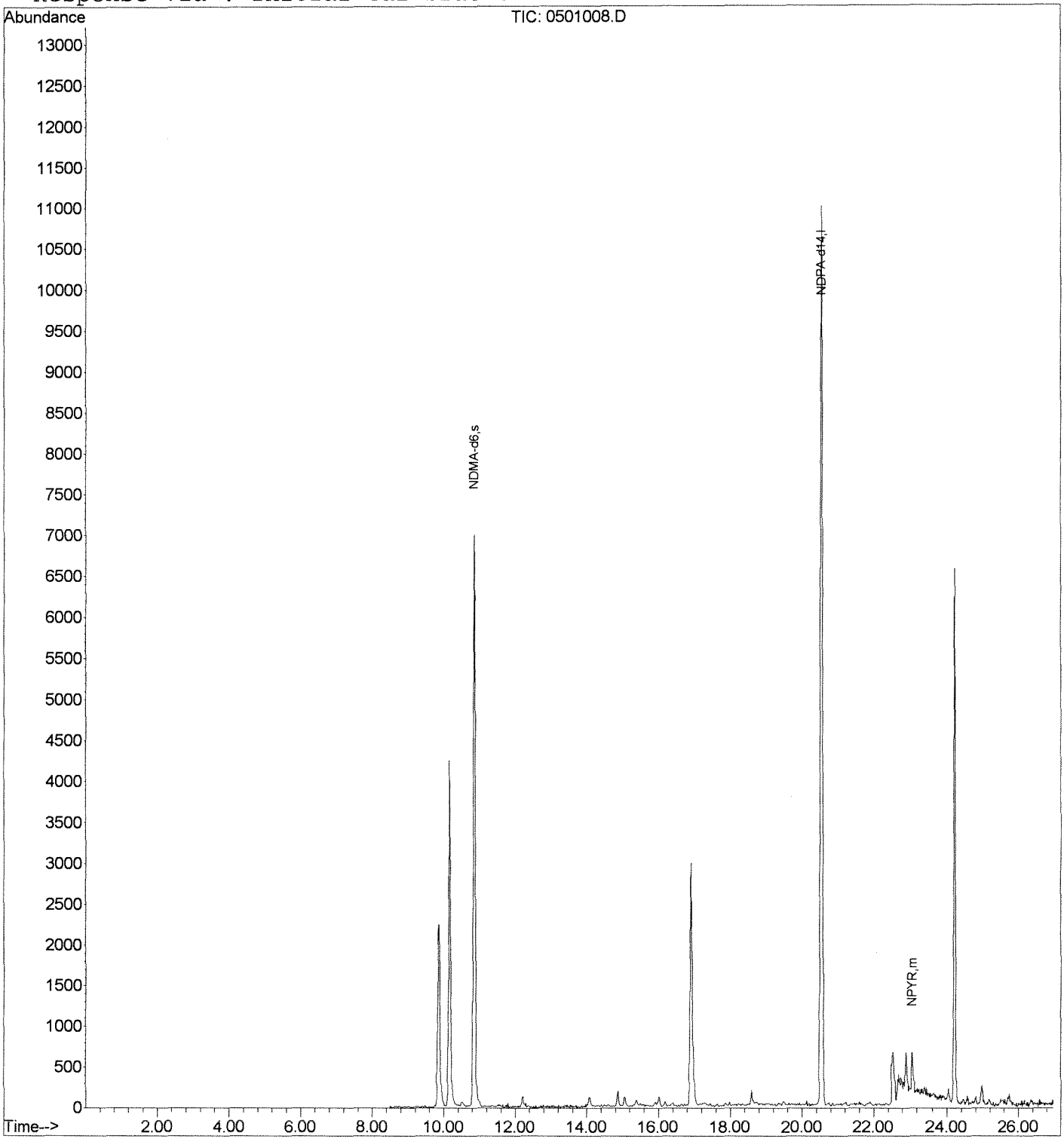
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	29010	50.00	ug/L	-0.04
System Monitoring Compounds						
3) NDMA-d6	10.84	50	16158	7.38	ug/L	-0.12
Target Compounds						Qvalue
8) NPYR	23.07	55	558	0.74	ug/L	95

(#) = qualifier out of range (m) = manual integration
0501008.D 031112_D14.M Wed May 09 11:58:48 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501008.D Vial: 9
Acq On : 01 May 12 22:01 Operator: SVO-DW
Sample : P1201573-003 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 11:52 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1204391-4	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	102	70-130	05/02/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050212-521\0502002.D
Lab ID: KWG1204391-4
RunType: MB
Matrix: WATER

Date Acquired: 05/02/2012 18:02
Date Quantitated: 05/09/2012 12:02
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502002.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 18:02	**Quant Date:**	05/09/2012 12:02	**Vial:**	4
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1204391-4			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204794	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121345	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050212-521\0502.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	0.02	97	24438	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.85	0.02	0.00	50	20604	10.20	102	70-130	OK

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine				47	0d		0.32	U	
1	N-Nitrosomethylethylamine				61	0		0.50	U	
1	N-Nitrosodiethylamine				75	0		0.76	U	
1	N-Nitrosodi-n-propylamine				89	0		0.76	U	
1	N-Nitrosopyrrolidine	23.09	-0.13	-0.01	55	225	0.6700	1.34	J	
1	N-Nitrosopiperidine				69	0		0.55	U	
1	N-Nitrosodi-n-butylamine				57	0		0.77	U	

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502002.D Vial: 4
Acq On : 02 May 12 18:02 Operator: SVO-DW
Sample : 043012-MB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:49:03 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

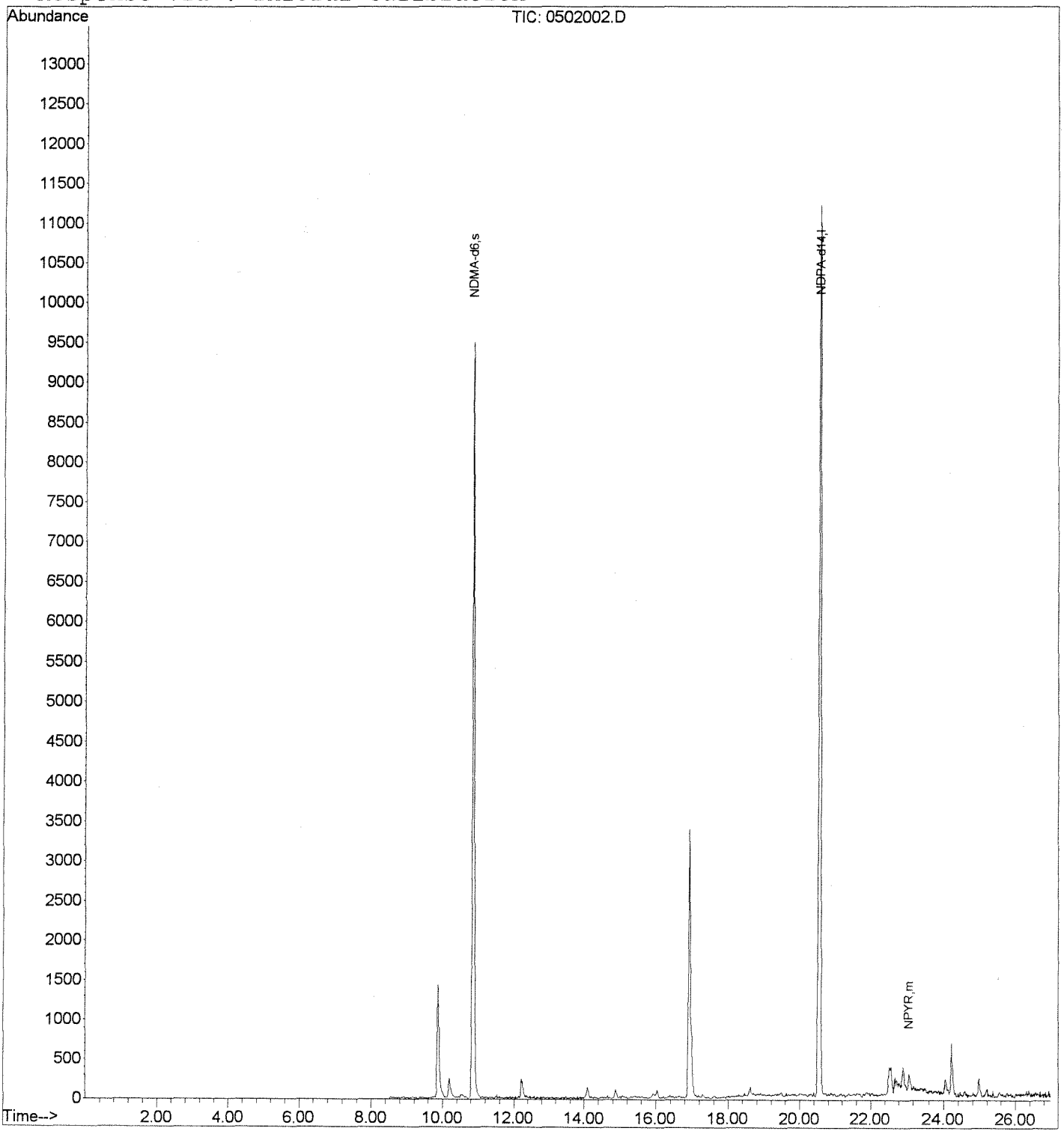
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	24438	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.85	50	20604	10.20	ug/L	-0.10
Target Compounds						Qvalue
8) NPYR	23.09	55	225	0.67	ug/L	94

(#) = qualifier out of range (m) = manual integration
0502002.D 031112_D14.M Wed May 09 12:11:55 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502002.D Vial: 4
Acq On : 02 May 12 18:02 Operator: SVO-DW
Sample : 043012-MB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:02 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	04/23/2012
Sample Matrix:	Water	**Date Received:**	04/23/2012

Nitrosamines by EPA 521

Sample Name:	MW-16MS	**Units:**	ng/L
Lab Code:	KWG1204391-1	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**24.2**		2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	93	70-130	05/02/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050212-521\0502005.D
Lab ID: KWG1204391-1 -- P1201573-002MS
RunType: MS
Matrix: WATER

Date Acquired: 05/02/2012 20:09
Date Quantitated: 05/03/2012 13:49
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosopiperidine	52.8	NA	50	NR
	N-Nitrosodi-n-butylamine	54.8	NA	50	b

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502005.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 20:09	**Quant Date:**	05/03/2012 13:49	**Vial:**	7
Run Type:	MS			**Dilution:**	1.0
Lab ID:	KWG1204391-1 -- P1201573-002MS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204794	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121342	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	0.02	97	25407	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.86	0.03	0.00	50	19029	9.31	93	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.98	0.01	0.00	47	21217	12.12	24.2		
1	N-Nitrosomethylethylamine	13.56	-0.01	0.00	61	21018	8.25	16.5		
1	N-Nitrosodiethylamine	15.67	0.02	0.00	75	3521	9.92	19.8		
1	N-Nitrosodi-n-propylamine	20.85	-0.02	0.00	89	2335	7.85	15.7		
1	N-Nitrosopyrrolidine	23.23	0.01	0.00	55	39637	10.76	21.5		
1	N-Nitrosopiperidine	24.15	0.01	0.00	69	91334	13.57	27.1		
1	N-Nitrosodi-n-butylamine	26.40	0.02	0.00	57	25373	11.61	23.2		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Matrix Spike Summary Report

Matrix Spike Information ***ListJoinID :*** LJ11419

Data File:	J:\MS16\DATA\050212-521\0502005.D	**Instrument:**	MS16
Lab ID:	KWG1204391-1	**Dilution:**	1.00
Client ID:	Matrix Spike	**Units:**	ng/L
Prod Code:	521 Nitrosamine	**Acqu Date:**	05/02/2012 20:09
Matrix:	WATER	**Quant Date:**	05/03/2012 13:49

Duplicate Matrix Spike Information

Data File:	J:\MS16\DATA\050812-521\0508019.D	**Instrument:**	MS16
Lab ID:	KWG1204391-2	**Dilution:**	1.00
Client ID:	Duplicate Matrix Spike	**Units:**	ng/L
Prod Code:	521 Nitrosamine	**Acqu Date:**	05/09/2012 01:36
Matrix:	WATER	**Quant Date:**	05/09/2012 12:13

Sample Reference Information

Data File:	J:\MS16\DATA\050212-521\0502004.D	**Instrument:**	MS16
Lab ID:	P1201573-002	**Dilution:**	1.00
Client ID:	MW-16	**Units:**	ng/L
Prod Code:	521 Nitrosamine	**Acqu Date:**	05/02/2012 19:26
Matrix:	WATER	**Quant Date:**	05/03/2012 13:49

Parameter Name	Sample Result	Matrix Spike			Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
N-Nitrosodimethylamine-d6				93			96	70-130		
N-Nitrosodimethylamine	0.96	24.2	20.0	116	17.5	20.0	83	70-130	32 *	30

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502005.D Vial: 7
Acq On : 02 May 12 20:09 Operator: SVO-DW
Sample : P1201573-002 MS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:49:43 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

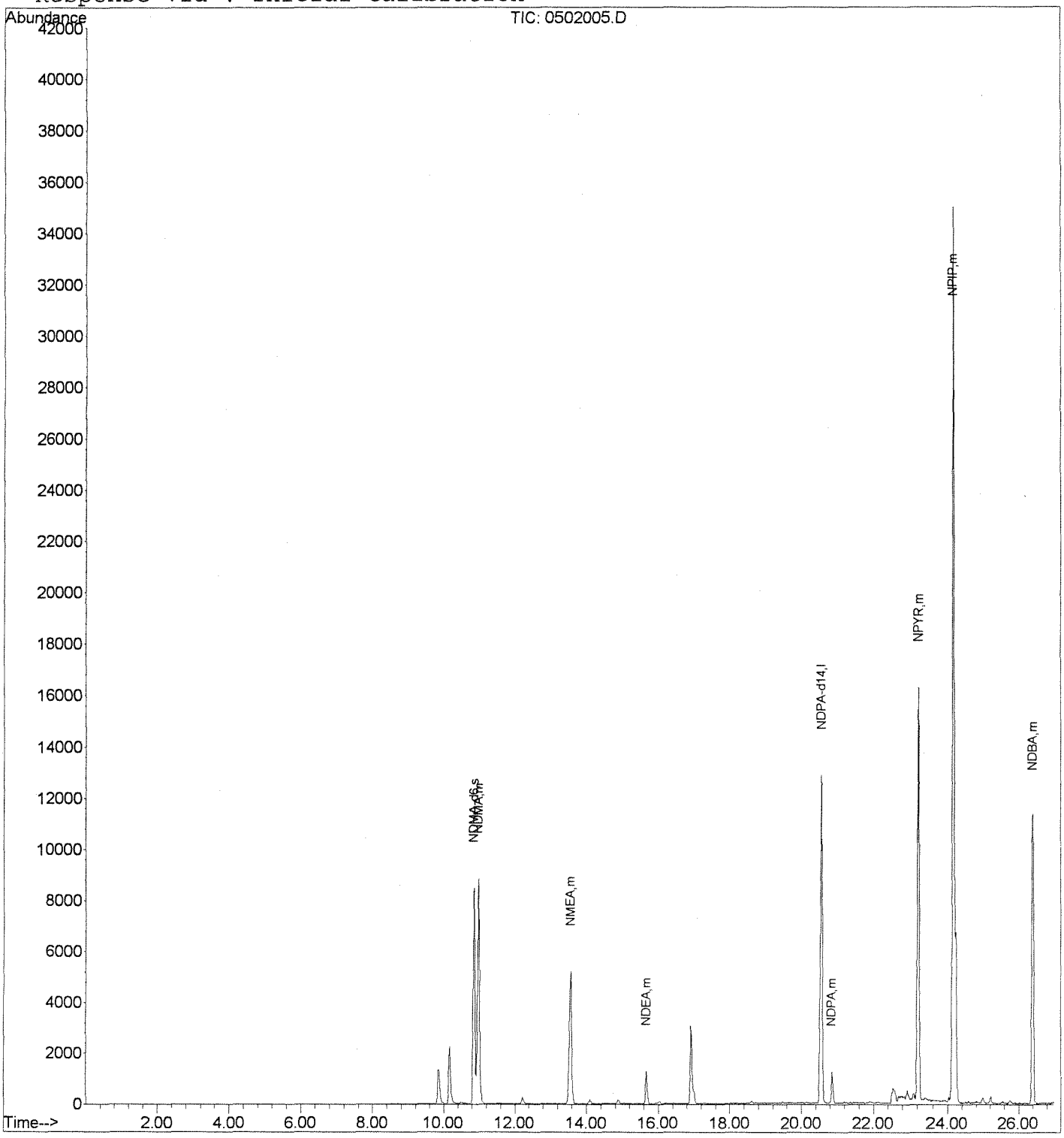
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	25407	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.86	50	19029	9.31	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.98	47	21217	12.12	ug/L	95
5) NMEA	13.56	61	21018	8.25	ug/L	100
6) NDEA	15.67	75	3521	9.92	ug/L	100
7) NDPA	20.85	89	2335	7.85	ug/L	100
8) NPYR	23.23	55	39637	10.76	ug/L	95
9) NPIP	24.15	69	91334	13.57	ug/L	100
10) NDBA	26.40	57	25373	11.61	ug/L	100

(#) = qualifier out of range (m) = manual integration
0502005.D 031112_D14.M Wed May 09 12:11:56 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502005.D Vial: 7
Acq On : 02 May 12 20:09 Operator: SVO-DW
Sample : P1201573-002 MS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:49 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.
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Analytical Results

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	04/23/2012
Sample Matrix:	Water	**Date Received:**	04/23/2012

Nitrosamines by EPA 521

Sample Name:	MW-16DMS	**Units:**	ng/L
Lab Code:	KWG1204391-2	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**17.5**		2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	96	70-130	05/09/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050112-521\0501007.D
Lab ID: KWG1204391-2 -- P1201573-002DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/01/2012 21:19
Date Quantitated: 05/02/2012 16:16
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA		x
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosodi-n-butylamine	50.6	NA	50	NR
Surrogates	N-Nitrosodimethylamine-d6	67	70	130	b

Primary Review: 5/9/12

Secondary Review: 5/9/12

Printed: 05/09/2012 12:36:49
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501007.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 21:19	**Quant Date:**	05/02/2012 16:16	**Vial:**	8
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1204391-2 -- P1201573-002DMS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204793	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121343	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	0.00	97	26255	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.85	0.00	0.00	50	12818	6.66	67	70-130	*	NR

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97		0.00	47	14833	8.74	17.5		
1	N-Nitrosomethylethylamine	13.55	0.02	0.00	61	14416	6.05	12.1		
1	N-Nitrosodiethylamine	15.65	0.01	0.00	75	2466	7.38	14.8		
1	N-Nitrosodi-n-propylamine	20.83		0.00	89	3075	9.48	19.0		
1	N-Nitrosopyrrolidine	23.20	-0.01	0.00	55	39232	10.37	20.7		
1	N-Nitrosopiperidine	24.12	-0.01	0.00	69	75431	11.25	22.5		
1	N-Nitrosodi-n-butylamine	26.36	-0.02	0.00	57	21808	10.21	20.4		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501007.D Vial: 8
Acq On : 01 May 12 21:19 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:16:58 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

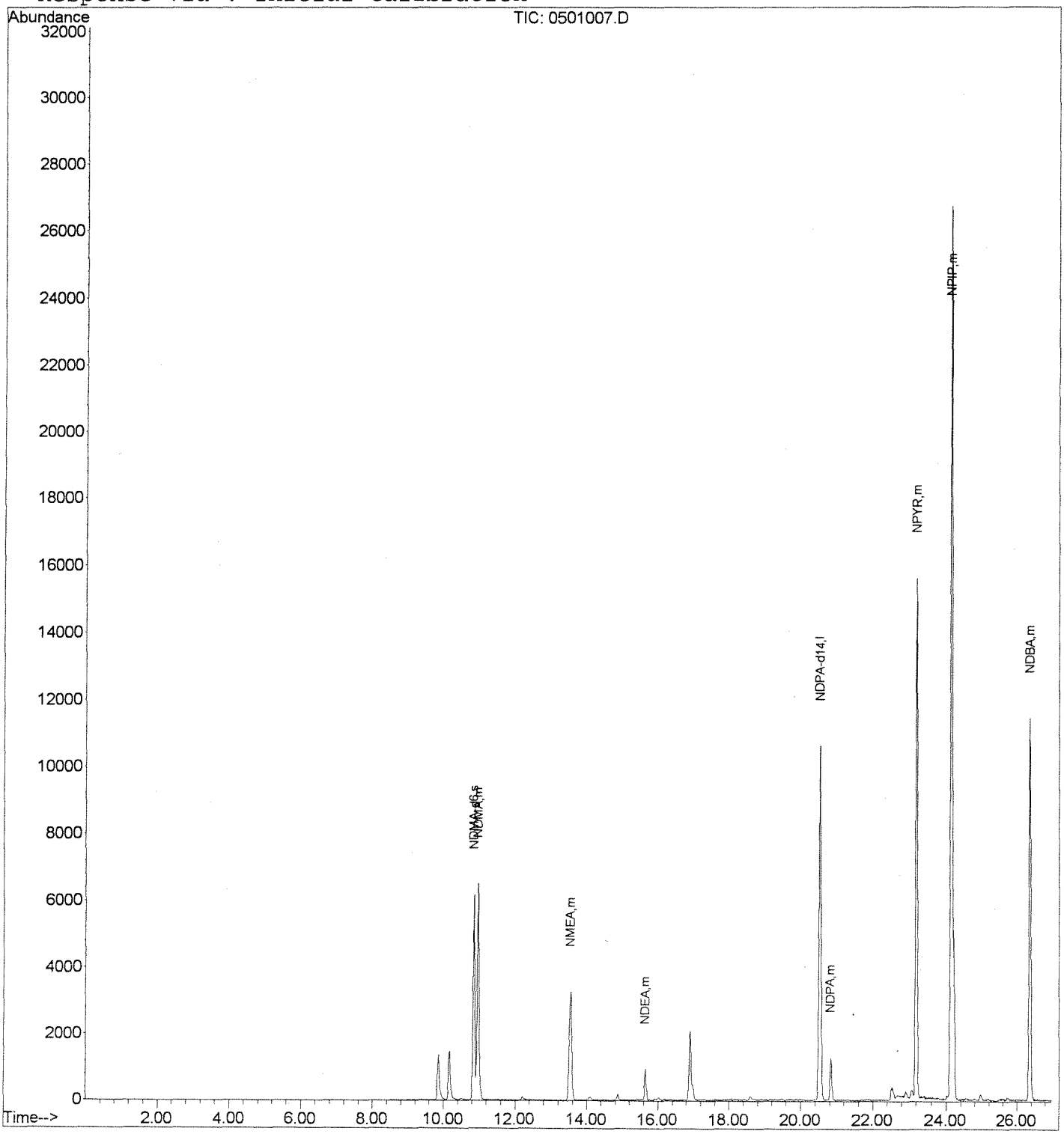
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	26255	50.00	ug/L	-0.04
System Monitoring Compounds						
3) NDMA-d6	10.85	50	12818	6.66	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.97	47	14833	8.74	ug/L	96
5) NMEA	13.55	61	14416	6.05	ug/L	100
6) NDEA	15.65	75	2466	7.38	ug/L	100
7) NDPA	20.83	89	3075	9.48	ug/L	100
8) NPYR	23.20	55	39232	10.37	ug/L	94
9) NPIP	24.12	69	75431	11.25	ug/L	100
10) NDBA	26.36	57	21808	10.21	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501007.D 031112_D14.M Wed May 09 12:06:37 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501007.D Vial: 8
Acq On : 01 May 12 21:19 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 2 16:16 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Exception Report

Data File: J:\MS16\DATA\050812-521\0508019.D
Lab ID: KWG1204391-2 -- P1201573-002DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/09/2012 01:36
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosopiperidine	53.6	NA	50	NR
	N-Nitrosodi-n-butylamine	69.4	NA	50	↓

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508019.D			**Instrument:**	MS16
Acqu Date:	05/09/2012 01:36	**Quant Date:**	05/09/2012 12:13	**Vial:**	16
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1204391-2 -- P1201573-002DMS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204795	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121343	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.51	0.00	97	31082	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.86	-0.02	0.00	50	24170	9.58	96	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97	-0.02	0.00	47	25741	12.04	24.1		NR
1	N-Nitrosomethylethylamine	13.53	-0.04	0.00	61	24709	8.01	16.0		
1	N-Nitrosodiethylamine	15.65	0.01	0.00	75	4409	10.10	20.2		
1	N-Nitrosodi-n-propylamine	20.81	-0.02	0.00	89	4250	10.69	21.4		
1	N-Nitrosopyrrolidine	23.19		0.00	55	50529	11.14	22.3		
1	N-Nitrosopiperidine	24.11		0.00	69	97644	12.12	24.2		
1	N-Nitrosodi-n-butylamine	26.34		0.00	57	27954	10.79	21.6		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508019.D Vial: 16
Acq On : 09 May 2012 01:36 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:32 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

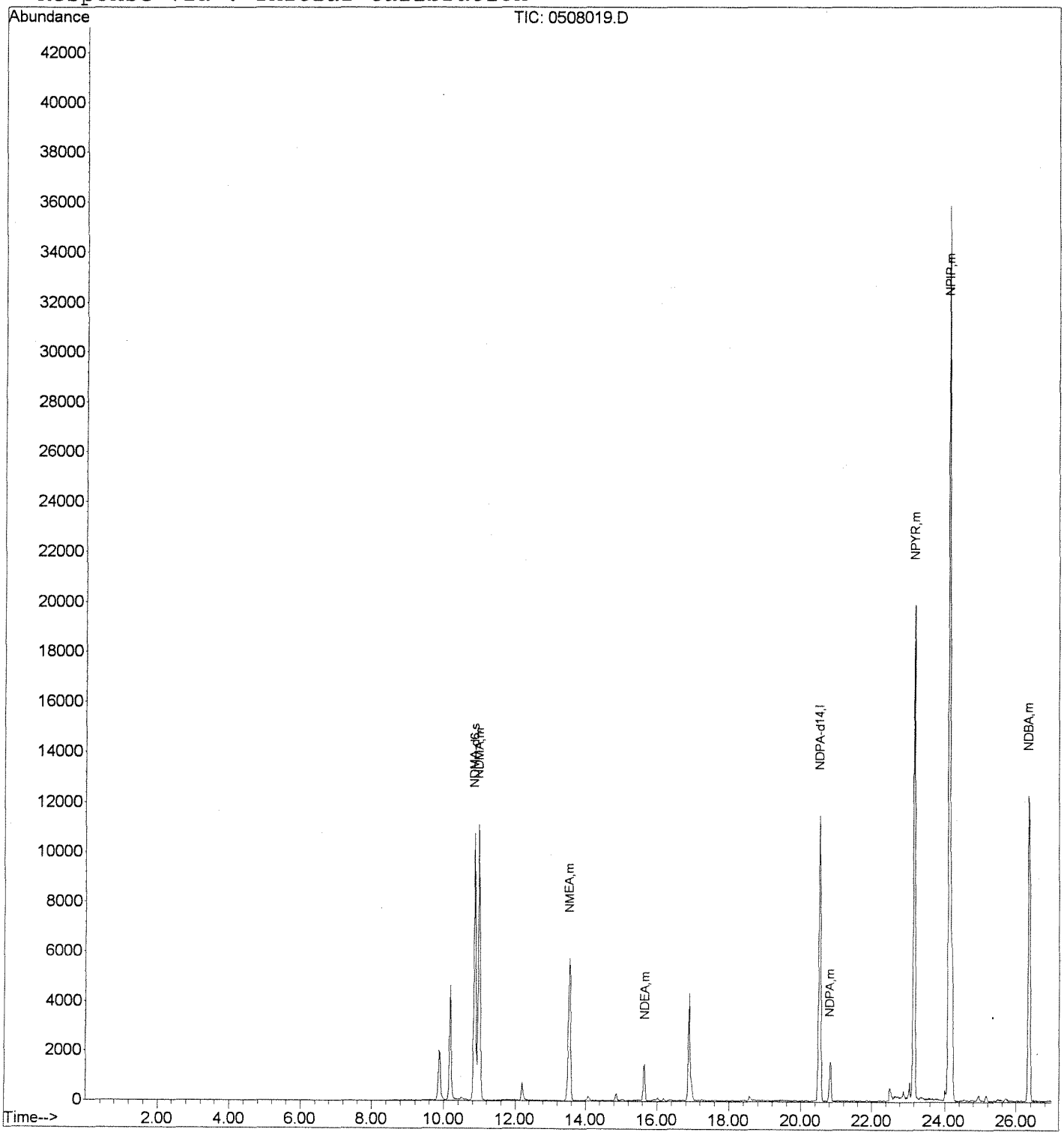
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.51	97	31082	50.00	ug/L	-0.06
System Monitoring Compounds						
3) NDMA-d6	10.86	50	24170	9.58	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.97	47	25741	12.04	ug/L	97
5) NMEA	13.53	61	24709	8.01	ug/L	100
6) NDEA	15.65	75	4409	10.10	ug/L	100
7) NDPA	20.81	89	4250	10.69	ug/L	100
8) NPYR	23.19	55	50529	11.14	ug/L	94
9) NPIP	24.11	69	97644	12.12	ug/L	100
10) NDBA	26.34	57	27954	10.79	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508019.D 031112_D14.M Wed May 09 12:16:21 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508019.D Vial: 16
Acq On : 09 May 2012 01:36 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Units:**	ng/L
Lab Code:	KWG1204391-3	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**15.6**		2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	87	70-130	05/08/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050112-521\0501004.D
Lab ID: KWG1204391-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/01/2012 19:12
Date Quantitated: 05/02/2012 16:16
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA		x
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosodi-n-butylamine	50.6	NA	50	NR
Surrogates	N-Nitrosodimethylamine-d6	63	70	130	b

Primary Review: 5/9/12

Secondary Review:

Printed: 05/09/2012 12:36:46
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501004.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 19:12	**Quant Date:**	05/02/2012 16:16	**Vial:**	5
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1204391-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204793	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121344	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.52	-0.01	97	28060	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.86	0.01	0.00	50	12644	6.25	63	70-130	*	NR

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.98	0.01	0.00	47	13900	7.82	15.6		
1	N-Nitrosomethylethylamine	13.56	0.03	0.00	61	13998	5.63	11.3		
1	N-Nitrosodiethylamine	15.65	0.01	0.00	75	2927	8.00	16.0		
1	N-Nitrosodi-n-propylamine	20.84	0.01	0.00	89	3561	10.09	20.2		
1	N-Nitrosopyrrolidine	23.21		0.00	55	41753	10.33	20.7		
1	N-Nitrosopiperidine	24.12	-0.01	0.00	69	81430	11.34	22.7		
1	N-Nitrosodi-n-butylamine	26.37	-0.01	0.00	57	22662	10.01	20.0		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501004.D Vial: 5
Acq On : 01 May 12 19:12 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:16:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

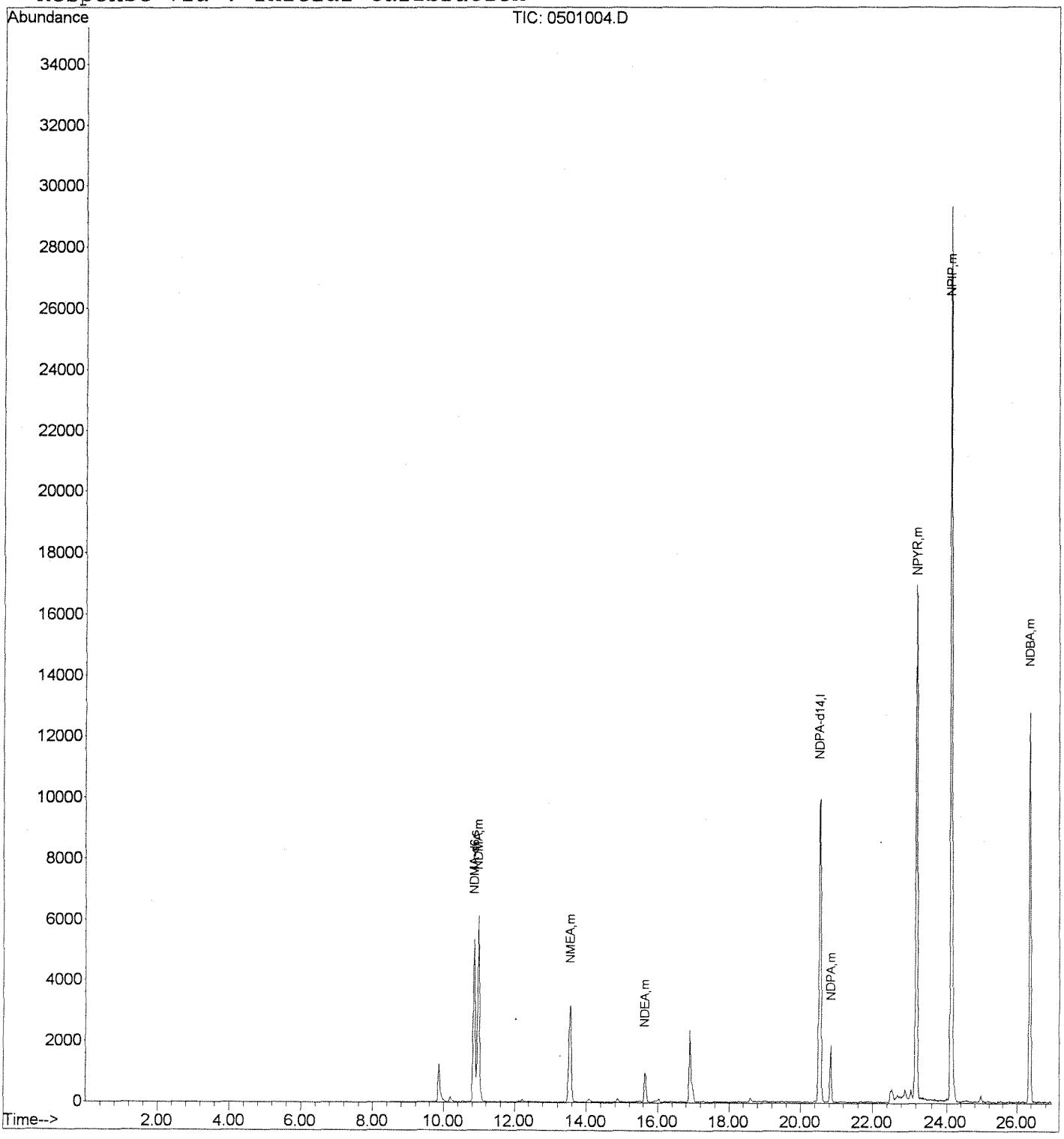
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.52	97	28060	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.86	50	12644	6.25	ug/L	-0.09
Target Compounds						Qvalue
4) NDMA	10.98	47	13900	7.82	ug/L	99
5) NMEA	13.56	61	13998	5.63	ug/L	100
6) NDEA	15.65	75	2927	8.00	ug/L	100
7) NDPA	20.84	89	3561	10.09	ug/L	100
8) NPYR	23.21	55	41753	10.33	ug/L	96
9) NPIP	24.12	69	81430	11.34	ug/L	100
10) NDBA	26.37	57	22662	10.01	ug/L	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501004.D Vial: 5
Acq On : 01 May 12 19:12 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 2 16:16 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Exception Report

Data File: J:\MS16\DATA\050812-521\0508016.D
Lab ID: KWG1204391-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/08/2012 23:29
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosopiperidine	53.6	NA	50	NC
	N-Nitrosodi-n-butylamine	69.4	NA	50	b

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508016.D			**Instrument:**	MS16
Acqu Date:	05/08/2012 23:29	**Quant Date:**	05/09/2012 12:13	**Vial:**	13
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1204391-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204795	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121344	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.50	-0.01	97	32827	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.83	-0.05	0.00	50	22524	8.69	87	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.95	-0.04	0.00	47	23011	10.48	21.0		NR
1	N-Nitrosomethylethylamine	13.52	-0.05	0.00	61	22498	7.16	14.3		
1	N-Nitrosodiethylamine	15.62	-0.02	0.00	75	4158	9.27	18.5		
1	N-Nitrosodi-n-propylamine	20.82	-0.01	0.00	89	3631	9.07	18.1		
1	N-Nitrosopyrrolidine	23.19		0.00	55	44044	9.46	18.9		
1	N-Nitrosopiperidine	24.11		0.00	69	91432	10.96	21.9		
1	N-Nitrosodi-n-butylamine	26.33	-0.01	0.00	57	26513	10.01	20.0		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508016.D Vial: 13
Acq On : 08 May 12 23:29 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:31 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

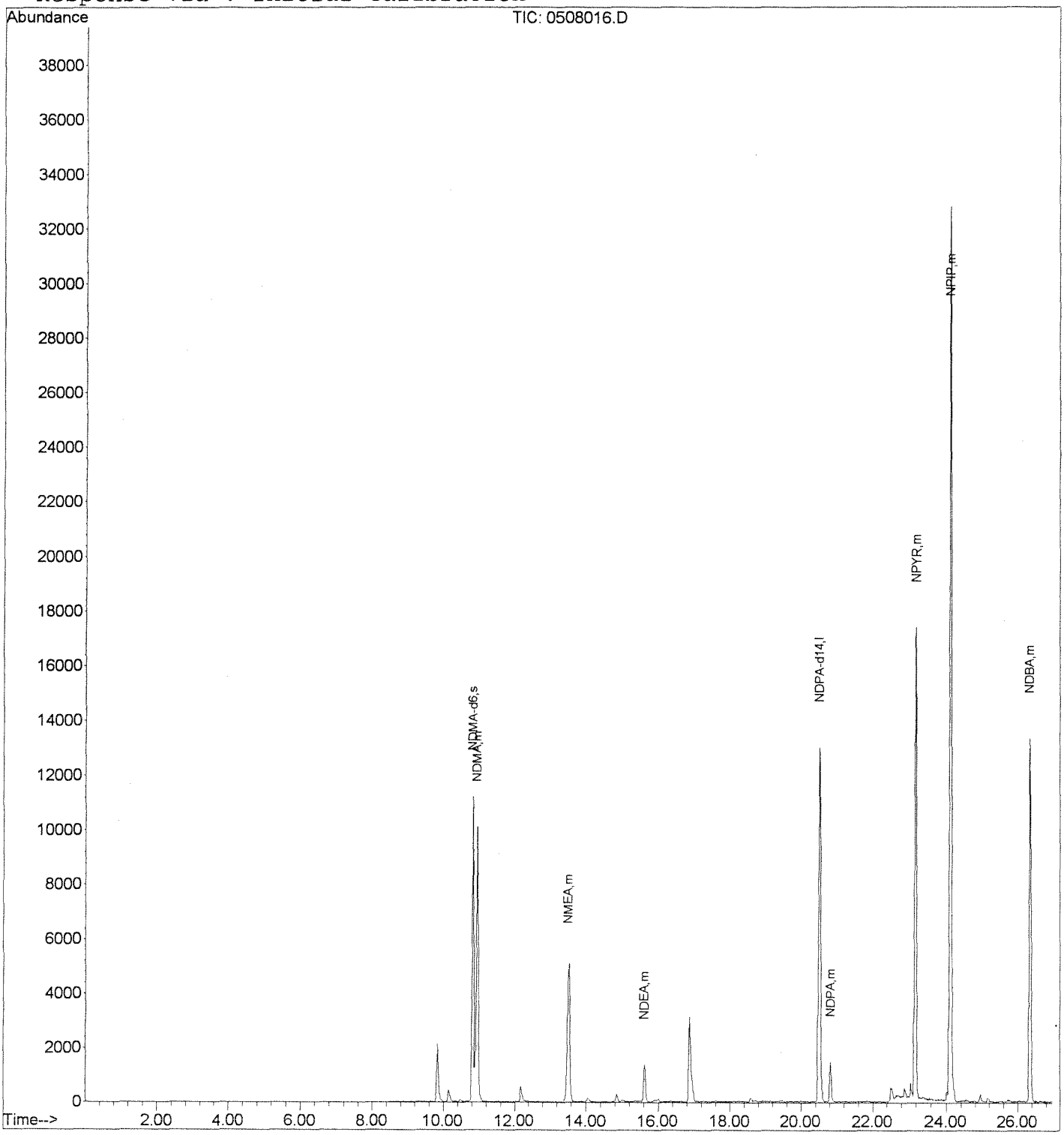
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.50	97	32827	50.00	ug/L	-0.07
System Monitoring Compounds						
3) NDMA-d6	10.83	50	22524	8.69	ug/L	-0.12
Target Compounds						Qvalue
4) NDMA	10.95	47	23011	10.48	ug/L	98
5) NMEA	13.52	61	22498	7.16	ug/L	100
6) NDEA	15.62	75	4158	9.27	ug/L	100
7) NDPA	20.82	89	3631	9.07	ug/L	100
8) NPYR	23.19	55	44044	9.46	ug/L	94
9) NPIP	24.11	69	91432	10.96	ug/L	100
10) NDBA	26.33	57	26513	10.01	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508016.D 031112_D14.M Wed May 09 12:16:20 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508016.D Vial: 13
Acq On : 08 May 12 23:29 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



0508016.D 031112_D14.M Wed May 09 12:16:20 2012 Page 2

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Standards Data

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Level ID	File ID
A	J:\MS16\DATA\031112-521\0311005.D
B	J:\MS16\DATA\031112-521\0311006.D
C	J:\MS16\DATA\031112-521\0311007.D
D	J:\MS16\DATA\031112-521\0311008.D
E	J:\MS16\DATA\031112-521\0311009.D
F	J:\MS16\DATA\031112-521\0311010.D
G	J:\MS16\DATA\031112-521\0311011.D
H	J:\MS16\DATA\031112-521\0311012.D
I	J:\MS16\DATA\031112-521\0311013.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
N-Nitrosodimethylamine-d6							C	1.0	1.28	D	2.0	2.08	E	5.0	2.86
	F	7.0	3.66	G	10	4.73	H	15	4.42	I	20	5.18			
N-Nitrosodimethylamine				B	0.50	1.18	C	1.0	1.63	D	2.0	2.42	E	5.0	2.51
	F	7.0	3.11	G	10	3.75	H	15	3.50	I	20	3.88			

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
N-Nitrosodimethylamine-d6	SURR	Quadratic	COD	0.992		≥ 0.99	3.46		
N-Nitrosodimethylamine	MS	Quadratic	COD	0.994		≥ 0.99	2.75		

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Calibration Date: 03/11/2012
Date Analyzed: 03/12/2012

Second Source Calibration Verification
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration ID: CAL11326
Units: ug/L

File ID: J:\MS16\DATA\031112-521\0311014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine	10	7.7	2.75	2.42	NA	-23	± 30 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Injection Log

ICAL 11326

Directory: J:\MS16\DATA\031112-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0311.D	1.	DCM		11 Mar 2012 29:0
2	1	0311001.D	1.	DWSTD5-49H 0.25 PPB		11 Mar 2012 29:4
3	2	0311002.D	1.	DWSTD5-49I 0.5 PPB		11 Mar 2012 30:2
4	13	0311003.D	1.	K1201175-002 MS		11 Mar 2012 31:1
5		0311004.D	1.	DCM		11 Mar 2012 31:5
6	1	0311005.D	1.	DWSTD5-42H 0.25 PPB		11 Mar 2012 32:3
7	2	0311006.D	1.	DWSTD5-51J 0.5 PPB		11 Mar 2012 33:2
8	3	0311007.D	1.	DWSTD5-50A 1 PPB		11 Mar 2012 34:0
9	4	0311008.D	1.	DWSTD5-42J 2 PPB		11 Mar 2012 34:4
10	5	0311009.D	1.	DWSTD5-48P 5 PPB		11 Mar 2012 35:2
11	6	0311010.D	1.	DWSTD5-43P 7 PPB		12 Mar 2012 12:1
12	7	0311011.D	1.	DWSTD5-42G 10 PPB		12 Mar 2012 12:5
13	8	0311012.D	1.	DWSTD5-42L 15 PPB		12 Mar 2012 13:3
14	9	0311013.D	1.	DWSTD5-42M 20 PPB		12 Mar 2012 14:1
15	10	0311014.D	1.	DWSTD5-50B ICV 10		12 Mar 2012 15:0
16		0311015.D	1.	DCM		12 Mar 2012 15:4
17	3	0311016.D	1.	DWSTD5-49J 1 PPB		12 Mar 2012 16:2
18	11	0311017.D	1.	K1201175-001		12 Mar 2012 17:0
19	12	0311018.D	1.	K1201175-002		12 Mar 2012 17:5
20	13	0311019.D	1.	K1201175-002 MS		12 Mar 2012 18:3
21	14	0311020.D	1.	K1201175-002 DMS		12 Mar 2012 19:1

3/12/14

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311005.D Vial: 1
Acq On : 11 Mar 12 20:38 Operator: SVO-DW
Sample : DWSTD5-42H 0.25 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:54 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

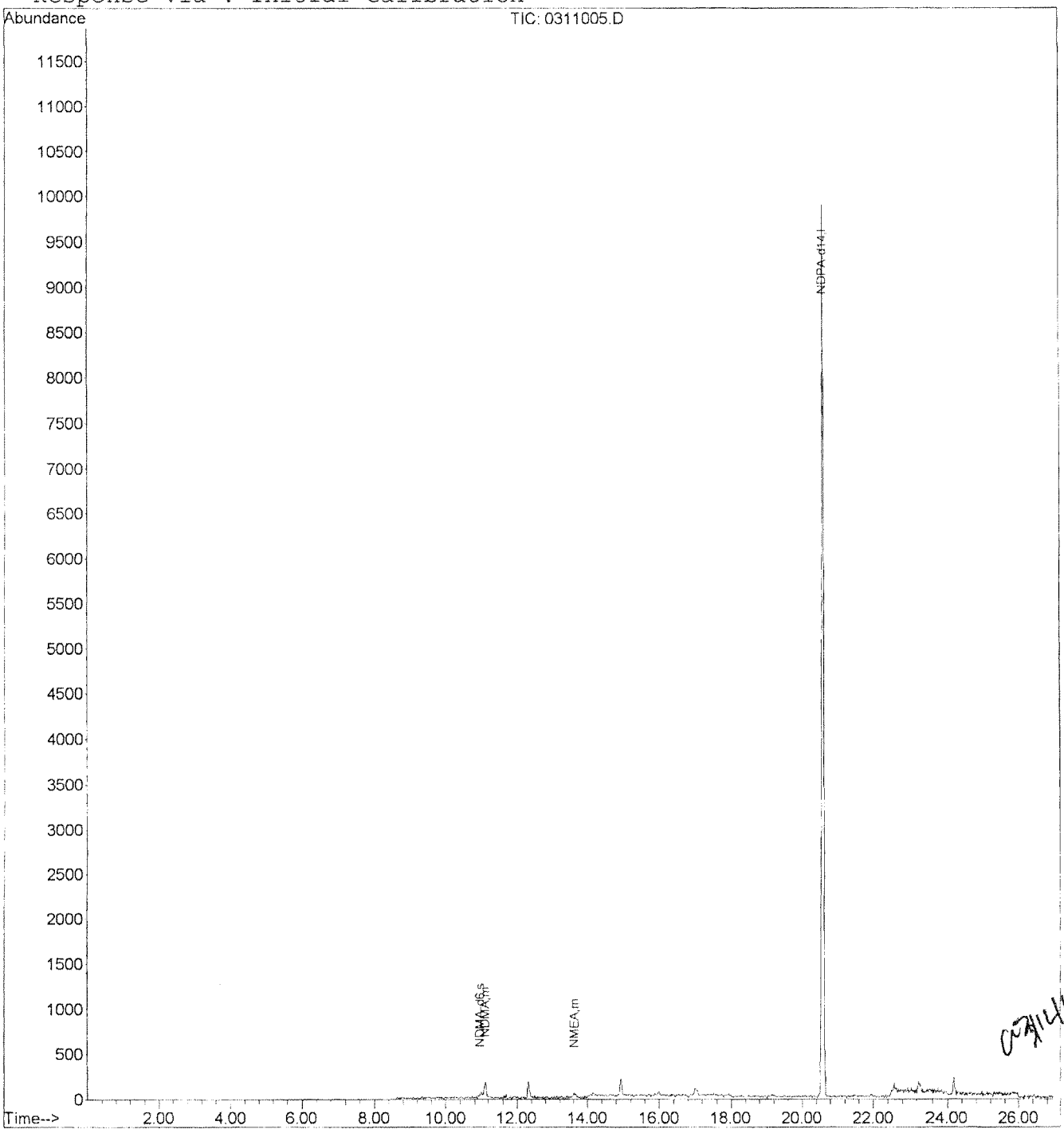
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	27591	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	162	0.43	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.11	47	496	0.34	ug/L	100
5) NMEA	13.63	61	240	0.38	ug/L	98

(#) = qualifier out of range (m) = manual integration
0311005.D 031112_D14.M Mon Mar 12 08:23:18 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311005.D Vial: 1
Acq On : 11 Mar 12 20:38 Operator: SVO-DW
Sample : DWSTD5-42H 0.25 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:18 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311005.D 031112_D14.M Mon Mar 12 08:23:19 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311006.D Vial: 2
Acq On : 11 Mar 12 21:21 Operator: SVO-DW
Sample : DWSTD5-51J 0.5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:54 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

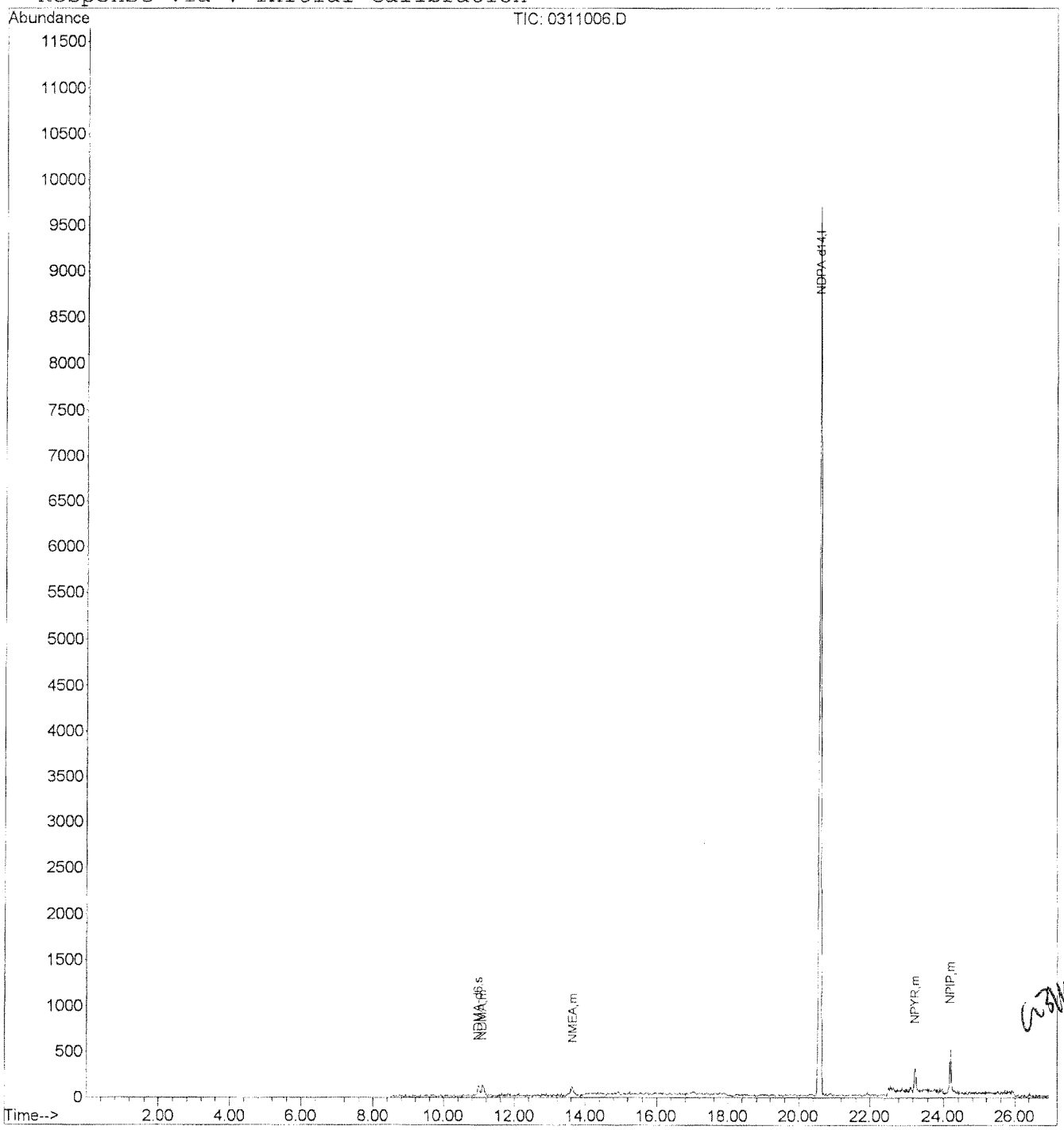
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	28801	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	288	0.51	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	340	0.24	ug/L	99
5) NMEA	13.64	61	513	0.55	ug/L	98
8) NPYR	23.26	55	613	0.34	ug/L	100
9) NPIP	24.18	69	993	0.37	ug/L	99

(#) = qualifier out of range (m) = manual integration
0311006.D 031112_D14.M Mon Mar 12 08:23:20 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311006.D Vial: 2
Acq On : 11 Mar 12 21:21 Operator: SVO-DW
Sample : DWSTD5-51J 0.5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311007.D Vial: 3
Acq On : 11 Mar 12 22:04 Operator: SVO-DW
Sample : DWSTD5-50A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

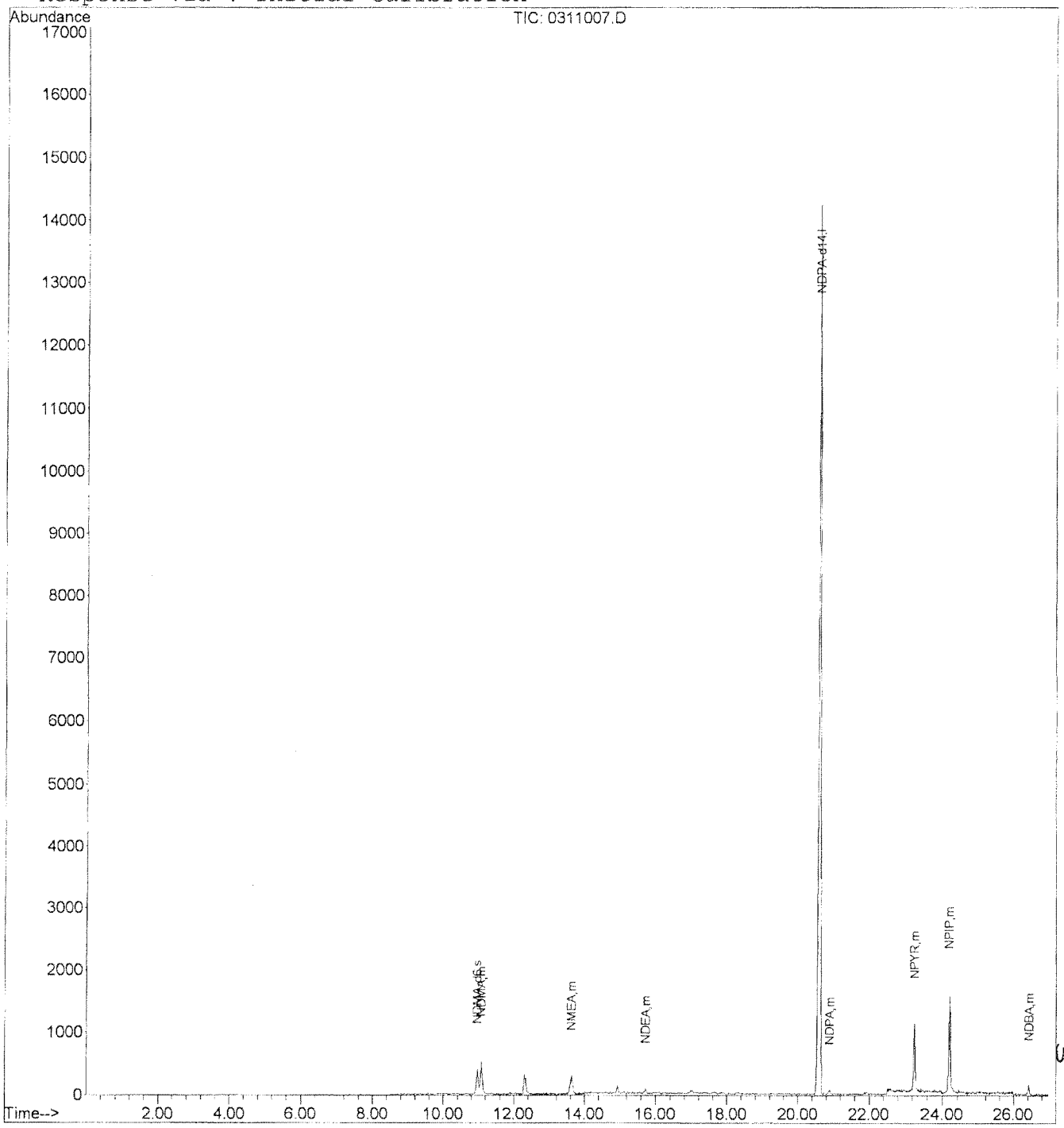
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	38374	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.97	50	981	0.83	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	1254	0.57	ug/L	98
5) NMEA	13.63	61	1290	0.84	ug/L	99
6) NDEA	15.73	75	176	1.02	ug/L	100
7) NDPA	20.89	89	119	0.47	ug/L	100
8) NPYR	23.25	55	2466	0.76	ug/L	100
9) NPIP	24.17	69	3591	0.68	ug/L	99
10) NDBA	26.43	57	181	0.76	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311007.D 031112_D14.M Mon Mar 12 08:23:22 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311007.D Vial: 3
Acq On : 11 Mar 12 22:04 Operator: SVO-DW
Sample : DWSTD5-50A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311007.D 031112_D14.M Mon Mar 12 08:23:22 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311008.D Vial: 4
Acq On : 11 Mar 12 22:46 Operator: SVO-DW
Sample : DWSTD5-42J 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

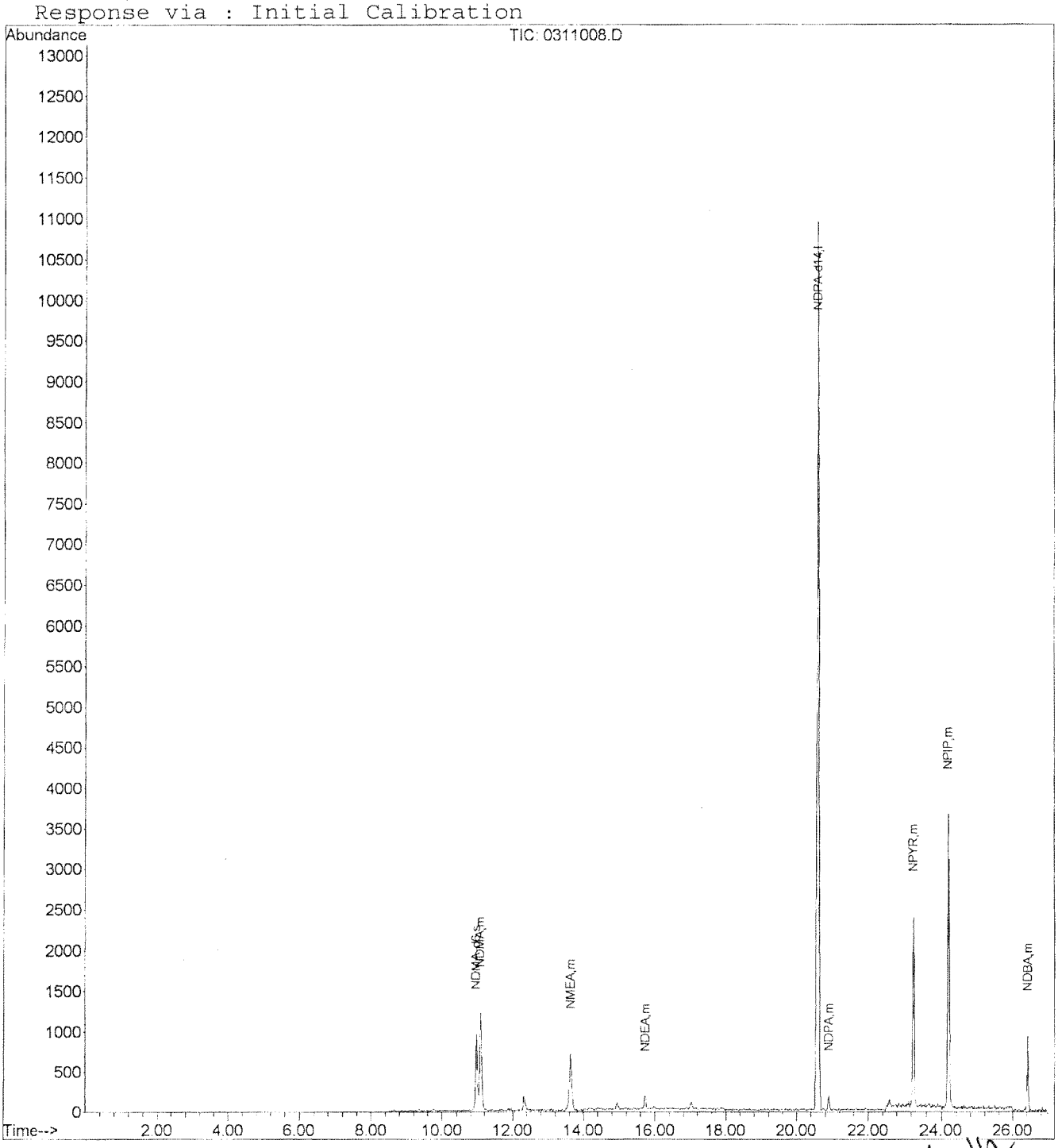
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.58	97	29381	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	2445	1.96	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	2840	1.57	ug/L	98
5) NMEA	13.63	61	2984	1.97	ug/L	99
6) NDEA	15.73	75	437	1.98	ug/L	100
7) NDPA	20.90	89	343	1.41	ug/L	100
8) NPYR	23.26	55	5523	1.89	ug/L	100
9) NPIP	24.18	69	8481	1.66	ug/L	99
10) NDBA	26.43	57	1130	1.19	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311008.D 031112_D14.M Mon Mar 12 08:23:24 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311008.D Vial: 4
Acq On : 11 Mar 12 22:46 Operator: SVO-DW
Sample : DWSTD5-42J 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



03/12/12

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311009.D Vial: 5
Acq On : 11 Mar 12 23:28 Operator: SVO-DW
Sample : DWSTD5-48P 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	30053	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.95	50	8605	5.32	ug/L	0.06
Target Compounds						Qvalue
4) NDMA	11.07	47	7538	3.83	ug/L	98
5) NMEA	13.63	61	11231	5.57	ug/L	99
6) NDEA	15.73	75	1840	5.66	ug/L	100
7) NDPA	20.90	89	1496	4.59	ug/L	100
8) NPYR	23.26	55	17249	4.88	ug/L	99
9) NPIP	24.18	69	31523	4.94	ug/L	99
10) NDBA	26.43	57	8214	3.74	ug/L	100

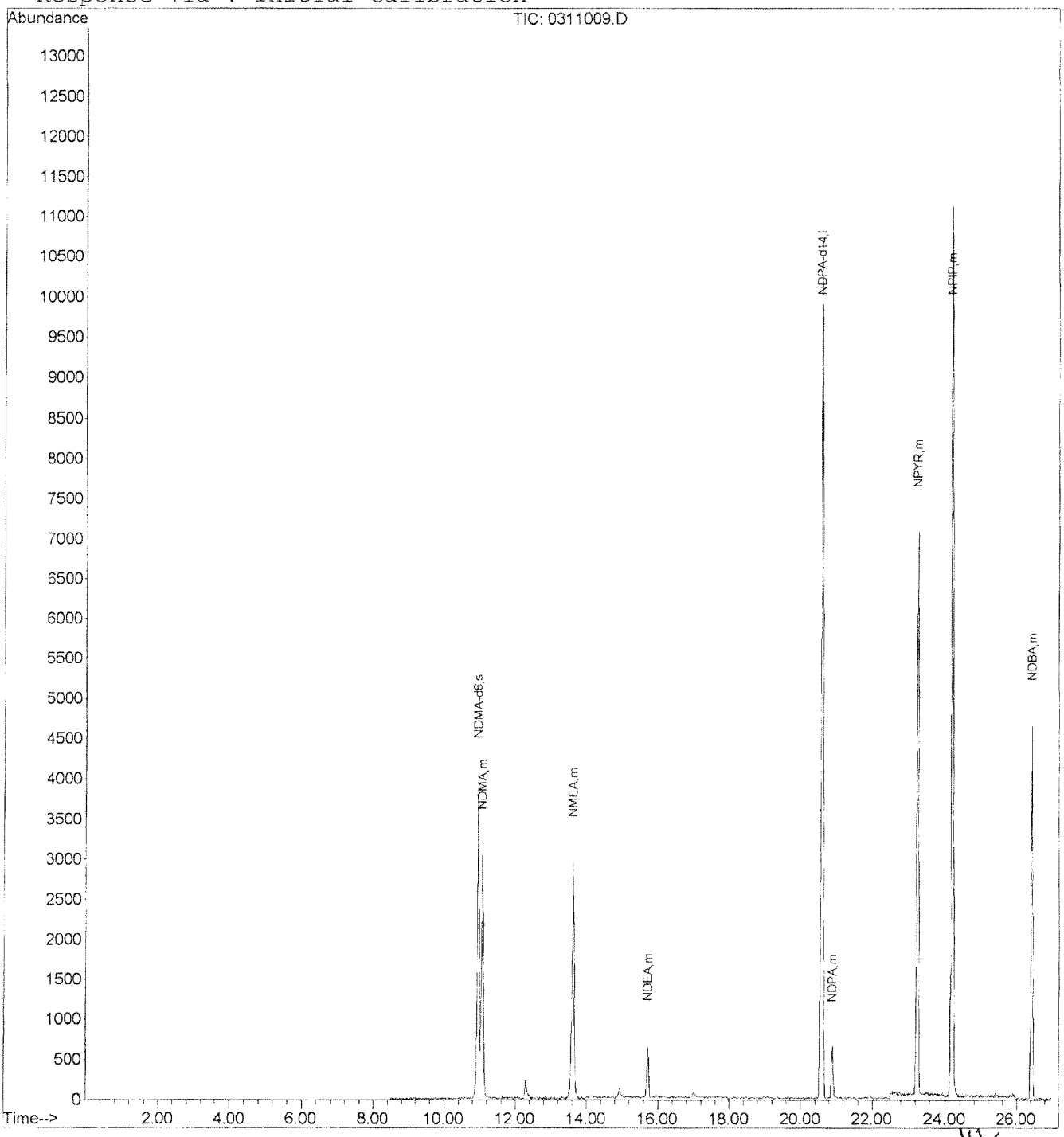
3/14/12

(#) = qualifier out of range (m) = manual integration
0311009.D 031112_D14.M Mon Mar 12 08:23:25 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311009.D Vial: 5
Acq On : 11 Mar 12 23:28 Operator: SVO-DW
Sample : DWSTD5-48P 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311009.D 031112_D14.M Mon Mar 12 08:23:26 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311010.D Vial: 6
Acq On : 12 Mar 2012 00:11 Operator: SVO-DW
Sample : DWSTD5-43P 7 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:56 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

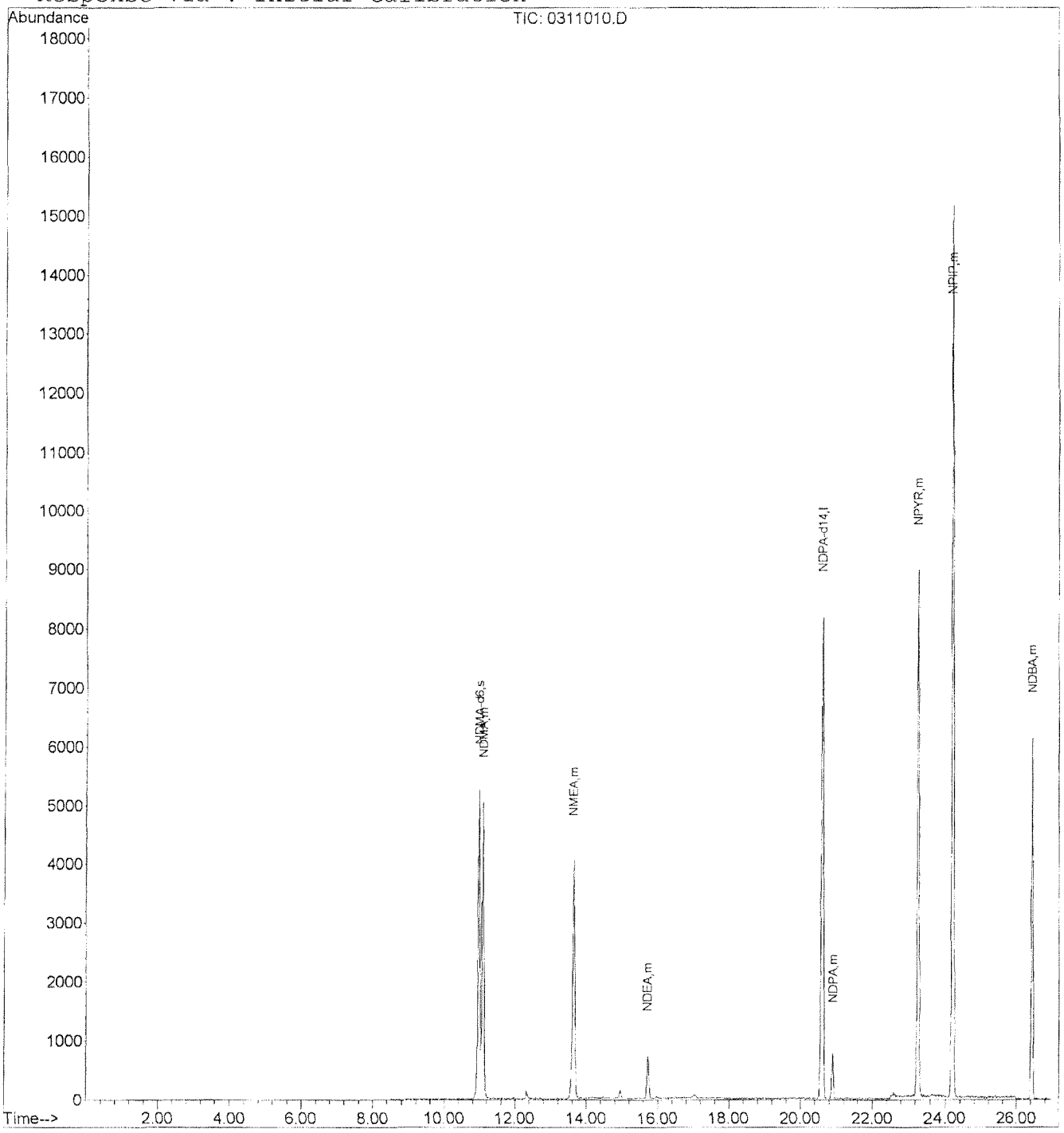
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	24830	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.97	50	12740	8.40	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	10802	6.36	ug/L	100
5) NMEA	13.64	61	17148	8.81	ug/L	99
6) NDEA	15.71	75	2090	7.20	ug/L	100
7) NDPA	20.90	89	1908	6.34	ug/L	100
8) NPYR	23.26	55	22562	7.05	ug/L	100
9) NPIP	24.19	69	40716	7.10	ug/L	99
10) NDBA	26.43	57	12687	5.81	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311010.D 031112_D14.M Mon Mar 12 08:23:27 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311010.D Vial: 6
Acq On : 12 Mar 2012 00:11 Operator: SVO-DW
Sample : DWSTD5-43P 7 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311011.D Vial: 7
Acq On : 12 Mar 2012 00:53 Operator: SVO-DW
Sample : DWSTD5-42G 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:56 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	23331	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.96	50	22064	13.23	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	17491	10.29	ug/L	97
5) NMEA	13.63	61	27747	12.90	ug/L	99
6) NDEA	15.74	75	3394	10.82	ug/L	100
7) NDPA	20.89	89	3130	9.38	ug/L	100
8) NPYR	23.27	55	36060	10.55	ug/L	100
9) NPIP	24.18	69	61376	10.26	ug/L	99
10) NDBA	26.44	57	19158	8.10	ug/L	100

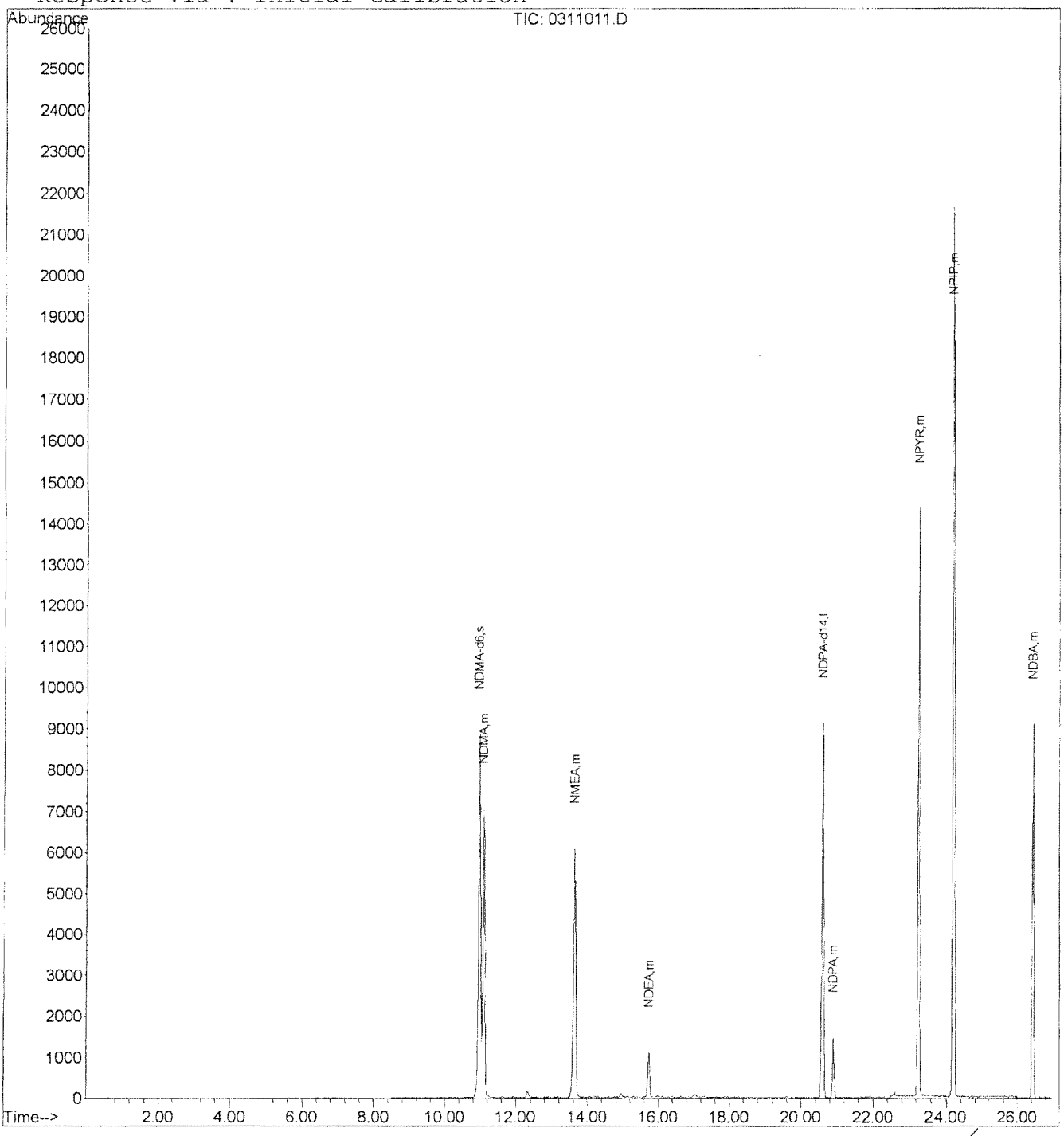
3/11/12

(#) = qualifier out of range (m) = manual integration
0311011.D 031112_D14.M Mon Mar 12 08:23:29 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311011.D Vial: 7
Acq On : 12 Mar 2012 00:53 Operator: SVO-DW
Sample : DWSTD5-42G 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311011.D 031112_D14.M Mon Mar 12 08:23:29 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311012.D Vial: 8
Acq On : 12 Mar 2012 01:36 Operator: SVO-DW
Sample : DWSTD5-42L 15 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

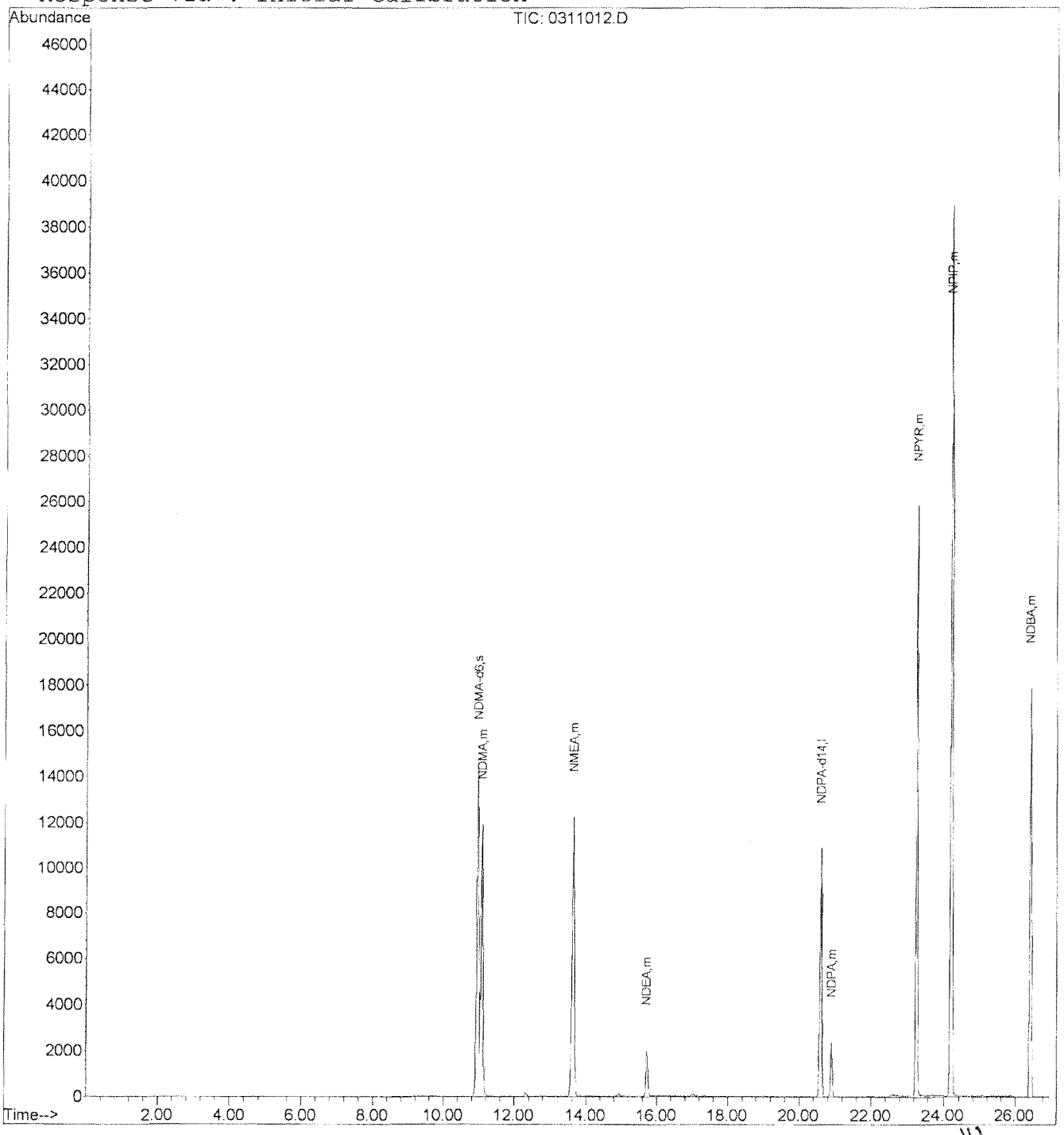
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.60	97	28601	50.00	ug/L	0.03
System Monitoring Compounds						
3) NDMA-d6	10.97	50	37928	16.79	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	29994	13.71	ug/L	100
5) NMEA	13.63	61	50017	16.69	ug/L	100
6) NDEA	15.71	75	6644	15.10	ug/L	100
7) NDPA	20.90	89	6020	12.66	ug/L	100
8) NPYR	23.26	55	67126	14.25	ug/L	100
9) NPIP	24.19	69	113622	13.93	ug/L	99
10) NDBA	26.43	57	42125	12.04	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311012.D 031112_D14.M Mon Mar 12 08:23:30 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311012.D Vial: 8
Acq On : 12 Mar 2012 01:36 Operator: SVO-DW
Sample : DWSTD5-42L 15 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



3/12/12

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311013.D Vial: 9
Acq On : 12 Mar 2012 02:18 Operator: SVO-DW
Sample : DWSTD5-42M 20 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.60	97	29929	50.00	ug/L	0.03
System Monitoring Compounds						
3) NDMA-d6	10.96	50	62054	22.72	ug/L	0.07
Target Compounds						Qvalue
4) NDMA	11.08	47	46487	18.92	ug/L	99
5) NMEA	13.64	61	86114	22.95	ug/L	99
6) NDEA	15.73	75	11096	20.76	ug/L	100
7) NDPA	20.90	89	9412	16.35	ug/L	100
8) NPYR	23.28	55	96259	17.71	ug/L	100
9) NPIP	24.19	69	172721	18.16	ug/L	100
10) NDBA	26.45	57	66211	15.71	ug/L	100

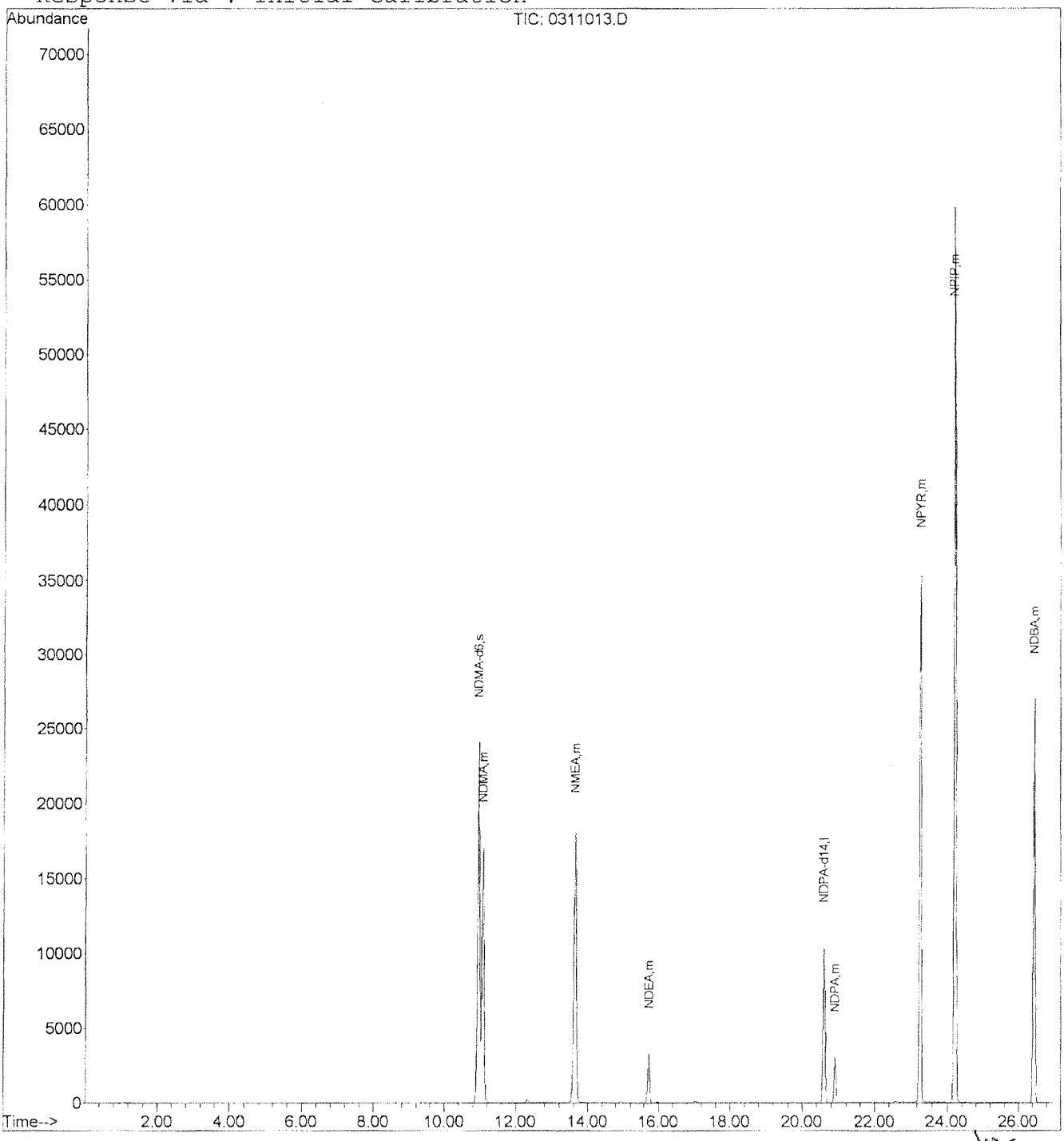
3/14/12

(#) = qualifier out of range (m) = manual integration
0311013.D 031112_D14.M Mon Mar 12 08:23:32 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311013.D Vial: 9
Acq On : 12 Mar 2012 02:18 Operator: SVO-DW
Sample : DWSTD5-42M 20 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\031112-521\0311014.D Vial: 10
Acq On : 12 Mar 2012 03:01 Operator: SVO-DW
Sample : DWSTD5-50B ICV 10 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:40:42 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	25007	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	0.00	50	0	0.00	ug/L	
Target Compounds						Qvalue
4) NDMA	11.08	47	12119	7.67	ug/L	97
5) NMEA	13.62	61	20016	8.05	ug/L	100
6) NDEA	15.71	75	2597	7.97	ug/L	100
7) NDPA	20.89	89	2542	8.49	ug/L	100
8) NPYR	23.26	55	28231	8.16	ug/L	94
9) NPIP	24.19	69	49441	8.21	ug/L	100
10) NDBA	26.43	57	15154	8.18	ug/L	100

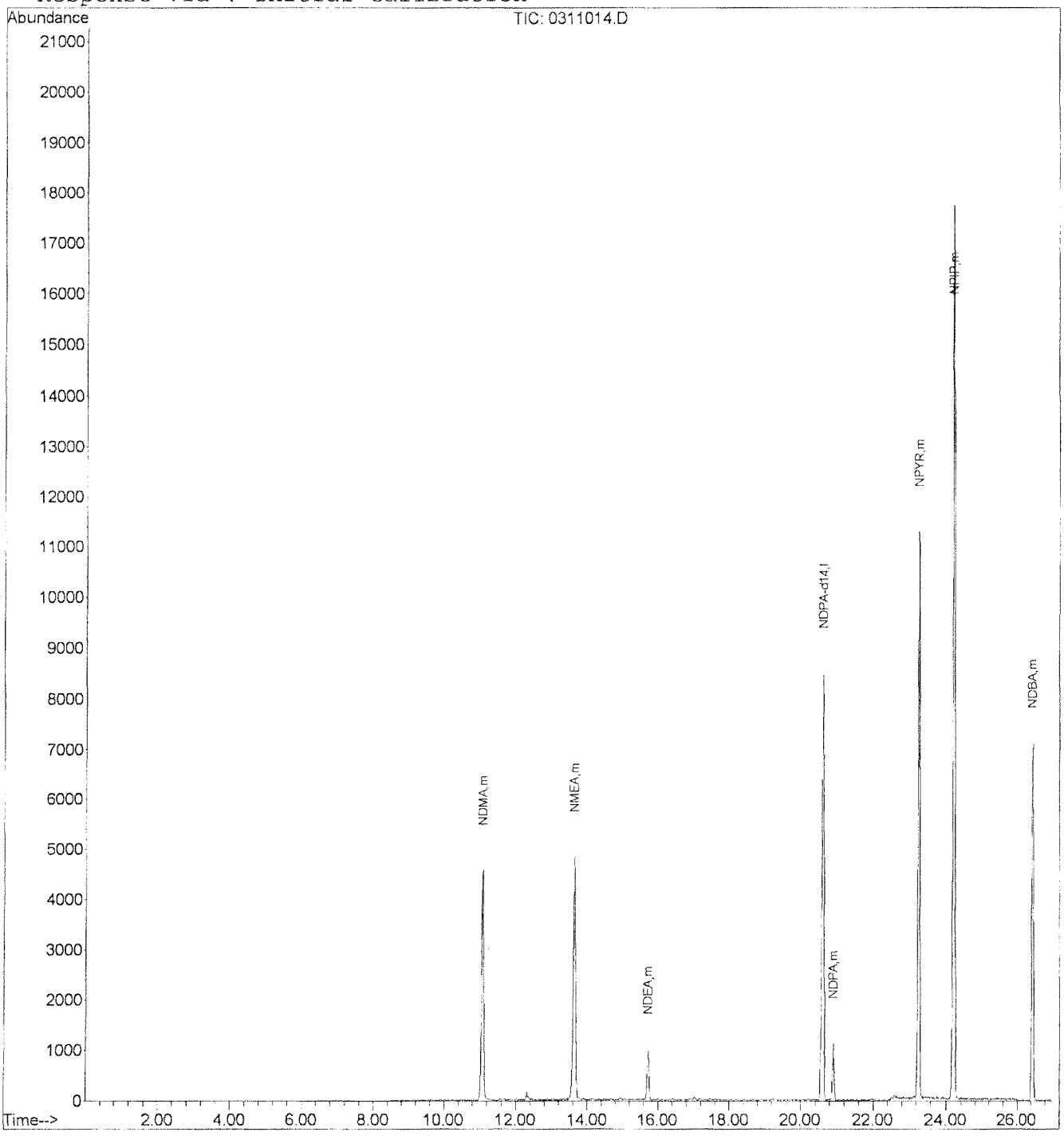
3/14/12

(#) = qualifier out of range (m) = manual integration
0311014.D 031112_D14.M Mon Mar 12 08:40:42 2012 Page 1

Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\031112-521\0311014.D Vial: 10
Acq On : 12 Mar 2012 03:01 Operator: SVO-DW
Sample : DWSTD5-50B ICV 10 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:40 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/01/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	0.98		3.46	0.816	NA	-2	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	0.89		2.75	1.53	NA	-11	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050112-521\0501001.D
Lab ID: KWG1204793-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/01/2012 17:04
Date Quantitated: 05/01/2012 17:33
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Printed: 05/09/2012 12:36:43
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501001.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 17:04	**Quant Date:**	05/01/2012 17:33	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204793-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204793	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	-0.06	97	32908	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.85			50	537	0.9800		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97			47	1005	0.8900			
1	N-Nitrosomethylethylamine	13.53			61	987	1.06			
1	N-Nitrosodiethylamine	15.64			75	157	1.04			
1	N-Nitrosodi-n-propylamine	20.83			89	153	1.23			
1	N-Nitrosopyrrolidine	23.21			55	2655	1.19			
1	N-Nitrosopiperidine	24.13			69	5111	1.32			
1	N-Nitrosodi-n-butylamine	26.38			57	612	1.38			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808
DataFile: J:\MS16\DATA\050112-521\0501001.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	0.816		0.9800	1.000	-2.0
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	1.527		0.8900	1.000	-11.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	1.500		1.060	1.000	6.0
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.239		1.040	1.000	4.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.232		1.230	1.000	23.0
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	4.034		1.190	1.000	19.0
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	7.766		1.320	1.000	32.0
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	0.930		1.380	1.000	38.0

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501001.D Vial: 1
Acq On : 01 May 12 17:04 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 01 17:33:02 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

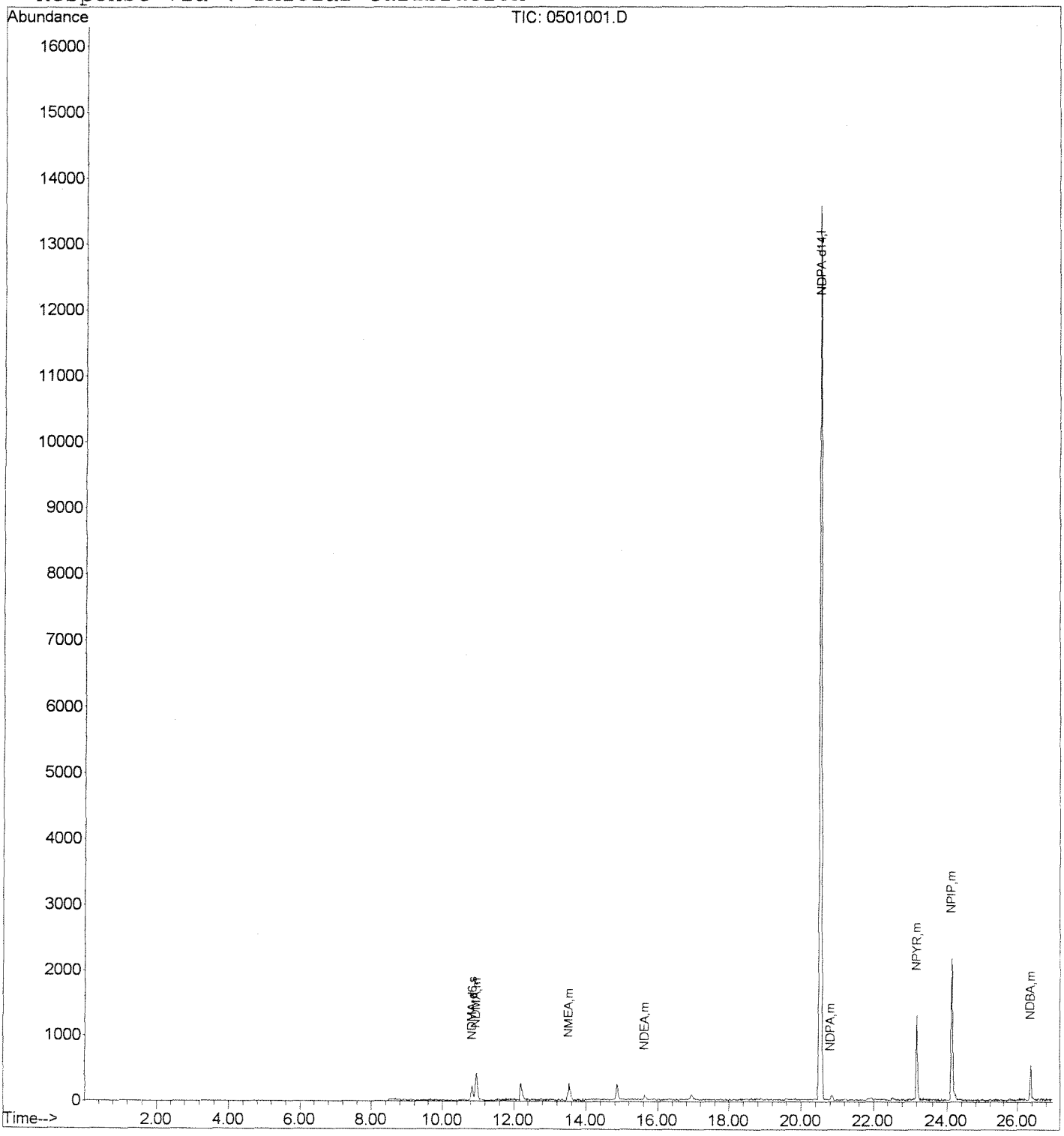
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	32908	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.85	50	537	0.98	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.97	47	1005	0.89	ug/L	98
5) NMEA	13.53	61	987	1.06	ug/L	99
6) NDEA	15.64	75	157	1.04	ug/L	100
7) NDPA	20.83	89	153	1.23	ug/L	99
8) NPYR	23.21	55	2655	1.19	ug/L	94
9) NPIP	24.13	69	5111	1.32	ug/L	100
10) NDBA	26.38	57	612	1.38	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501001.D 031112_D14.M Wed May 09 11:58:38 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501001.D Vial: 1
Acq On : 01 May 12 17:04 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 1 17:33 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	4.3		3.46	2.75	NA	-15	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	5.4		2.75	3.21	NA	8	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050112-521\0501013.D
Lab ID: KWG1204793-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/02/2012 01:33
Date Quantitated: 05/02/2012 16:17
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501013.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 01:33	**Quant Date:**	05/02/2012 16:17	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204793-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204793	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050112-521\0501.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	-0.04	97	32882	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.81			50	9051	4.27		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.93			47	10566	5.40			
1	N-Nitrosomethylethylamine	13.53			61	10533	4.04			
1	N-Nitrosodiethylamine	15.64			75	2140	5.55			
1	N-Nitrosodi-n-propylamine	20.83			89	1908	5.49			
1	N-Nitrosopyrrolidine	23.21			55	26354	6.09			
1	N-Nitrosopiperidine	24.13			69	51712	6.77			
1	N-Nitrosodi-n-butylamine	26.37			57	17691	7.53			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808
DataFile: J:\MS16\DATA\050112-521\0501013.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	2.753		4.270	5.000	-14.6
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	3.213		5.400	5.000	8.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	3.203		4.040	5.000	-19.2
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.651		5.550	5.000	11.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.580		5.490	5.000	9.8
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	8.015		6.090	5.000	21.8
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	1.6E+1		6.770	5.000	35.4
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	5.380		7.530	5.000	50.6 *

1 Compounds Failed CCV Criteria (12.50 Percent)

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501013.D Vial: 2
Acq On : 02 May 2012 01:33 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:17:00 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

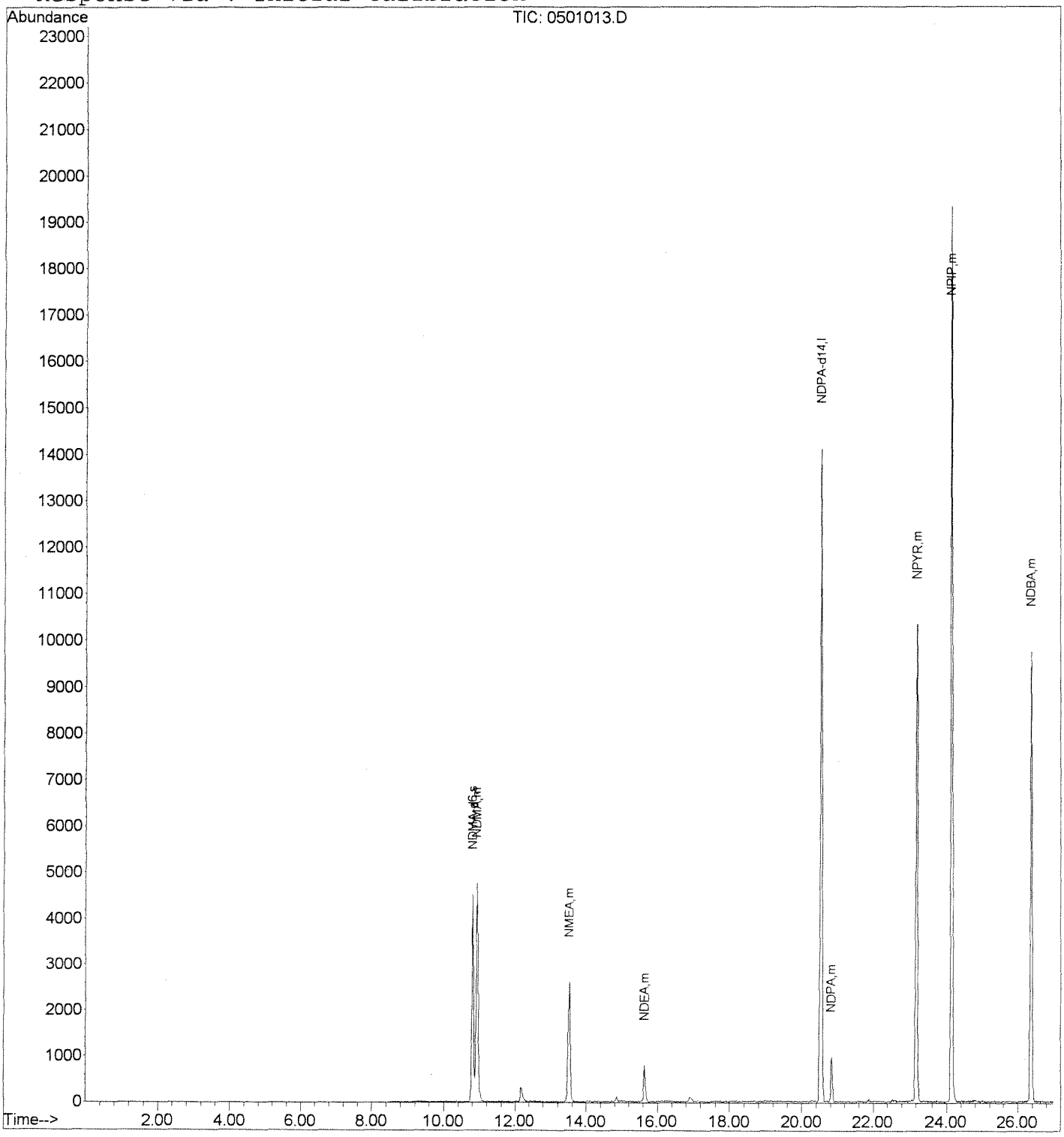
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	32882	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.81	50	9051	4.27	ug/L	-0.14
Target Compounds						Qvalue
4) NDMA	10.93	47	10566	5.40	ug/L	95
5) NMEA	13.53	61	10533	4.04	ug/L	100
6) NDEA	15.64	75	2140	5.55	ug/L	100
7) NDPA	20.83	89	1908	5.49	ug/L	100
8) NPYR	23.21	55	26354	6.09	ug/L	94
9) NPIP	24.13	69	51712	6.77	ug/L	100
10) NDBA	26.37	57	17691	7.53	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501013.D 031112_D14.M Wed May 09 11:58:50 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501013.D Vial: 2
Acq On : 02 May 2012 01:33 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 2 16:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.3		3.46	1.80	NA	25	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.3		2.75	2.78	NA	30	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050212-521\0502001.D
Lab ID: KWG1204794-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/02/2012 17:19
Date Quantitated: 05/03/2012 13:45
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502001.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 17:19	**Quant Date:**	05/03/2012 13:45	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204794-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204794	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050212-521\0502.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	-0.06	97	30450	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.83			50	1094	1.25		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97			47	1694	1.30			
1	N-Nitrosomethylethylamine	13.57			61	1266	1.19			
1	N-Nitrosodiethylamine	15.65			75	178	1.13			
1	N-Nitrosodi-n-propylamine	20.87			89	197	1.39			
1	N-Nitrosopyrrolidine	23.22			55	3470	1.43			
1	N-Nitrosopiperidine	24.14			69	5823	1.47			
1	N-Nitrosodi-n-butylamine	26.38			57	524	1.36			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808

DataFile: J:\MS16\DATA\050212-521\0502001.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	1.796		1.250	1.000	25.0
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	2.782		1.300	1.000	30.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	2.079		1.190	1.000	19.0
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.292		1.130	1.000	13.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.323		1.390	1.000	39.0
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	5.698		1.430	1.000	43.0
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	9.562		1.470	1.000	47.0
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	0.860		1.360	1.000	36.0

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502001.D Vial: 1
Acq On : 02 May 12 17:19 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:45:01 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

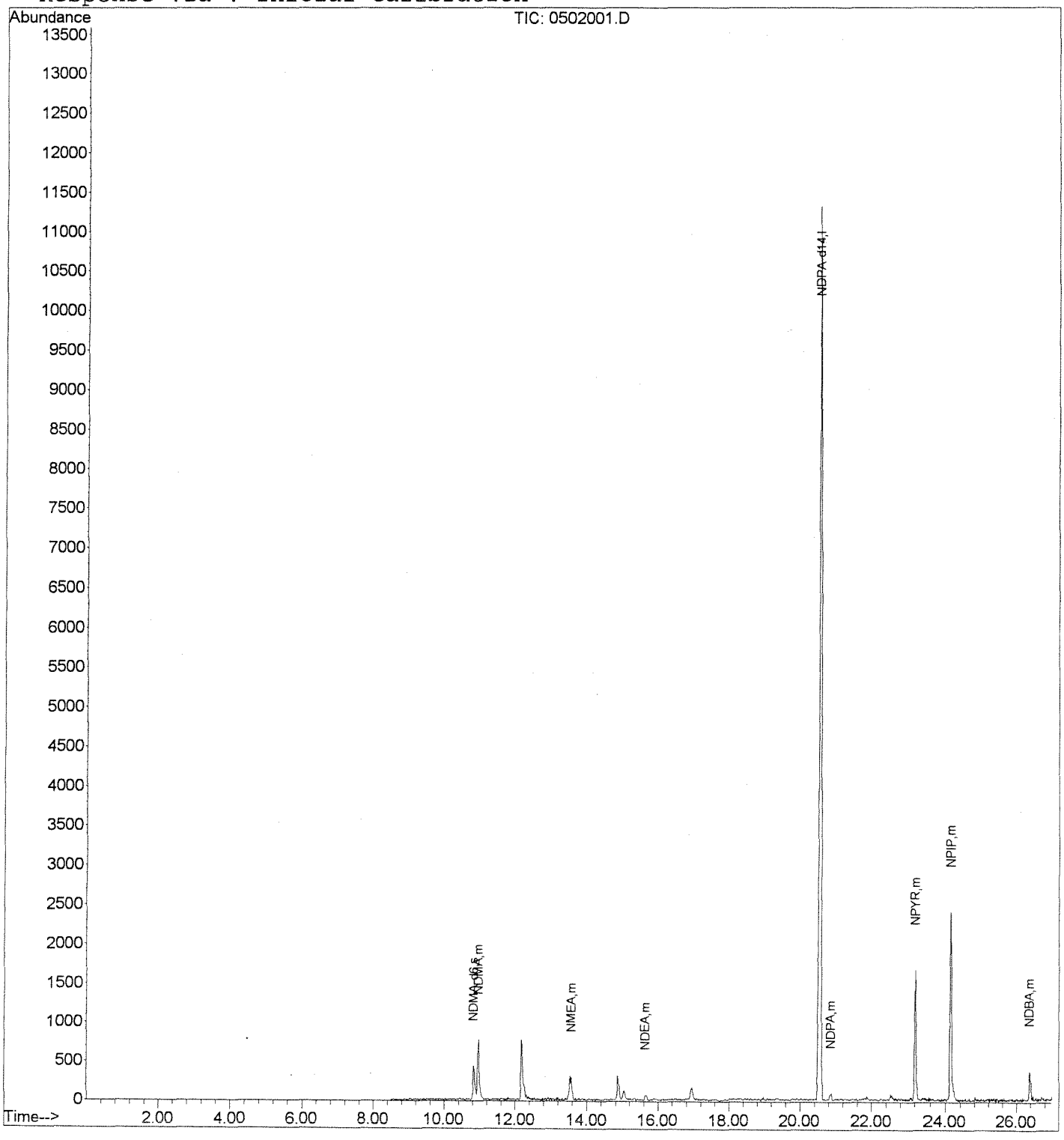
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	30450	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.83	50	1094	1.25	ug/L	-0.12
Target Compounds						Qvalue
4) NDMA	10.97	47	1694	1.30	ug/L	98
5) NMEA	13.57	61	1266	1.19	ug/L	100
6) NDEA	15.65	75	178	1.13	ug/L	100
7) NDPA	20.87	89	197	1.39	ug/L	100
8) NPYR	23.22	55	3470	1.43	ug/L	97
9) NPIP	24.14	69	5823	1.47	ug/L	100
10) NDBA	26.38	57	524	1.36	ug/L	100

(#) = qualifier out of range (m) = manual integration
0502001.D 031112_D14.M Wed May 09 12:11:50 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502001.D Vial: 1
Acq On : 02 May 12 17:19 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:45 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502008.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.1		3.46	3.43	NA	1	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.3		2.75	3.88	NA	27	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050212-521\0502008.D
Lab ID: KWG1204794-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/02/2012 22:16
Date Quantitated: 05/03/2012 13:46
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502008.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 22:16	**Quant Date:**	05/03/2012 13:46	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204794-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204794	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	-0.02	97	27043	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.84			50	9283	5.06		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.96			47	10492	6.34			
1	N-Nitrosomethylethylamine	13.55			61	9530	4.33			
1	N-Nitrosodiethylamine	15.67			75	1764	5.56			
1	N-Nitrosodi-n-propylamine	20.85			89	1569	5.49			
1	N-Nitrosopyrrolidine	23.23			55	24098	6.66			
1	N-Nitrosopiperidine	24.15			69	49139	7.64			
1	N-Nitrosodi-n-butylamine	26.40			57	15150	7.74			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808

DataFile: J:\MS16\DATA\050212-521\0502008.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	3.433		5.060	5.000	1.2
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	3.880		6.340	5.000	26.8
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	3.524		4.330	5.000	-13.4
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.652		5.560	5.000	11.2
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.580		5.490	5.000	9.8
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	8.911		6.660	5.000	33.2
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	1.8E+1		7.640	5.000	52.8 *
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	5.602		7.740	5.000	54.8 *

2 Compounds Failed CCV Criteria (25.00 Percent)

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502008.D Vial: 2
Acq On : 02 May 12 22:16 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:46:21 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

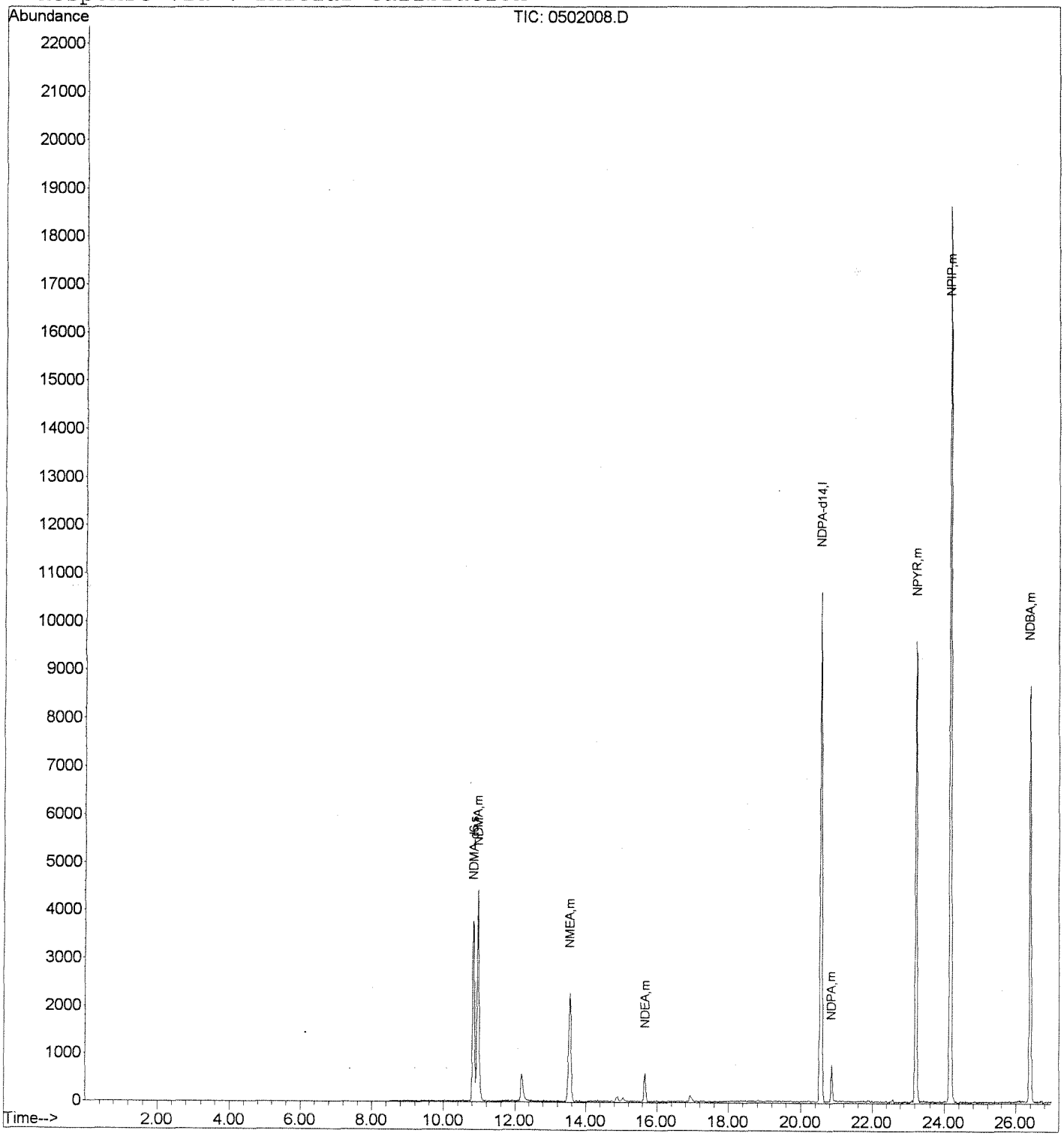
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	27043	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.84	50	9283	5.06	ug/L	-0.11
Target Compounds						Qvalue
4) NDMA	10.96	47	10492	6.34	ug/L	95
5) NMEA	13.55	61	9530	4.33	ug/L	100
6) NDEA	15.67	75	1764	5.56	ug/L	100
7) NDPA	20.85	89	1569	5.49	ug/L	100
8) NPYR	23.23	55	24098	6.66	ug/L	94
9) NPIP	24.15	69	49139	7.64	ug/L	100
10) NDBA	26.40	57	15150	7.74	ug/L	100

(#) = qualifier out of range (m) = manual integration
0502008.D 031112_D14.M Wed May 09 12:11:57 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502008.D Vial: 2
Acq On : 02 May 12 22:16 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:46 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/08/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.2		3.46	1.72	NA	23	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.2		2.75	2.36	NA	16	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050812-521\0508013.D
Lab ID: KWG1204795-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/08/2012 21:22
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508013.D			**Instrument:**	MS16
Acqu Date:	05/08/2012 21:22	**Quant Date:**	05/09/2012 12:13	**Vial:**	3
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204795-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204795	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.51	-0.08	97	28678	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.88			50	988	1.23		70-130	NA	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.99			47	1353	1.16			
1	N-Nitrosomethylethylamine	13.57			61	1110	1.16			
1	N-Nitrosodiethylamine	15.64			75	174	1.15			
1	N-Nitrosodi-n-propylamine	20.83			89	159	1.30			
1	N-Nitrosopyrrolidine	23.19			55	2383	1.21			
1	N-Nitrosopiperidine	24.11			69	4536	1.34			
1	N-Nitrosodi-n-butylamine	26.34			57	350	1.28			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808

DataFile: J:\MS16\DATA\050812-521\0508013.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	1.723		1.230	1.000	23.0
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	2.359		1.160	1.000	16.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	1.935		1.160	1.000	16.0
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.303		1.150	1.000	15.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.277		1.300	1.000	30.0
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	4.155		1.210	1.000	21.0
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	7.909		1.340	1.000	34.0
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	0.610		1.280	1.000	28.0

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508013.D Vial: 3
Acq On : 08 May 12 21:22 Operator: SVO-DW
Sample : DWSTD5-55J 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:30 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

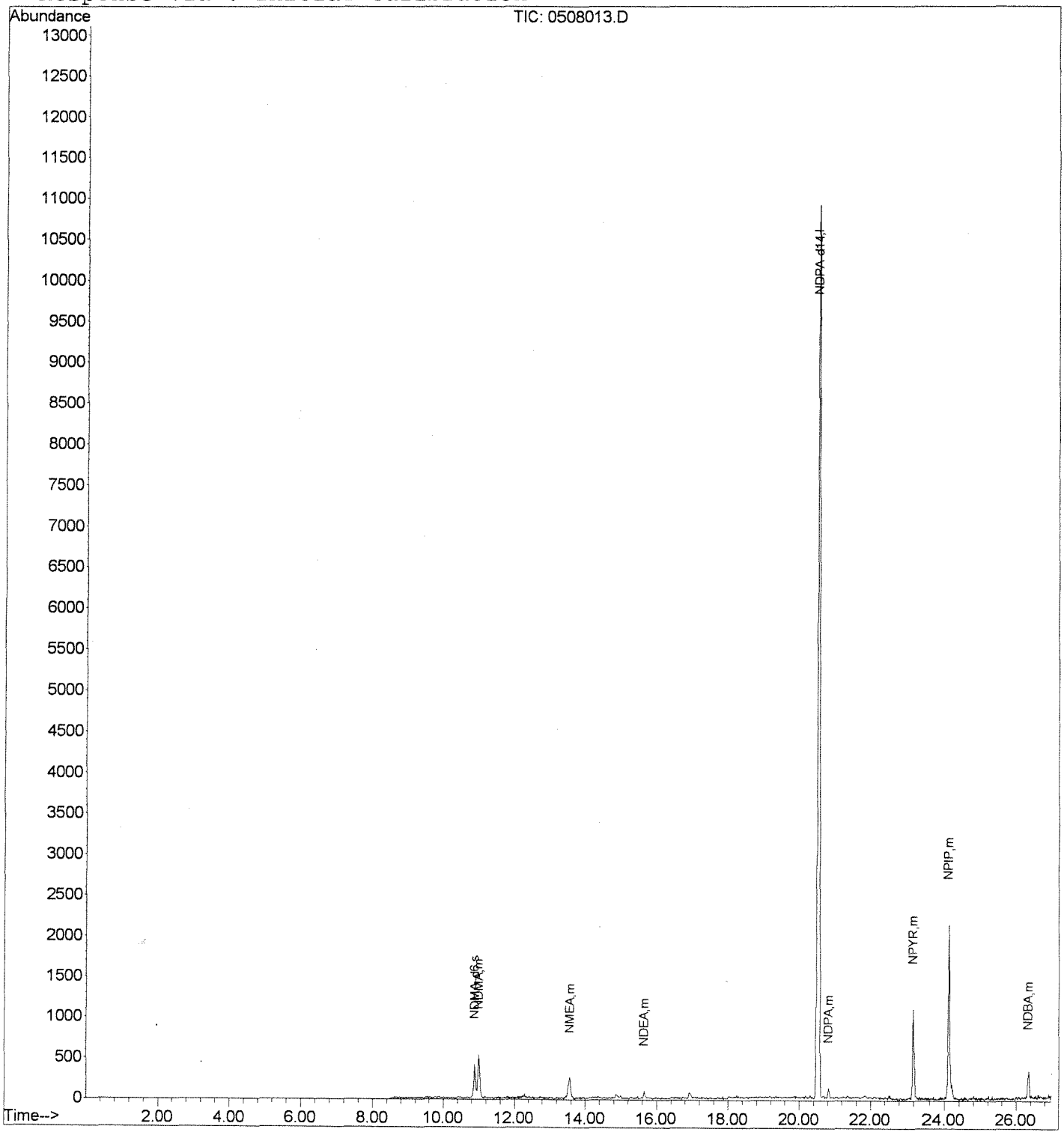
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.51	97	28678	50.00	ug/L	-0.07
System Monitoring Compounds						
3) NDMA-d6	10.88	50	988	1.23	ug/L	-0.08
Target Compounds						Qvalue
4) NDMA	10.99	47	1353	1.16	ug/L	95
5) NMEA	13.57	61	1110	1.16	ug/L	99
6) NDEA	15.64	75	174	1.15	ug/L	100
7) NDPA	20.83	89	159	1.30	ug/L	100
8) NPYR	23.19	55	2383	1.21	ug/L	94
9) NPIP	24.11	69	4536	1.34	ug/L	100
10) NDBA	26.34	57	350	1.28	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508013.D 031112_D14.M Wed May 09 12:16:16 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508013.D Vial: 3
Acq On : 08 May 12 21:22 Operator: SVO-DW
Sample : DWSTD5-55J 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/09/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508024.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.5		3.46	3.84	NA	10	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.6		2.75	4.04	NA	31	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050812-521\0508024.D
Lab ID: KWG1204795-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/09/2012 08:53
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508024.D			**Instrument:**	MS16
Acqu Date:	05/09/2012 08:53	**Quant Date:**	05/09/2012 12:13	**Vial:**	5
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204795-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204795	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.51	-0.06	97	27403	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.87			50	10510	5.51		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97			47	11071	6.57			
1	N-Nitrosomethylethylamine	13.54			61	11895	5.07			
1	N-Nitrosodiethylamine	15.62			75	2070	6.23			
1	N-Nitrosodi-n-propylamine	20.81			89	1950	6.43			
1	N-Nitrosopyrrolidine	23.19			55	26653	7.18			
1	N-Nitrosopiperidine	24.10			69	50086	7.68			
1	N-Nitrosodi-n-butylamine	26.33			57	17435	8.47			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808
DataFile: J:\MS16\DATA\050812-521\0508024.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	3.835		5.510	5.000	10.2
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	4.040		6.570	5.000	31.4
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	4.341		5.070	5.000	1.4
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.755		6.230	5.000	24.6
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.712		6.430	5.000	28.6
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	9.726		7.180	5.000	43.6
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	1.8E+1		7.680	5.000	53.6 *
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	6.362		8.470	5.000	69.4 *

2 Compounds Failed CCV Criteria (25.00 Percent)

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508024.D Vial: 5
Acq On : 09 May 2012 08:53 Operator: SVO-DW
Sample : DWSTD5-55L 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:33 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

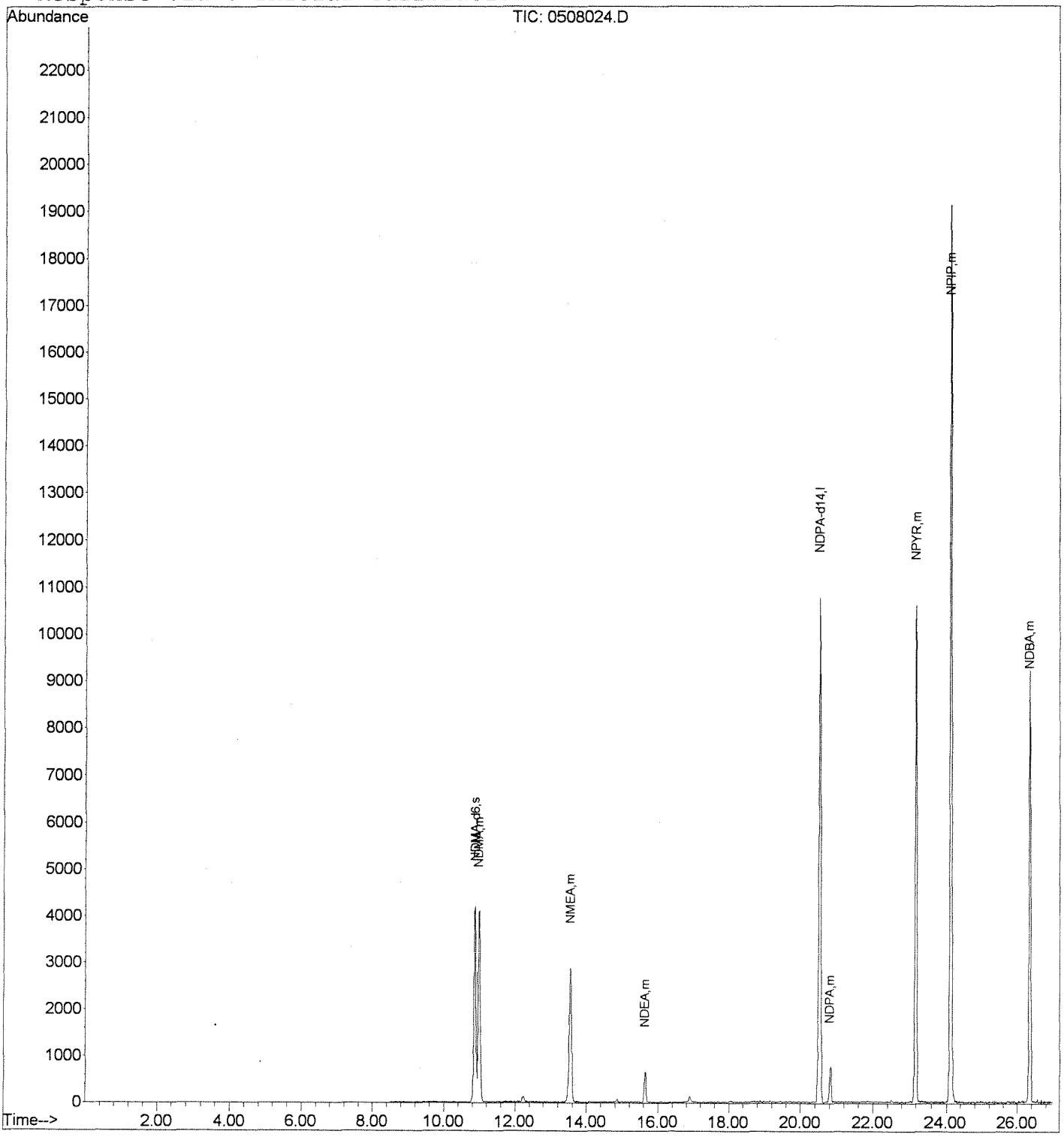
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.51	97	27403	50.00	ug/L	-0.07
System Monitoring Compounds						
3) NDMA-d6	10.87	50	10510	5.51	ug/L	-0.08
Target Compounds						Qvalue
4) NDMA	10.97	47	11071	6.57	ug/L	97
5) NMEA	13.54	61	11895	5.07	ug/L	100
6) NDEA	15.62	75	2070	6.23	ug/L	100
7) NDPA	20.81	89	1950	6.43	ug/L	100
8) NPYR	23.19	55	26653	7.18	ug/L	97
9) NPIP	24.10	69	50086	7.68	ug/L	100
10) NDBA	26.33	57	17435	8.47	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508024.D 031112_D14.M Wed May 09 12:16:22 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508024.D Vial: 5
Acq On : 09 May 2012 08:53 Operator: SVO-DW
Sample : DWSTD5-55L 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Sample Prep and Screen Data

Preparation Information

Group ID:	KWG1204391	**Prep Method:**	METHOD	**Prep Date:**	04/30/12 08:00
Department:	Semivoa GC				

Lab Code	Client ID	Product	Matrix	Amt. Ext.	Final Vol.
KWG1204391-1	Matrix Spike	521 Nitrosamines	WATER	500ml	1ml
KWG1204391-2	Duplicate Matrix Spike	521 Nitrosamines	WATER	500ml	1ml
KWG1204391-3	Lab Control Sample	521 Nitrosamines	WATER	500ml	1ml
KWG1204391-4	Method Blank	521 Nitrosamines	WATER	500ml	1ml
P1201573-002	MW-16	521 Nitrosamines	WATER	500ml	1ml
P1201573-003	DUPE-8-2Q12	521 Nitrosamines	WATER	500ml	1ml
P1201588-002	MW-13	521 Nitrosamines	WATER	500ml	1ml
P1201604-005	MW-24-1	521 Nitrosamines	WATER	500ml	1ml
P1201630-005	MW-4-1	521 Nitrosamines	WATER	500ml	1ml

Lab Code	Parent Lab Code	Comments
KWG1204391-1	P1201573-002	
KWG1204391-2	P1201573-002	

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
KWG1204391-1	1121342	DWSTD05-35 I	10uL	DWSTD05-55 B	100uL	
KWG1204391-2	1121343	DWSTD05-35 I	10uL	DWSTD05-55 B	100uL	
KWG1204391-3	1121344	DWSTD05-35 I	10uL	DWSTD05-55 B	100uL	
KWG1204391-4	1121345	DWSTD05-35 I	10uL			
P1201573-002	1121338	DWSTD05-35 I	10uL			
P1201573-003	1121339	DWSTD05-35 I	10uL			
P1201588-002	1121340	DWSTD05-35 I	10uL			
P1201604-005	1121341	DWSTD05-35 I	10uL			
P1201630-005	1121337	DWSTD05-35 I	10uL			

Comments:

Started By: RHayes Assisted By: Training Yes No

Completed By: RHayes Assisted By: Yes No

Reviewed By: LL Date: 5/9/12 Storage: 215A - F. 06

Chain of Custody

Relinquished By: Date: 4/30/12

Received By: LL Date: 5/1/12 Extracts Examined Yes No

COLUMBIA ANALYTICAL SERVICES, INC.

Service Request No.: As listed **Date Extracted:** 4-30-12

Analyst: Rob Hayes **Method:** EPA 521

StarLims Run :

Nitrosoamines in Water

Lab ID	Client ID	Sample Volume (mL)	Surr (mL)	MS	Residual Chlorine	Final Volume mL
	ISTD: 10 mL					
P1201573-002		500	10		<0.1	1
" -003		500	10		<0.1	1
P1201588-002		500	10		<0.1	1
P1201604-005		500	10		<0.1	1
P1201630-005		500	10		<0.1	1
MB		500	10		<0.1	1
LCS		500	10	100	<0.1	1
P1201573-002	MS	500	10	100	<0.1	1
P1201573-002	DMS	500	10	100	<0.1	1
MRL		500	10	10	<0.1	1

Comments:

DCM Lot # DF597 **MeOH Lot #** DE997 **Sulfate Lot #** 2/14/12-J49603

SPE Cartridge Lot # 94627-EL

Surrogate ID: DuST005-35 I 1ppm XP 5/15/12

Spike ID : DuST005-55B 100ppb XP 10/30/12 ISTD: DuST005-496 5ppm XP 7/9/12

Vial: Amber **Extract Storage:** 215A-F-06 **Extracts Received:** 5/11/12

Reviewed By:	**Date:** 5/9/12

Preparation Information Benchsheet

Prep Run#: 156720 **Prep WorkFlow:** OrgExtDW(14/28) **Status:** Draft
Team: Semivoa GC **Prep Method:** Method **Prep Date/Time:** 4/30/12 09:18 AM
Number of Copies to make: 4

#	Lab Code	Client ID	B#	√	Test	Matrix	Amt Ext.	pH	Int Vol	Final Vol	Surr Added	Spike Added
1	P1201573-002	MW-16	.02		521/Nitrosamines	Water						
2	P1201573-003	DUPE-8-2Q12	.01		521/Nitrosamines	Water						
3	P1201588-002	MW-13	.02		521/Nitrosamines	Water						
4	P1201604-005	MW-24-1	.01		521/Nitrosamines	Water						
5	P1201630-005	MW-4-1	.01		521/Nitrosamines	Water						

Comments: used for ID only

Surrogate ID: _____ Spike ID: _____

Witnessed By: _____

Analyst: _____ Assisted By: _____

Injection Log

Directory: J:\MS16\DATA\050112-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0501.D	1.	DCM	Run # 290877	01 May 2012 28:2
2	1	0501001.D	1.	DWSTD5-53A 1 PPB		01 May 2012 29:0
3	3	0501002.D	1.	043012-MRL		01 May 2012 29:4
4	4	0501003.D	1.	043012-MB – rerun Surr low		01 May 2012 30:2
5	5	0501004.D	1.	043012-LCS – rerun Surr low		01 May 2012 31:1
6	6	0501005.D	1.	P1201573-002 – rerun Surr low		01 May 2012 31:5
7	7	0501006.D	1.	P1201573-002 MS		01 May 2012 32:3
8	8	0501007.D	1.	P1201573-002 DMS		01 May 2012 33:1
9	9	0501008.D	1.	P1201573-003		01 May 2012 34:0
10	10	0501009.D	1.	P1201588-002		01 May 2012 34:4
11	11	0501010.D	1.	P1201604-005		01 May 2012 35:2
12	12	0501011.D	1.	P1201630-005		02 May 2012 12:0
13		0501012.D	1.	CARRYOVER BLANK		02 May 2012 12:5
14	2	0501013.D	1.	DWSTD5-53C 5 PPB		02 May 2012 13:3

Injection Log

Directory: J:\MS16\DATA\050212-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0502.D	1.	DCM		
2	1	0502001.D	1.	DWSTD5-53A 1 PPB		02 May 2012 28:3
3	4	0502002.D	1.	043012-MB		02 May 2012 29:1
4	5	0502003.D	1.	043012-LCS ~~NR, report only~~ report NR rerun		02 May 2012 30:0
5	6	0502004.D	1.	P1201573-002		02 May 2012 30:4
6	7	0502005.D	1.	P1201573-002 MS		02 May 2012 31:2
7	8	0502006.D	1.	P1201573-002 DMS - NR rerun		02 May 2012 32:0
8		0502007.D	1.	CARRYOVER BLANK		02 May 2012 32:5
9	2	0502008.D	1.	DWSTD5-53C 5 PPB		02 May 2012 33:3
						02 May 2012 34:1

Injection Log

Directory: J:\MS16\DATA\050812-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0508.D	1.	DCM		08 May 2012 23:0
2	1	0508001.D	1.	DWSTD5-55H 0.25 PPB		08 May 2012 23:4
3	2	0508002.D	1.	DWSTD5-55I 0.5 PPB	NR reinject	08 May 2012 25:3
4	3	0508003.D	1.	DWSTD5-55J 1 PPB		08 May 2012 26:1
5	2	0508004.D	1.	DWSTD5-55I 0.5 PPB		08 May 2012 27:0
6	4	0508005.D	1.	DWSTD5-55K 2 PPB		08 May 2012 27:4
7	5	0508006.D	1.	DWSTD5-55L 5 PPB		08 May 2012 28:2
8	6	0508007.D	1.	DWSTD5-55M 7 PPB		08 May 2012 29:0
9	7	0508008.D	1.	DWSTD5-55N 10 PPB	NR, not needed	08 May 2012 29:5
10	8	0508009.D	1.	DWSTD5-55O 15 PPB		08 May 2012 30:3
11	9	0508010.D	1.	DWSTD5-55P 20 PPB		08 May 2012 31:1
12	10	0508011.D	1.	DWSTD5-56B ICV 10		08 May 2012 31:5
13		0508012.D	1.	DCM		08 May 2012 32:3
14	3	0508013.D	1.	DWSTD5-55J 1 PPB		08 May 2012 33:2
15	11	0508014.D	1.	043012-MRL		08 May 2012 34:0
16	12	0508015.D	1.	043012-MB		08 May 2012 34:4
17	13	0508016.D	1.	043012-LCS (Surr only)		08 May 2012 35:2
18	14	0508017.D	1.	P1201573-002		09 May 2012 12:1
19	15	0508018.D	1.	P1201573-002 MS		09 May 2012 12:5
20	16	0508019.D	1.	P1201573-002 DMS (Surr only)		09 May 2012 13:3
21	17	0508020.D	1.	P1201573-003		09 May 2012 14:1
22	18	0508021.D	1.	P1201588-002		09 May 2012 15:0
23	19	0508022.D	1.	P1201604-005		09 May 2012 15:4
24		0508023.D	1.	CARRYOVER BLANK		09 May 2012 20:1
25	5	0508024.D	1.	DWSTD5-55L 5 PPB	NDMA FAIL	09 May 2012 20:5

1,4-Dioxane

Organic Analysis:
1,4-Dioxane by GC/MS

Summary Package

Sample and QC Results

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201573

Cover Page - Organic Analysis Data Package
1,4-Dioxane by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
MW-16	P1201573-002	04/23/2012	04/23/2012
DUPE-8-2Q12	P1201573-003	04/23/2012	04/23/2012

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Carl Dazen

Date: 5/8/12 Title: Group Supervisor

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	04/23/2012
Sample Matrix:	Water	**Date Received:**	04/23/2012

1,4-Dioxane by GC/MS

Sample Name:	MW-16	**Units:**	ug/L
Lab Code:	P1201573-002	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**0.94**	J	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	86	48-118	05/03/12	Acceptable

Comments:

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	04/23/2012
Sample Matrix:	Water	**Date Received:**	04/23/2012

1,4-Dioxane by GC/MS

Sample Name:	DUPE-8-2Q12	**Units:**	ug/L
Lab Code:	P1201573-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**1.0**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	83	48-118	05/03/12	Acceptable

Comments:

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1204380-5	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	90	48-118	05/03/12	Acceptable

Comments:

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201573

Surrogate Recovery Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	K1203834-003	80
MW-16	P1201573-002	86
DUPE-8-2Q12	P1201573-003	83
Method Blank	KWG1204380-5	90
Batch QCMS	KWG1204380-1	80
Batch QCDMS	KWG1204380-2	80
Lab Control Sample	KWG1204380-3	93
Duplicate Lab Control Sample	KWG1204380-4	96

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Dioxane-d8	48-118

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/03/2012
Time Analyzed: 16:29

Internal Standard Area and RT Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F003.D
Instrument ID: MS26
Analysis Method: 8270D SIM

Lab Code: KWG1204586-2
Analysis Lot: KWG1204586

		1,4-Dichlorobenzene-d4	
		Area	RT
	Results ==>	14,092	5.28
	Upper Limit ==>	28,184	5.78
	Lower Limit ==>	7,046	4.78
	ICAL Result ==>	15,754	5.29
Associated Analyses			
Method Blank	KWG1204380-5	14,307	5.28
Lab Control Sample	KWG1204380-3	15,930	5.28
Duplicate Lab Control Sample	KWG1204380-4	14,308	5.27
Batch QCMS	KWG1204380-1	14,342	5.27
Batch QCDMS	KWG1204380-2	13,718	5.27
Batch QC	K1203834-003	16,251	5.28
MW-16	P1201573-002	15,268	5.27
DUPE-8-2Q12	P1201573-003	15,755	5.27

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012

Matrix Spike/Duplicate Matrix Spike Summary
1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1203834-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

Analyte Name	Sample Result	Batch QCMS KWG1204380-1 Matrix Spike			Batch QCDMS KWG1204380-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,4-Dioxane	ND	24.3	25.0	97	23.8	25.0	95	33-127	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012

Lab Control Spike/Duplicate Lab Control Spike Summary
1,4-Dioxane by GC/MS

Extraction Method:	EPA 3510C	**Units:**	ug/L
Analysis Method:	8270D SIM	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1204380

	Lab Control Sample KWG1204380-3 Lab Control Spike			Duplicate Lab Control Sample KWG1204380-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,4-Dioxane	23.6	25.0	94	22.8	25.0	91	52-111	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	16:48

Method Blank Summary
1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS26
Lab Code:	KWG1204380-5	**File ID:**	J:\MS26\DATA\050312\0503F004.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/12	17:08
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/12	17:27
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-16	P1201573-002	J:\MS26\DATA\050312\0503F015.D	05/03/12	20:19
DUPE-8-2Q12	P1201573-003	J:\MS26\DATA\050312\0503F016.D	05/03/12	20:38

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	17:08

Lab Control Sample Summary
1,4-Dioxane by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS26
Lab Code:	KWG1204380-3	**File ID:**	J:\MS26\DATA\050312\0503F005.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/12	16:48
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-16	P1201573-002	J:\MS26\DATA\050312\0503F015.D	05/03/12	20:19
DUPE-8-2Q12	P1201573-003	J:\MS26\DATA\050312\0503F016.D	05/03/12	20:38

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/03/2012
Time Analyzed: 16:10

Tune Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F002.D
Instrument ID: MS26
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1204586

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.9	55287	PASS
68	69	0	2	1.3	1000	PASS
69	198	0	100	23.0	75190	PASS
70	69	0	2	0.4	321	PASS
127	198	10	80	41.2	134864	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	53.1	327258	PASS
199	198	5	9	6.7	22072	PASS
275	198	10	60	28.6	93752	PASS
365	442	1	50	2.1	12870	PASS
441	443	0	100	73.0	87834	PASS
442	442	100	100	100.0	615872	PASS
443	442	15	24	19.5	120280	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1204586-2	J:\MS26\DATA\050312\0503F003.D	05/03/2012	16:29	
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/2012	16:48	
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/2012	17:08	
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/2012	17:27	
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/2012	17:46	
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/2012	18:05	
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/2012	18:24	
MW-16	P1201573-002	J:\MS26\DATA\050312\0503F015.D	05/03/2012	20:19	
DUPE-8-2Q12	P1201573-003	J:\MS26\DATA\050312\0503F016.D	05/03/2012	20:38	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26

Column: MS

Level ID	File ID
A	J:\MS26\DATA\041112\0411F009.D
B	J:\MS26\DATA\041112\0411F010.D
C	J:\MS26\DATA\041112\0411F011.D
D	J:\MS26\DATA\041112\0411F012.D
E	J:\MS26\DATA\041112\0411F013.D
F	J:\MS26\DATA\041112\0411F014.D
G	J:\MS26\DATA\041112\0411F015.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,4-Dioxane	A	2.0	0.346	B	4.0	0.323	C	10	0.385	D	20	0.376	E	50	0.406
	F	100	0.417	G	200	0.401									
1,4-Dioxane-d8	A	2.0	0.360	B	4.0	0.348	C	10	0.389	D	20	0.384	E	50	0.381
	F	100	0.407	G	200	0.394									

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,4-Dioxane	MS	AverageRF	% RSD	9.0		≤ 20	0.379		0.01
1,4-Dioxane-d8	SURR	AverageRF	% RSD	5.4		≤ 20	0.380		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Calibration Date: 04/11/2012
Date Analyzed: 04/11/2012

Second Source Calibration Verification
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL11446
Units: ng/ml

File ID: J:\MS26\DATA\041112\0411F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	21	0.379	0.404	7	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/03/2012

Continuing Calibration Verification Summary
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 04/11/2012
Calibration ID: CAL11446
Analysis Lot: KWG1204586
Units: ng/ml

File ID: J:\MS26\DATA\050312\0503F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	20	0.01	0.379	0.376	-1	NA	± 20 %	AverageRF
1,4-Dioxane-d8	20	17	0.01	0.380	0.314	-17	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201573

Analysis Run Log
1,4-Dioxane by GC/MS

Analysis Method: 8270D SIM
Analysis Lot: KWG1204586
Instrument ID: MS26

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0503F002.D	GC/MS Tuning - Generic	KWG1204586-1	5/3/2012	16:10		5/3/2012	16:20
0503F003.D	Continuing Calibration Verification	KWG1204586-2	5/3/2012	16:29		5/3/2012	16:39
0503F004.D	Method Blank	KWG1204380-5	5/3/2012	16:48		5/3/2012	16:58
0503F005.D	Lab Control Sample	KWG1204380-3	5/3/2012	17:08		5/3/2012	17:18
0503F006.D	Duplicate Lab Control Sample	KWG1204380-4	5/3/2012	17:27		5/3/2012	17:37
0503F007.D	Batch QCMS	KWG1204380-1	5/3/2012	17:46		5/3/2012	17:56
0503F008.D	Batch QCDMS	KWG1204380-2	5/3/2012	18:05		5/3/2012	18:15
0503F009.D	Batch QC	K1203834-003	5/3/2012	18:24		5/3/2012	18:34
0503F010.D	ZZZZZZ	ZZZZZZ	5/3/2012	18:43		5/3/2012	18:53
0503F011.D	ZZZZZZ	ZZZZZZ	5/3/2012	19:02		5/3/2012	19:12
0503F012.D	ZZZZZZ	ZZZZZZ	5/3/2012	19:21		5/3/2012	19:31
0503F013.D	ZZZZZZ	ZZZZZZ	5/3/2012	19:40		5/3/2012	19:50
0503F014.D	ZZZZZZ	ZZZZZZ	5/3/2012	20:00		5/3/2012	20:10
0503F015.D	MW-16	P1201573-002	5/3/2012	20:19		5/3/2012	20:29
0503F016.D	DUPE-8-2Q12	P1201573-003	5/3/2012	20:38		5/3/2012	20:48
0503F017.D	ZZZZZZ	ZZZZZZ	5/3/2012	20:57		5/3/2012	21:07
0503F018.D	ZZZZZZ	ZZZZZZ	5/3/2012	21:16		5/3/2012	21:26
0503F019.D	ZZZZZZ	ZZZZZZ	5/3/2012	21:35		5/3/2012	21:45

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201573
Date Extracted: 04/30/2012

Extraction Prep Log
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Extraction Lot: KWG1204380
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MW-16	P1201573-002	04/23/12	04/23/12	100ml	50ml	NA	
DUPE-8-2Q12	P1201573-003	04/23/12	04/23/12	100ml	50ml	NA	
Method Blank	KWG1204380-5	NA	NA	100ml	50ml	NA	
Batch QC	K1203834-003	NA	NA	100ml	50ml	NA	
Batch QCMS	KWG1204380-1	NA	NA	100ml	50ml	NA	
Batch QCDMS	KWG1204380-2	NA	NA	100ml	50ml	NA	
Lab Control Sample	KWG1204380-3	NA	NA	100ml	50ml	NA	
Duplicate Lab Control Sample	KWG1204380-4	NA	NA	100ml	50ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

QC Reports

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201573

Surrogate Recovery Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	K1203834-003	80
MW-16	P1201573-002	86
DUPE-8-2Q12	P1201573-003	83
Method Blank	KWG1204380-5	90
Batch QCMS	KWG1204380-1	80
Batch QCDMS	KWG1204380-2	80
Lab Control Sample	KWG1204380-3	93
Duplicate Lab Control Sample	KWG1204380-4	96

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Dioxane-d8	48-118

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/03/2012
Time Analyzed: 16:29

Internal Standard Area and RT Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F003.D
Instrument ID: MS26
Analysis Method: 8270D SIM

Lab Code: KWG1204586-2
Analysis Lot: KWG1204586

		1,4-Dichlorobenzene-d4	
		Area	**RT**
	Results ==>	14,092	5.28
	Upper Limit ==>	28,184	5.78
	Lower Limit ==>	7,046	4.78
	ICAL Result ==>	15,754	5.29
Associated Analyses			
Method Blank	KWG1204380-5	14,307	5.28
Lab Control Sample	KWG1204380-3	15,930	5.28
Duplicate Lab Control Sample	KWG1204380-4	14,308	5.27
Batch QCMS	KWG1204380-1	14,342	5.27
Batch QCDMS	KWG1204380-2	13,718	5.27
Batch QC	K1203834-003	16,251	5.28
MW-16	P1201573-002	15,268	5.27
DUPE-8-2Q12	P1201573-003	15,755	5.27

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012

Matrix Spike/Duplicate Matrix Spike Summary
1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1203834-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

Analyte Name	Sample Result	Batch QCMS KWG1204380-1 Matrix Spike			Batch QCDMS KWG1204380-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,4-Dioxane	ND	24.3	25.0	97	23.8	25.0	95	33-127	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012

Lab Control Spike/Duplicate Lab Control Spike Summary
1,4-Dioxane by GC/MS

Extraction Method:	EPA 3510C	**Units:**	ug/L
Analysis Method:	8270D SIM	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1204380

	Lab Control Sample KWG1204380-3 Lab Control Spike			Duplicate Lab Control Sample KWG1204380-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,4-Dioxane	23.6	25.0	94	22.8	25.0	91	52-111	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	16:48

Method Blank Summary
1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS26
Lab Code:	KWG1204380-5	**File ID:**	J:\MS26\DATA\050312\0503F004.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/12	17:08
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/12	17:27
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-16	P1201573-002	J:\MS26\DATA\050312\0503F015.D	05/03/12	20:19
DUPE-8-2Q12	P1201573-003	J:\MS26\DATA\050312\0503F016.D	05/03/12	20:38

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	17:08

Lab Control Sample Summary
1,4-Dioxane by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS26
Lab Code:	KWG1204380-3	**File ID:**	J:\MS26\DATA\050312\0503F005.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/12	16:48
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-16	P1201573-002	J:\MS26\DATA\050312\0503F015.D	05/03/12	20:19
DUPE-8-2Q12	P1201573-003	J:\MS26\DATA\050312\0503F016.D	05/03/12	20:38

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Raw Data

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	04/23/2012
Sample Matrix:	Water	**Date Received:**	04/23/2012

1,4-Dioxane by GC/MS

Sample Name:	MW-16	**Units:**	ug/L
Lab Code:	P1201573-002	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**0.94**	J	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	86	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F015.D
Lab ID: P1201573-002
RunType: SMPL
Matrix: WATER

Date Acquired: 05/03/2012 20:19
Date Quantitated: 05/04/2012 08:48
Batch ID: KWG1204586
Analysis Method: 8270D SIM
ListJoinID: LJ2865

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Duplicate Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: LB MAY 04 2012

Secondary Review: CM 05.04.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F015.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 20:19	**Quant Date:**	05/04/2012 08:48	**Vial:**	15
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201573-002			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**	04/23/2012	**Receive Date:**	04/23/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	P1201573
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121259	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:	1,4-Dioxane by GC/MS	**Report List ID:**	LJ2865
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	15268	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.18	-0.01	0.00	96	5006	43.11	86	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.20	-0.01	0.00	88	218m	1.88	0.94	J	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F015.D Vial: 15
Acq On : 3 May 2012 8:19 pm Operator: KBailey
Sample : P1201573-002 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:22 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

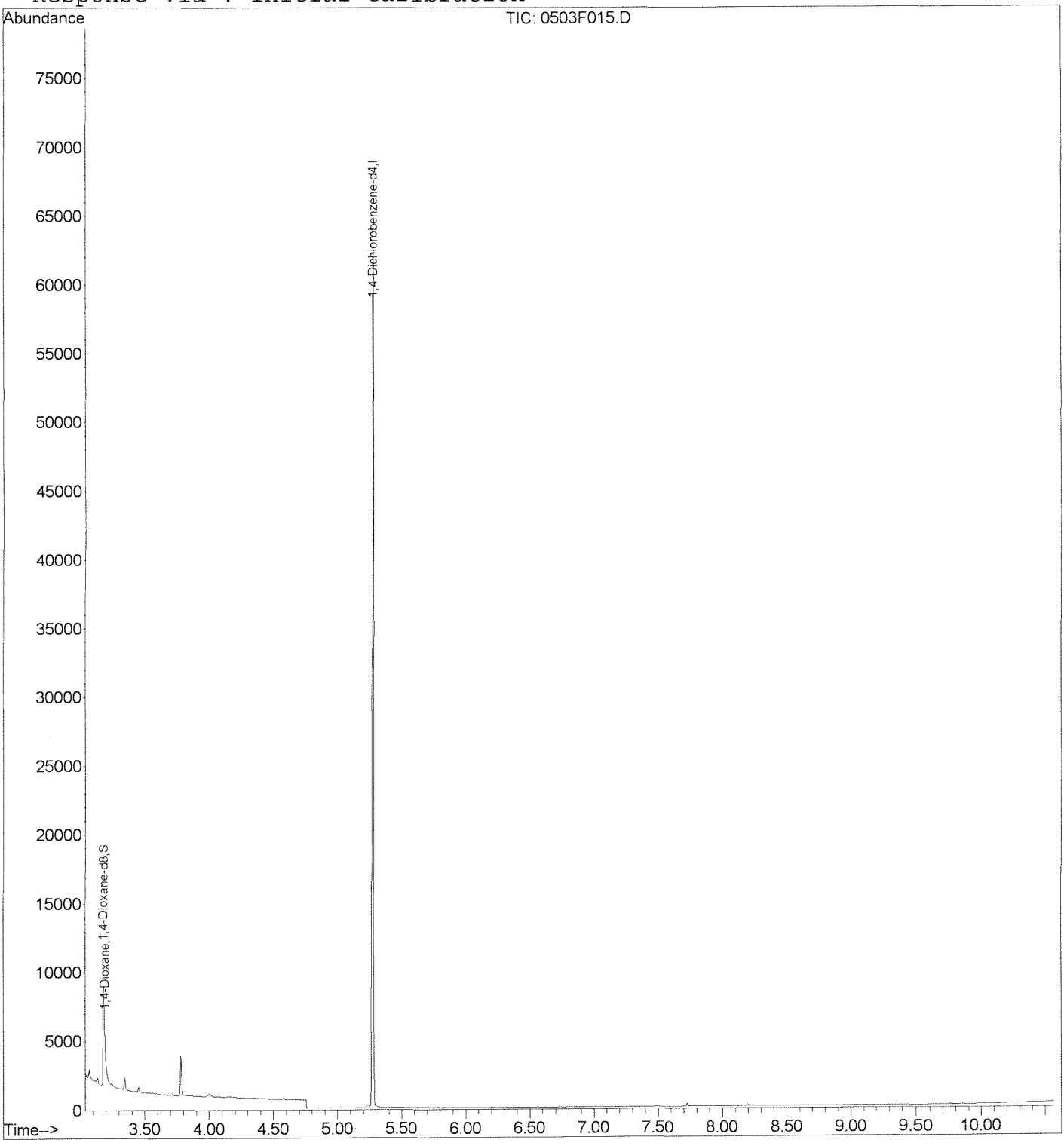
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	15268	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.18	96	5006	43.11	ng/ml	-0.04
Spiked Amount 50.000			Recovery = 86.22%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.20	88	218m	1.88	ng/ml	

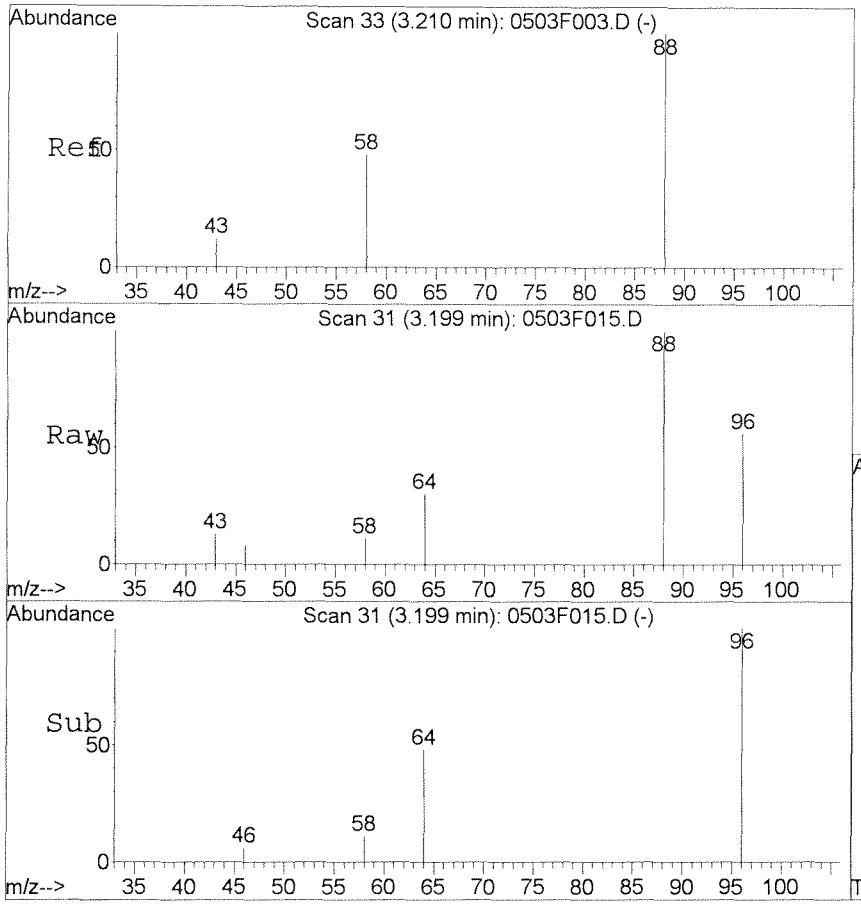
(#) = qualifier out of range (m) = manual integration
0503F015.D 041112_DX.M Fri May 04 08:54:35 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F015.D Vial: 15
Acq On : 3 May 2012 8:19 pm Operator: KBailey
Sample : P1201573-002 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:48 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

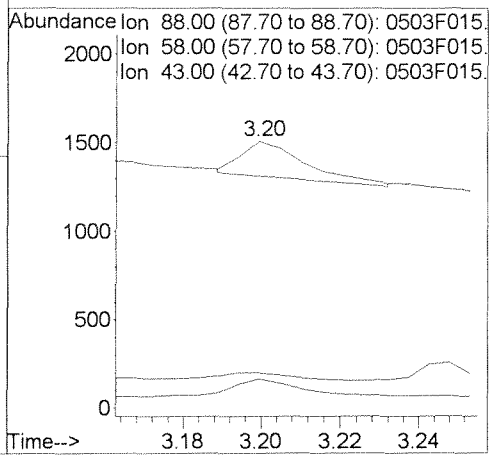




#3
1,4-Dioxane
Concen: 1.88 ng/ml m
RT: 3.20 min Scan# 31
Delta R.T. -0.04 min
Lab File: 0503F015.D
Acq: 3 May 2012 8:19 pm

Tgt Ion: 88 Resp: 218

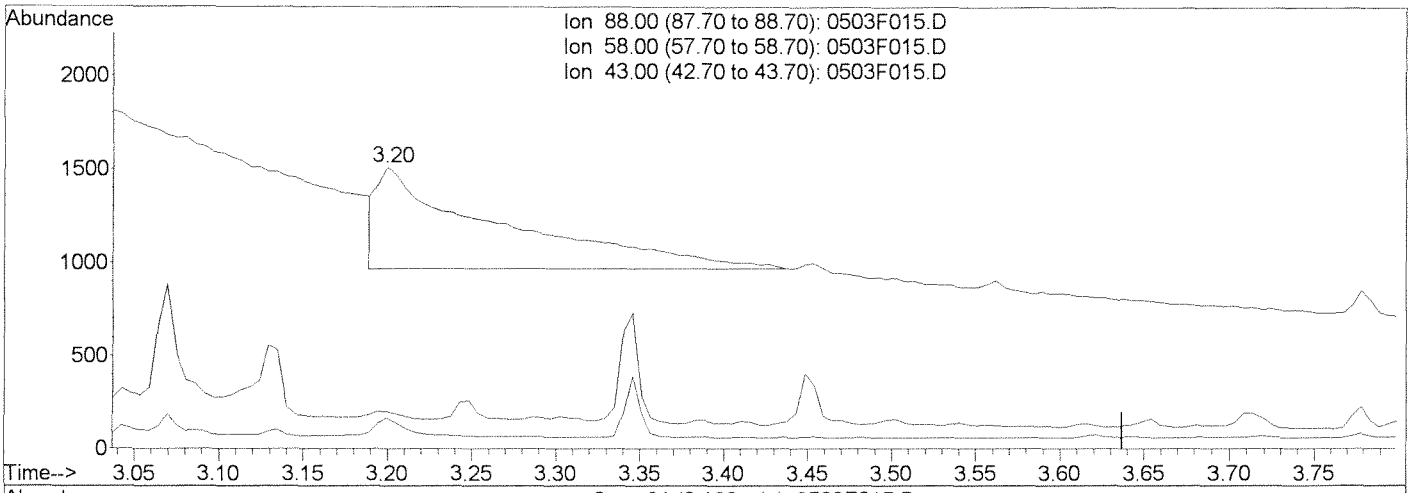
Ion	Ratio	Lower	Upper
88	100		
58	10.9	0.0	35.5
43	13.2	0.0	35.9

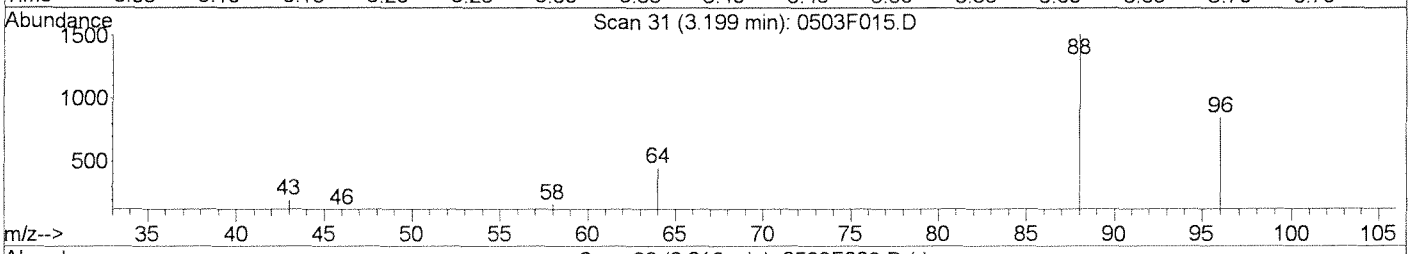


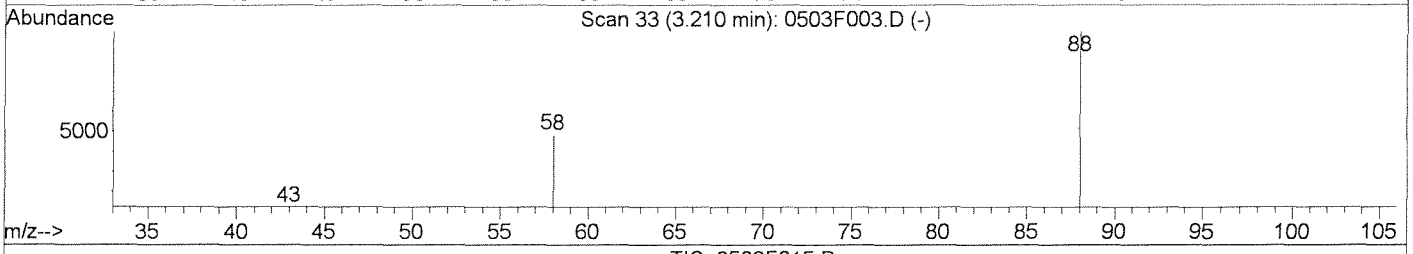
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F015.D Vial: 15
Acq On : 3 May 2012 8:19 pm Operator: KBailey
Sample : P1201573-002 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F015.D

(3) 1,4-Dioxane (T)

3.20min 23.26ng/ml

response 2693

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	19.41
43.00	15.90	10.17
0.00	0.00	0.00

Manual Integration:

Before

0503F015.D 041112_DX.M Fri May 04 08:48:51 2012

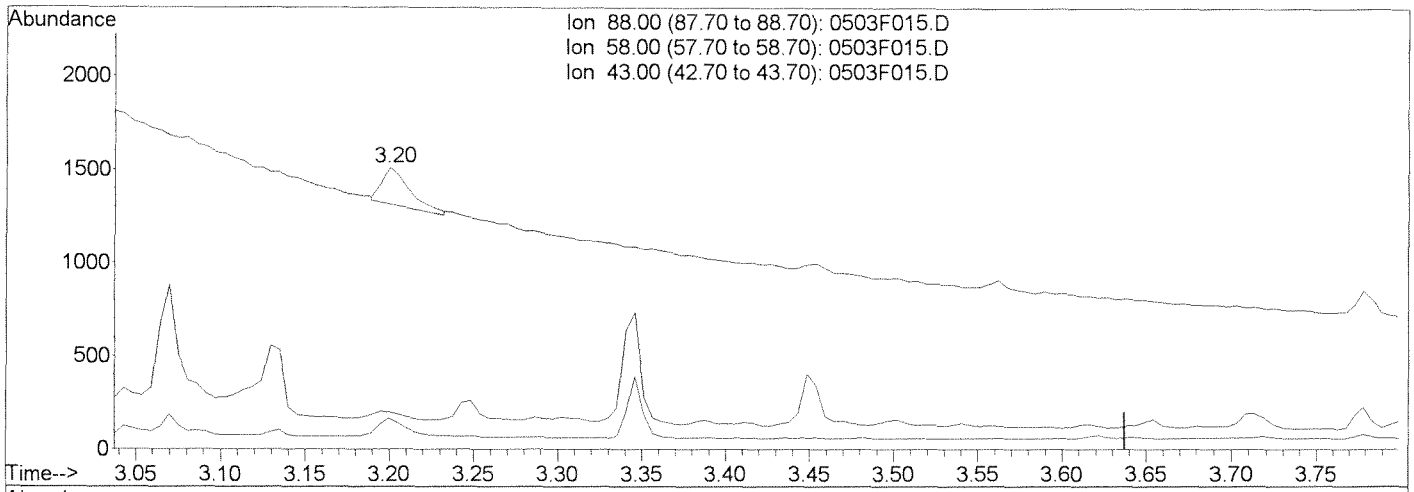
Quantitation Report (Qedit)

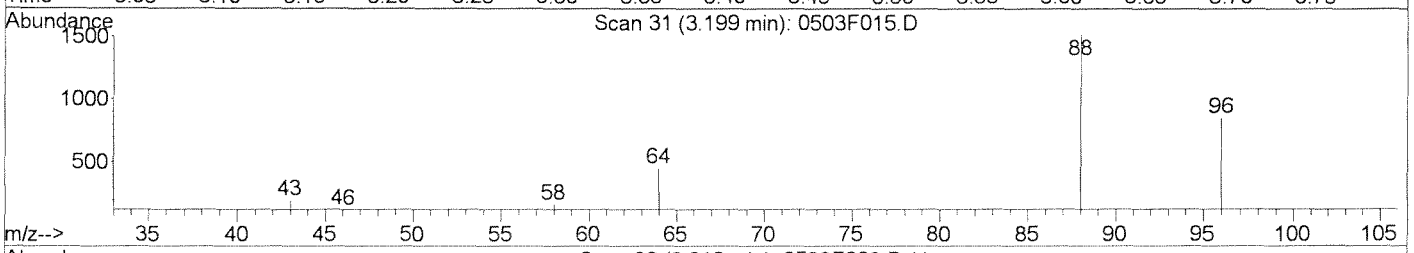
Data File : J:\MS26\DATA\050312\0503F015.D
Acq On : 3 May 2012 8:19 pm
Sample : P1201573-002
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:48 2012

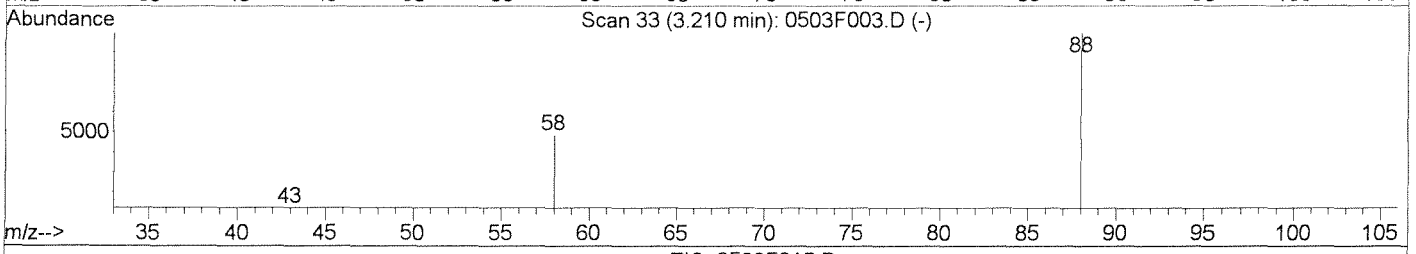
Vial: 15
Operator: KBailey
Inst : MS26
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F015.D

(3) 1,4-Dioxane (T)

3.20min 1.88ng/ml m

response 218

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	10.93
43.00	15.90	13.19
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F015.D 041112_DX.M Fri May 04 08:48:58 2012

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	04/23/2012
Sample Matrix:	Water	**Date Received:**	04/23/2012

1,4-Dioxane by GC/MS

Sample Name:	DUPE-8-2Q12	**Units:**	ug/L
Lab Code:	P1201573-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**1.0**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	83	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F016.D
Lab ID: P1201573-003
RunType: SMPL
Matrix: WATER

Date Acquired: 05/03/2012 20:38
Date Quantitated: 05/04/2012 08:49
Batch ID: KWG1204586
Analysis Method: 8270D SIM
ListJoinID: LJ2865

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Duplicate Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: LB MAY 04 2012

Secondary Review: CA 05.04.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F016.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 20:38	**Quant Date:**	05/04/2012 08:49	**Vial:**	16
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201573-003			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**	04/23/2012	**Receive Date:**	04/23/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	P1201573
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121260	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:	1,4-Dioxane by GC/MS	**Report List ID:**	LJ2865
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	15755	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.18	-0.01	0.00	96	4989	41.64	83	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.20	-0.01	0.00	88	244m	2.04	1.0		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F016.D Vial: 16
Acq On : 3 May 2012 8:38 pm Operator: KBailey
Sample : P1201573-003 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:22 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

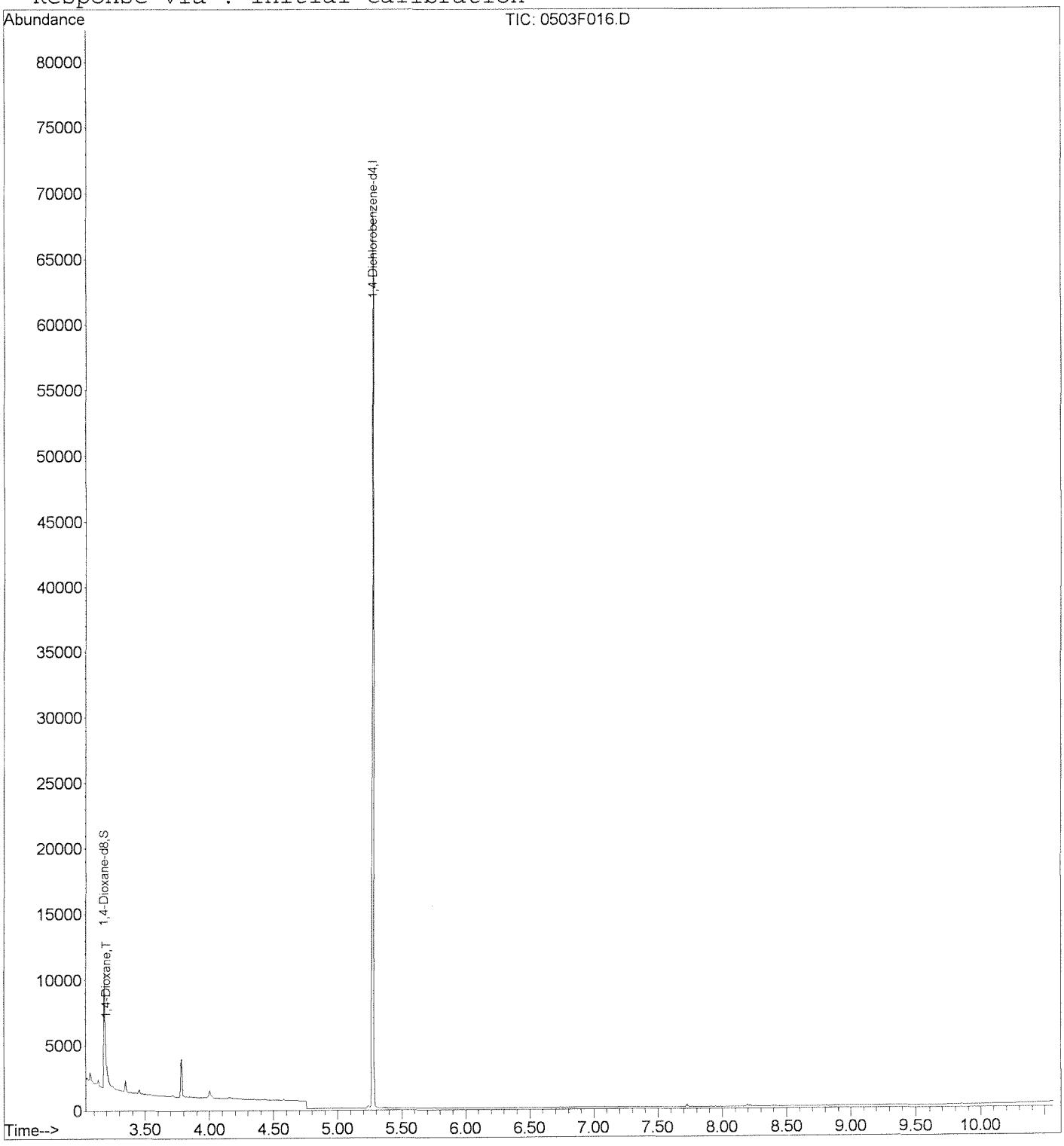
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	15755	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.18	96	4989	41.64	ng/ml	-0.04
Spiked Amount 50.000			Recovery =	83.28%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.20	88	244m	2.04	ng/ml	

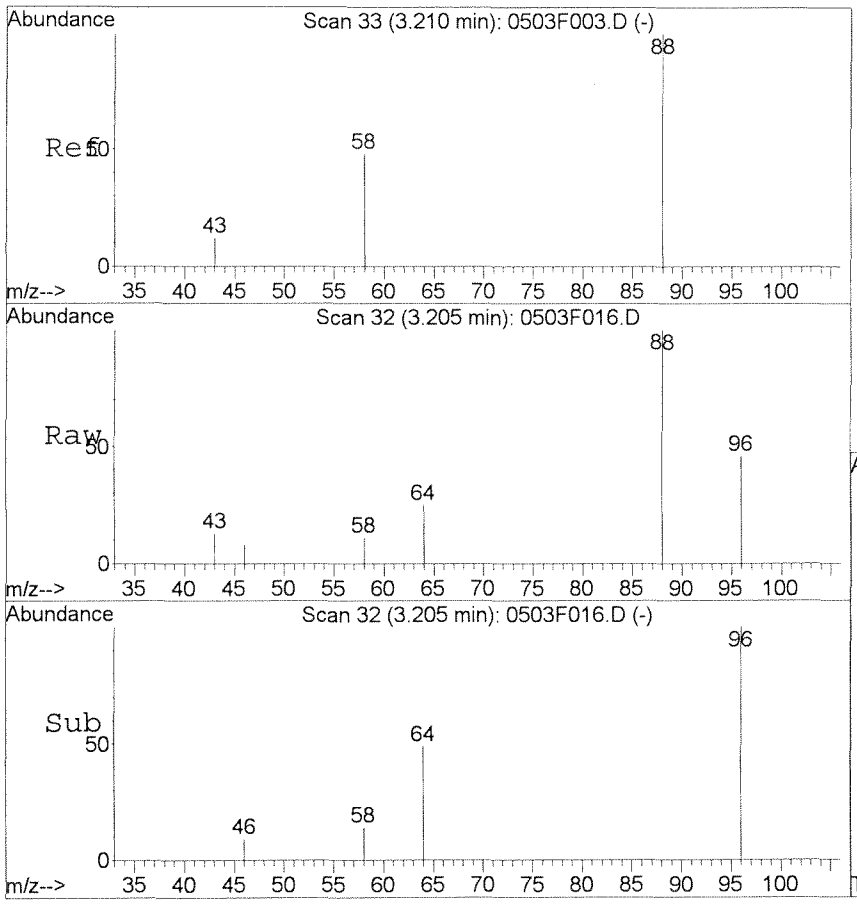
(#) = qualifier out of range (m) = manual integration
0503F016.D 041112_DX.M Fri May 04 08:54:36 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F016.D Vial: 16
Acq On : 3 May 2012 8:38 pm Operator: KBailey
Sample : P1201573-003 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:49 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

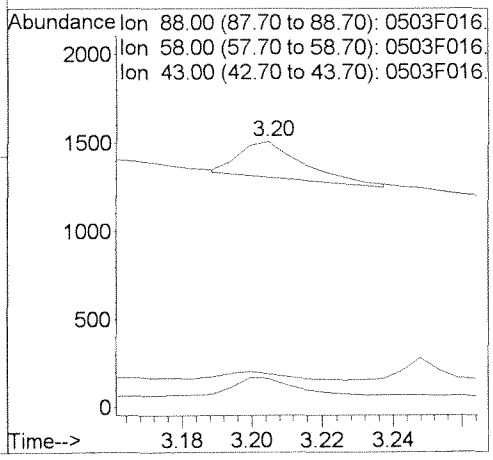




#3
1,4-Dioxane
Concen: 2.04 ng/ml m
RT: 3.20 min Scan# 32
Delta R.T. -0.03 min
Lab File: 0503F016.D
Acq: 3 May 2012 8:38 pm

Tgt Ion: 88 Resp: 244

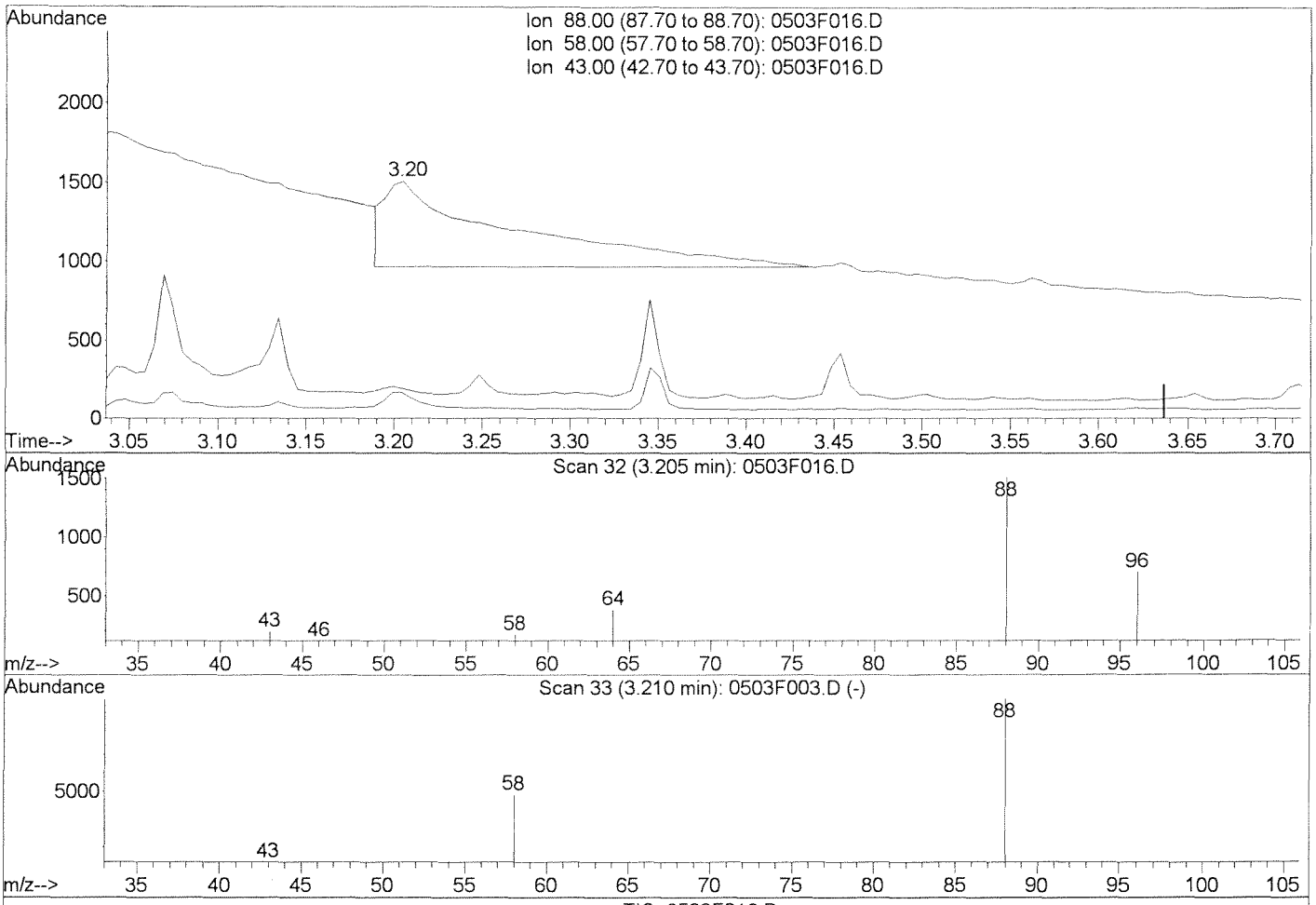
Ion	Ratio	Lower	Upper
88	100		
58	10.9	0.0	35.5
43	12.7	0.0	35.9



Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F016.D Vial: 16
Acq On : 3 May 2012 8:38 pm Operator: KBailey
Sample : P1201573-003 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F016.D

(3) 1,4-Dioxane (T)

3.20min 23.10ng/ml

response 2760

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	19.59
43.00	15.90	8.87
0.00	0.00	0.00

Manual Integration:

Before

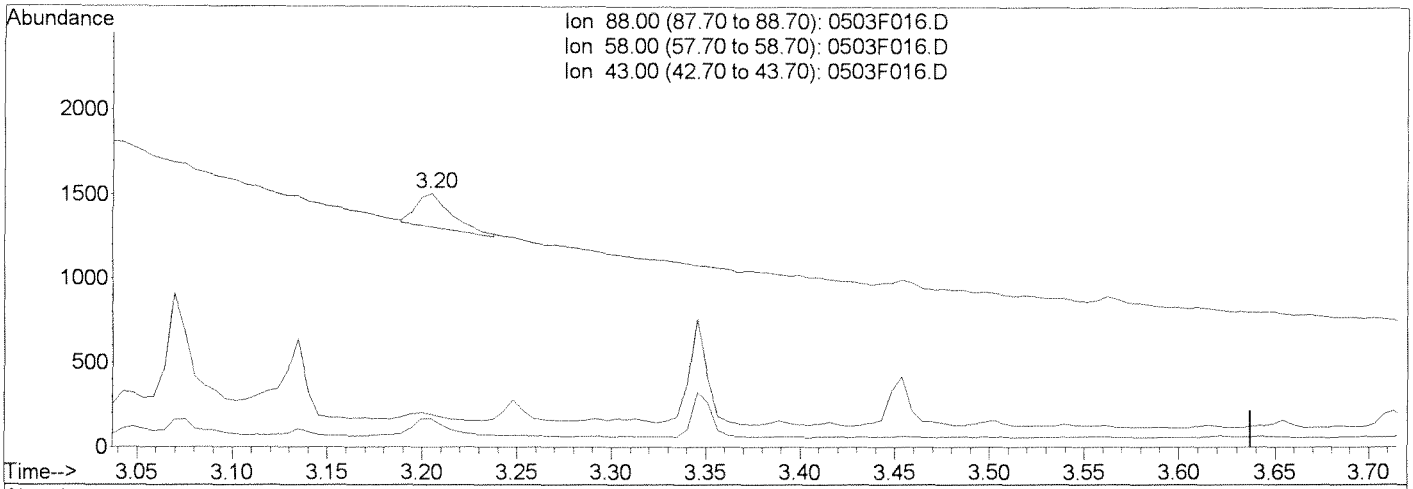
0503F016.D 041112_DX.M Fri May 04 08:49:06 2012

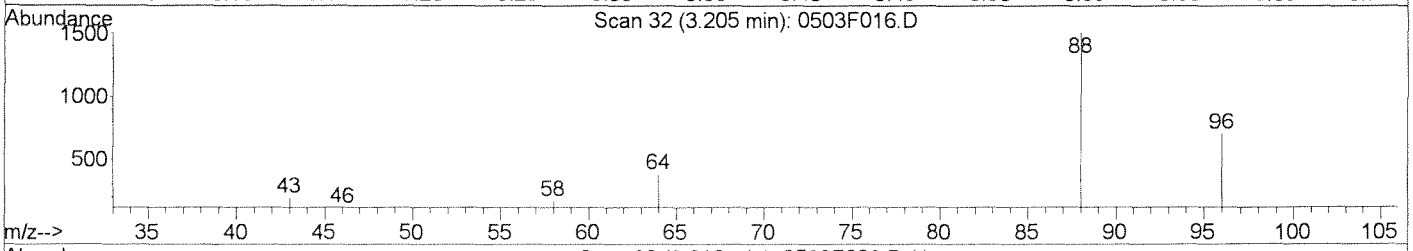
Quantitation Report (Qedit)

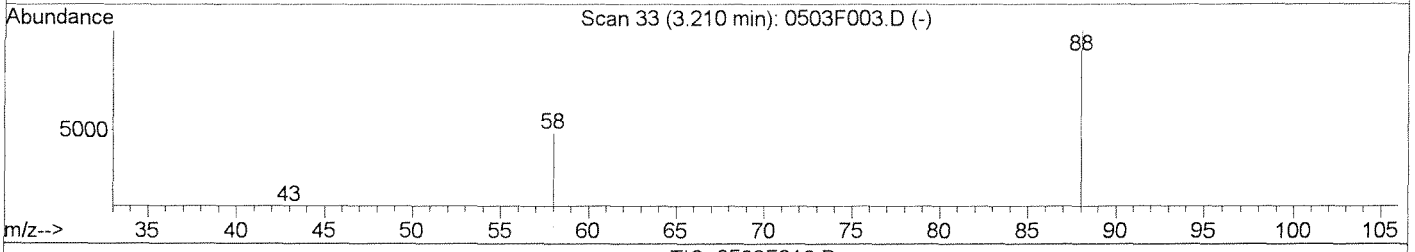
Data File : J:\MS26\DATA\050312\0503F016.D
Acq On : 3 May 2012 8:38 pm
Sample : P1201573-003
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:49 2012

Vial: 16
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F016.D

(3) 1,4-Dioxane (T)

3.20min 2.04ng/ml m

response 244

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	10.95
43.00	15.90	12.67
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F016.D 041112_DX.M Fri May 04 08:49:12 2012

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1204380-5	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	90	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F004.D
Lab ID: KWG1204380-5
RunType: MB
Matrix: WATER

Date Acquired: 05/03/2012 16:48
Date Quantitated: 05/04/2012 08:46
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

L3834
L3902
P1573
P1588
P1L04
P1L30

Primary Review: L3 MAY 04 2012

Secondary Review: CK 05·04·12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F004.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 16:48	**Quant Date:**	05/04/2012 08:46	**Vial:**	4
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1204380-5			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121267	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.00?	152	14307	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.20	0.01	0.00	96	4916	45.18	90	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (Not Reviewed)

Data File : J:\MS26\DATA\050312\0503F004.D Vial: 4
Acq On : 3 May 2012 4:48 pm Operator: KBailey
Sample : KWG1204380-5 | MB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:19 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	14307	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.20	96	4916	45.18	ng/ml	-0.03
Spiked Amount 50.000			Recovery =	90.36%		

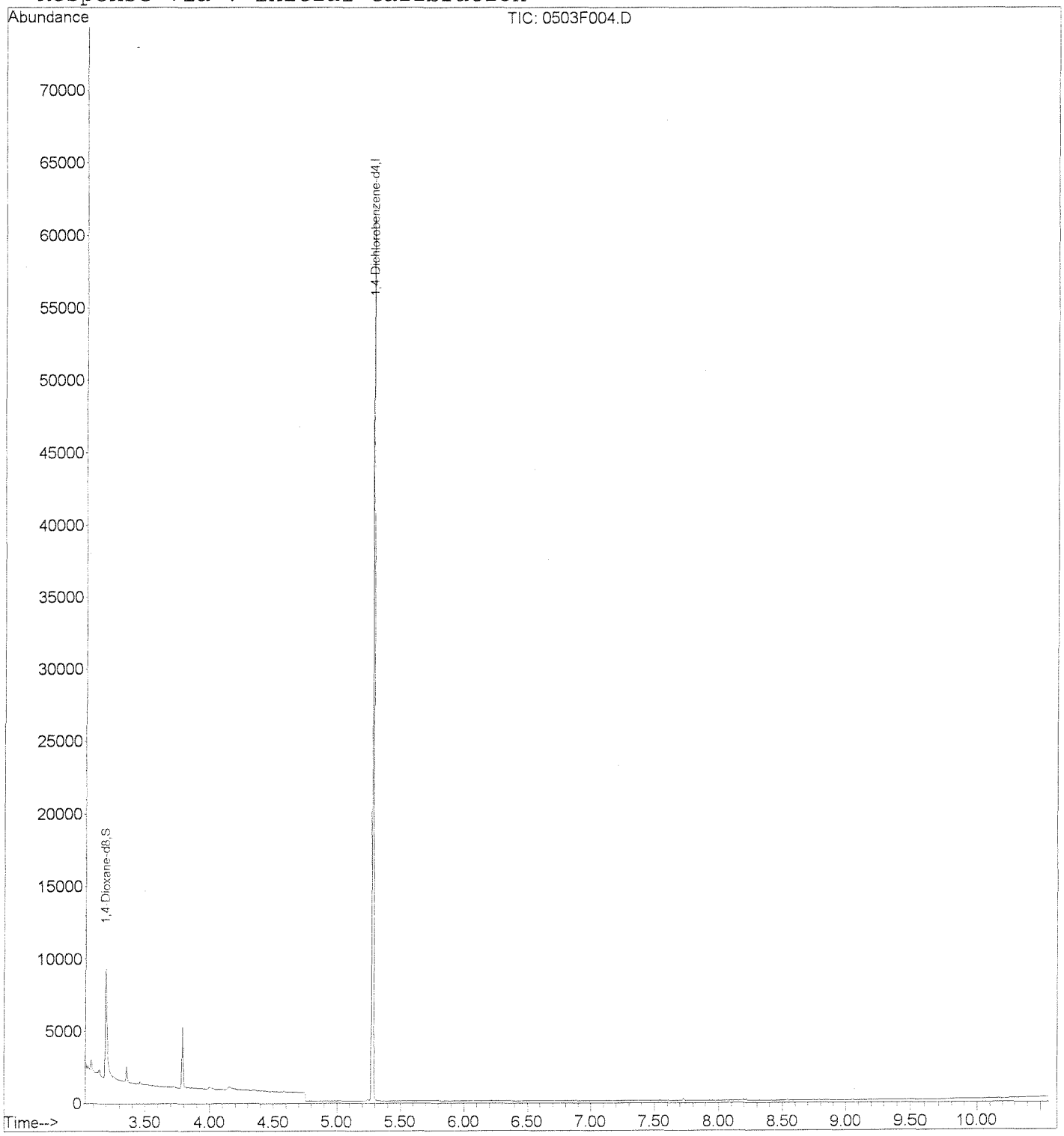
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration
0503F004.D 041112_DX.M Fri May 04 08:54:29 2012 Page 1

Quantitation Report (Not Reviewed)

Data File : J:\MS26\DATA\050312\0503F004.D Vial: 4
Acq On : 3 May 2012 4:48 pm Operator: KBailey
Sample : KWG1204380-5 | MB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1203834-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	80	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File:	J:\MS26\DATA\050312\0503F009.D	**Date Acquired:**	05/03/2012 18:24
Lab ID:	K1203834-003	**Date Quantitated:**	05/04/2012 08:48
RunType:	SMPL	**Batch ID:**	KWG1204586
Matrix:	WATER	**Analysis Method:**	8270D SIM
		ListJoinID:	LJ2865

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Duplicate Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
L 3902
P 1573
P 1588
P 1604
P 1630

Primary Review: LS MAY 04 2012

Secondary Review: CW 05-04-12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F009.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 18:24	**Quant Date:**	05/04/2012 08:48	**Vial:**	9
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1203834-003			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**	04/23/2012	**Receive Date:**	04/25/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	K1203834
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121255	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:	1,4-Dioxane by GC/MS	**Report List ID:**	LJ2865
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.00?	152	16251	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.22	0.03	0.01	96	4920m	39.81	80	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F009.D Vial: 9
Acq On : 3 May 2012 6:24 pm Operator: KBailey
Sample : K1203834-003 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:21 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

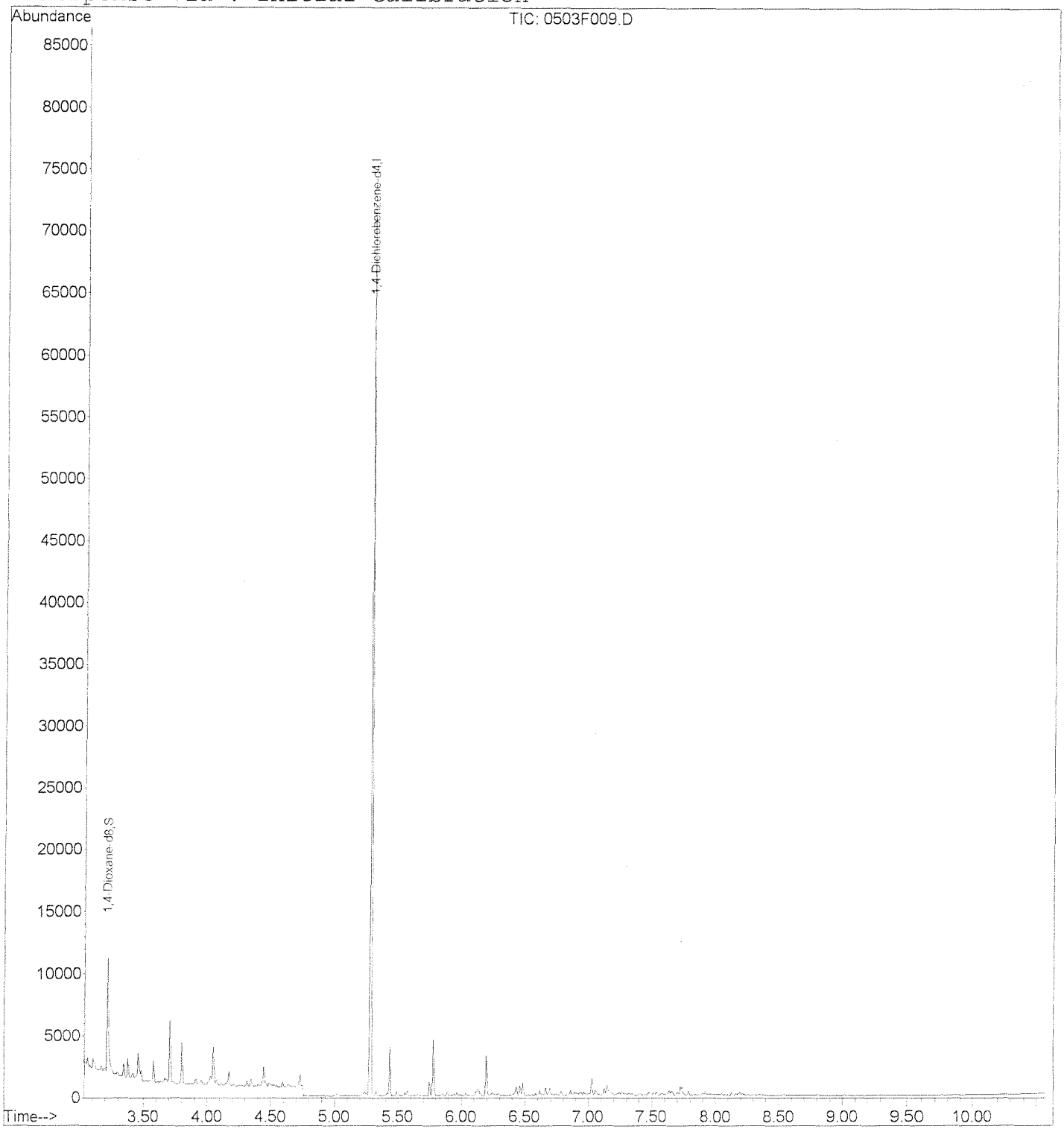
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	16251	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	4920m	39.81	ng/ml	-0.01
Spiked Amount 50.000			Recovery =	79.62%		
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration
0503F009.D 041112_DX.M Fri May 04 08:54:32 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F009.D Vial: 9
Acq On : 3 May 2012 6:24 pm Operator: KBailey
Sample : K1203834-003 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:48 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

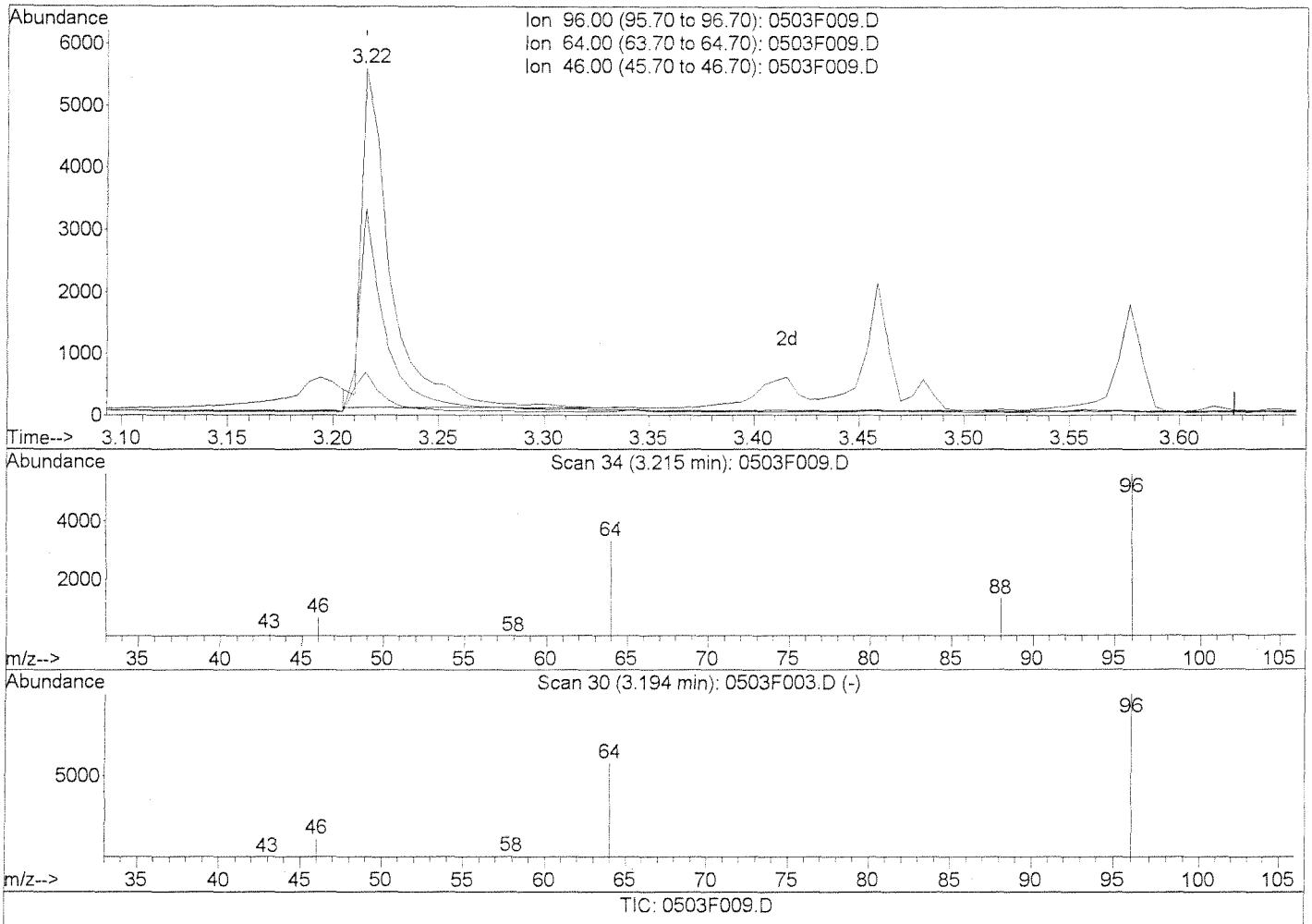


Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F009.D
Acq On : 3 May 2012 6:24 pm
Sample : K1203834-003
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012

Vial: 9
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



(2) 1,4-Dioxane-d8 (S)

3.22min 43.05ng/ml

response 5320

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	59.32
46.00	9.50	11.67
0.00	0.00	0.00

Manual Integration:

Before

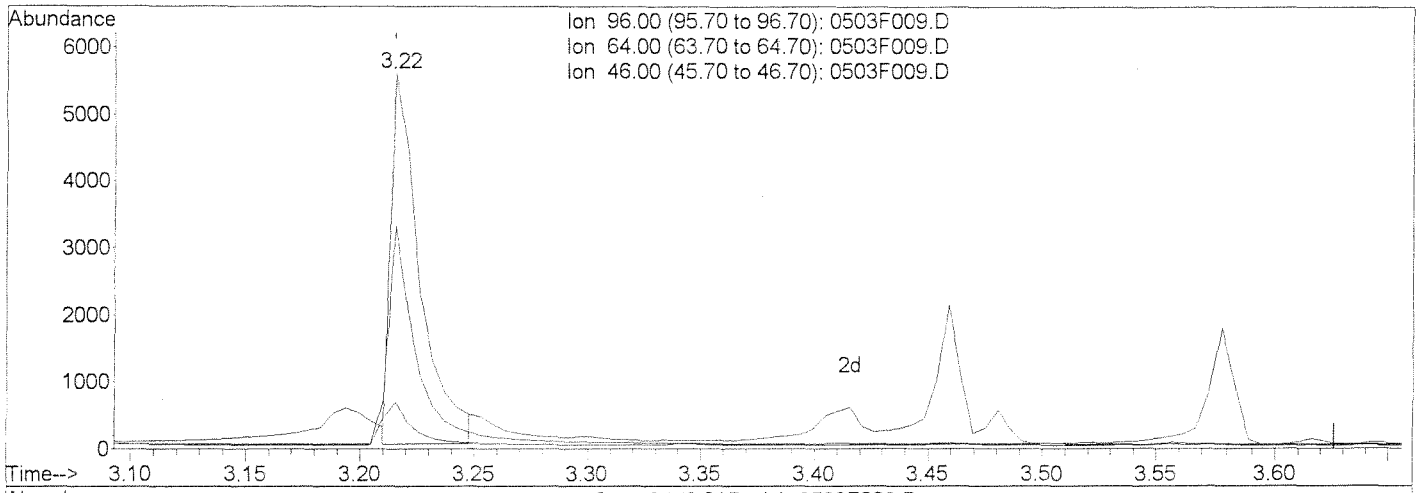
0503F009.D 041112_DX.M Fri May 04 08:48:05 2012

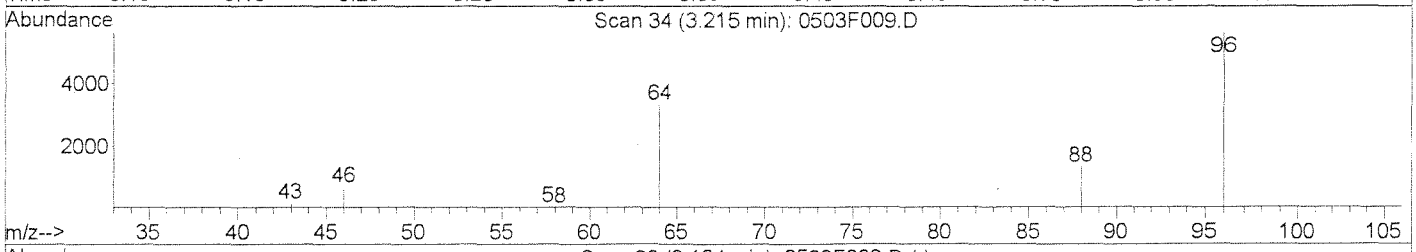
Quantitation Report (Qedit)

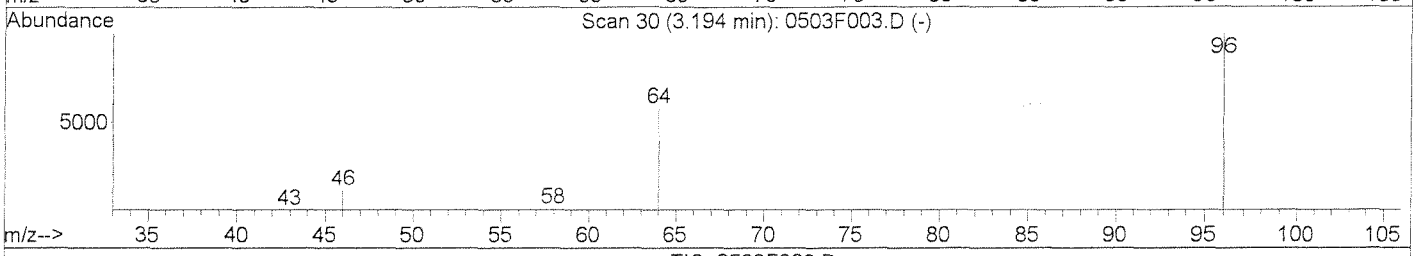
Data File : J:\MS26\DATA\050312\0503F009.D
Acq On : 3 May 2012 6:24 pm
Sample : K1203834-003
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:48 2012

Vial: 9
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F009.D

(2) 1,4-Dioxane-d8 (S)

3.22min 39.81ng/ml m

response 4920

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	59.36
46.00	9.50	12.44
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F009.D 041112_DX.M Fri May 04 08:48:15 2012

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QCMS	**Units:**	ug/L
Lab Code:	KWG1204380-1	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**24.3**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	80	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F007.D
Lab ID: KWG1204380-1 -- K1203834-003MS
RunType: MS
Matrix: WATER

Date Acquired: 05/03/2012 17:46
Date Quantitated: 05/04/2012 08:47
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
L3902
P1573
P1588
Pilot
PIL30

Primary Review: MAY 04 2012

Secondary Review: 05.04.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F007.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 17:46	**Quant Date:**	05/04/2012 08:47	**Vial:**	7
Run Type:	MS			**Dilution:**	1.0
Lab ID:	KWG1204380-1 -- K1203834-003MS			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121263	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	14342	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.18	-0.01	0.00	96	4336m	39.76	80	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.19	-0.02	0.00	88	5291m	48.65	24.3		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

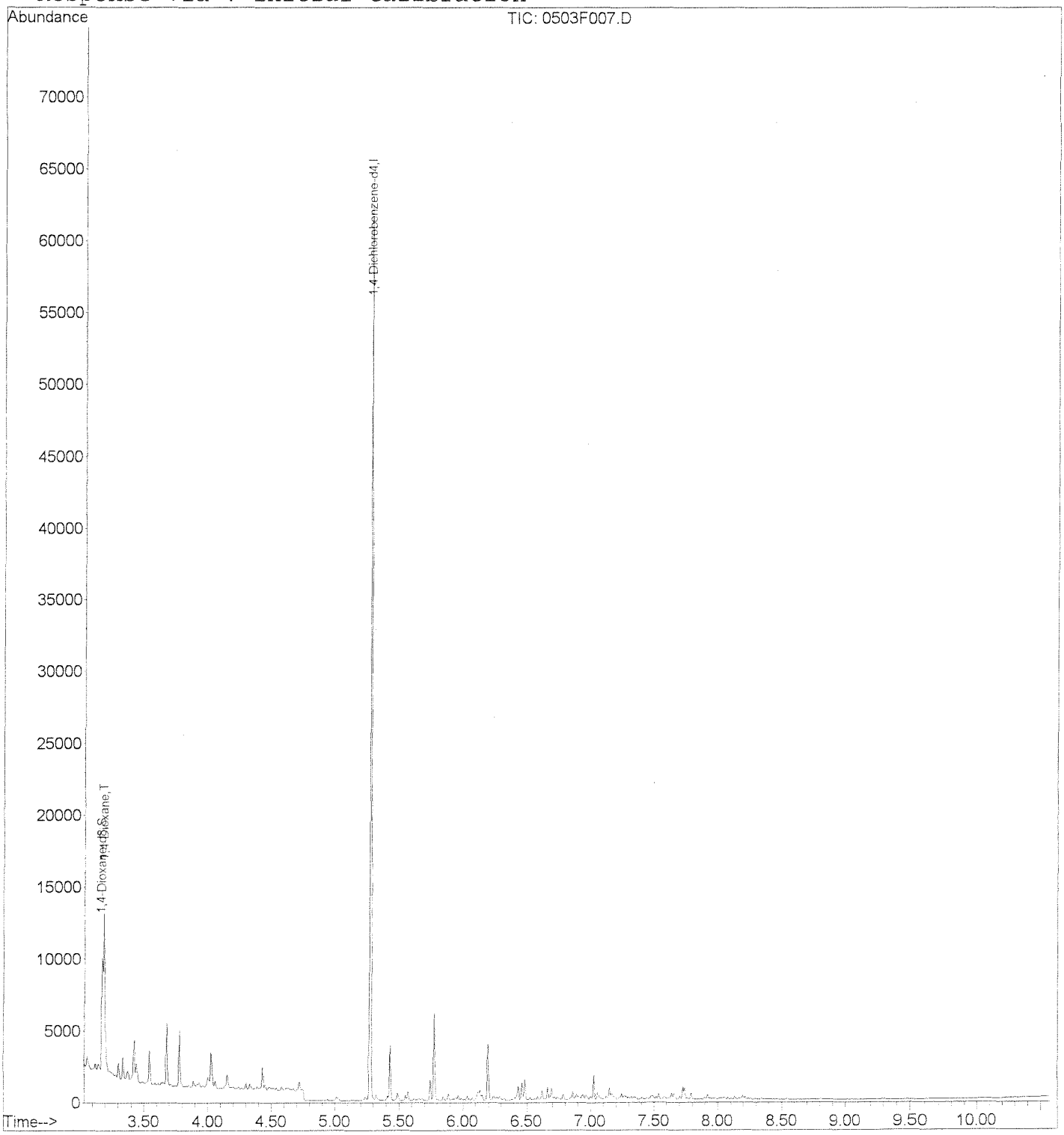
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	14342	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.18	96	4336m	39.76	ng/ml	-0.05
Spiked Amount 50.000			Recovery =	79.52%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.19	88	5291m	48.65	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F007.D 041112_DX.M Fri May 04 08:54:30 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: 041112_DX.RE

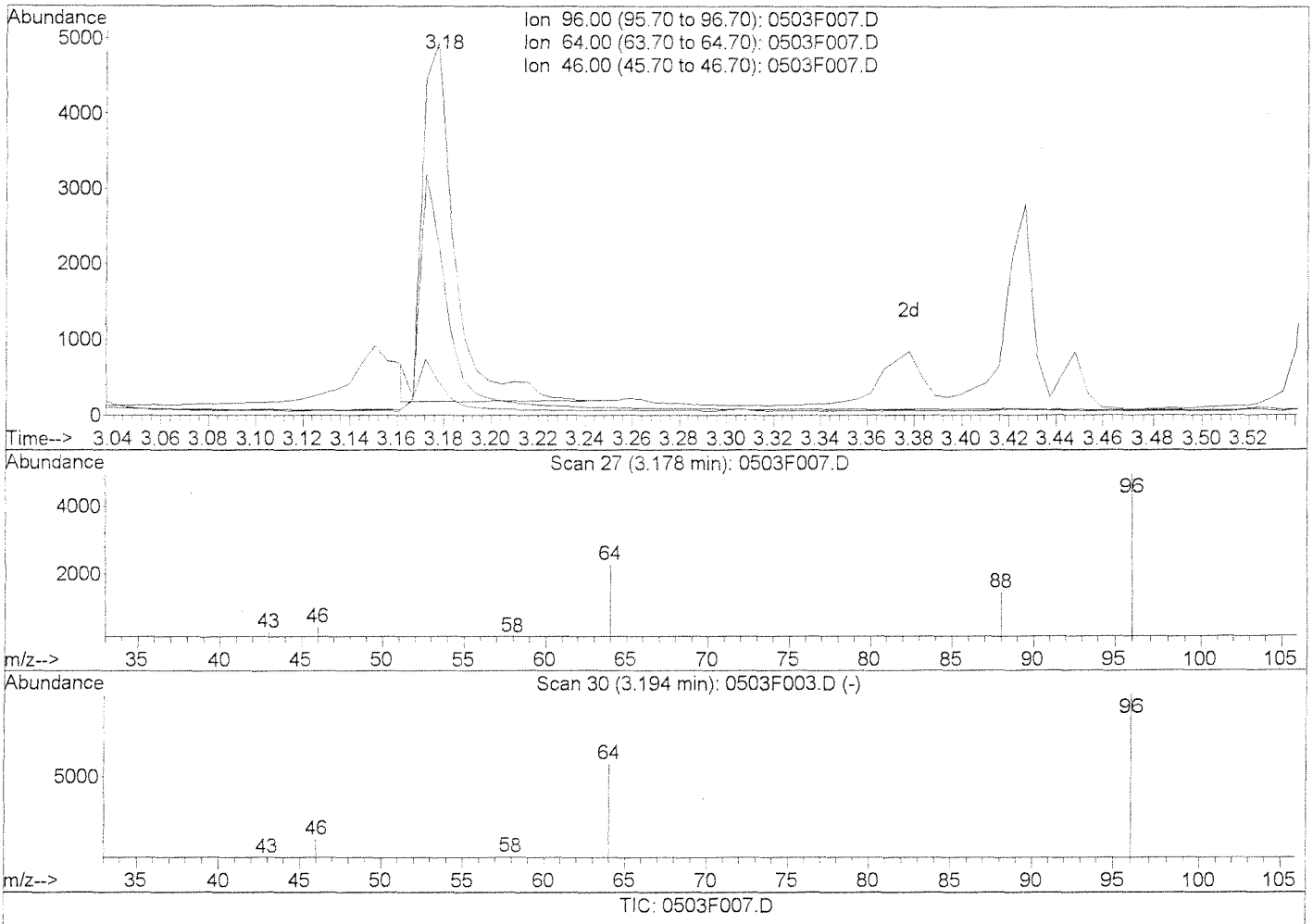
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration



Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



(2) 1,4-Dioxane-d8 (S)

3.18min 40.96ng/ml

response 4467

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	46.36
46.00	9.50	8.07
0.00	0.00	0.00

Manual Integration:

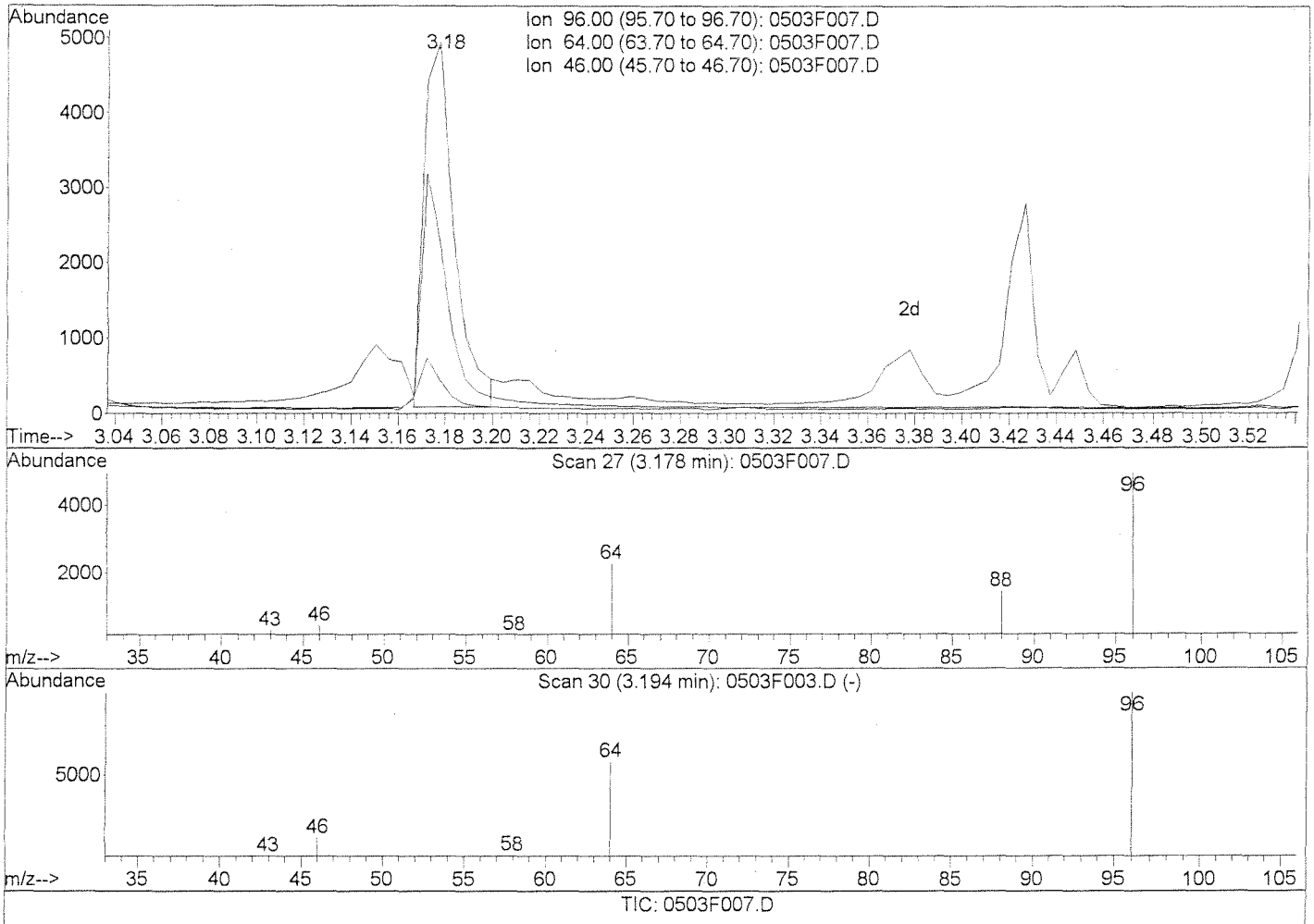
Before

0503F007.D 041112_DX.M Fri May 04 08:47:13 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



(2) 1,4-Dioxane-d8 (S)

3.18min 39.76ng/ml m

response 4336

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	46.06
46.00	9.50	8.91
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

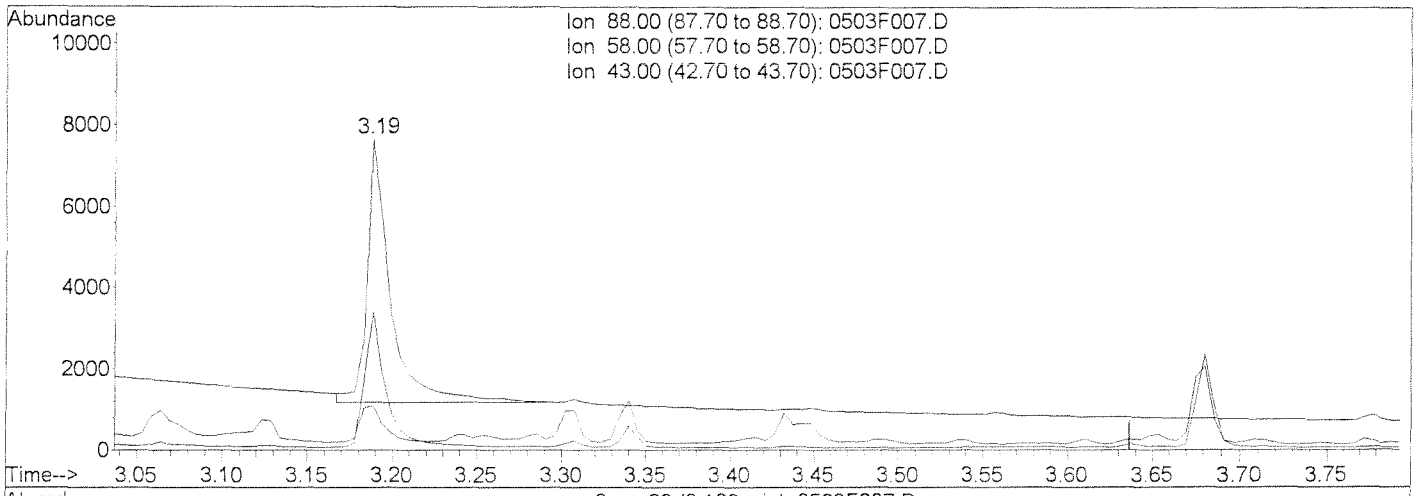
CM LAB

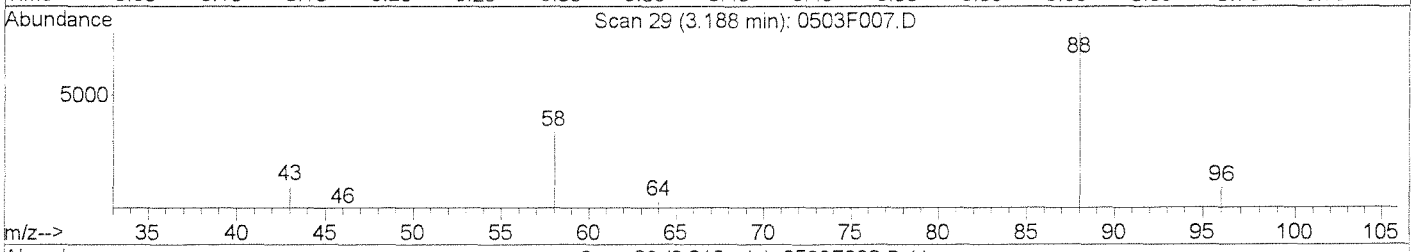
0503F007.D 041112_DX.M Fri May 04 08:47:19 2012

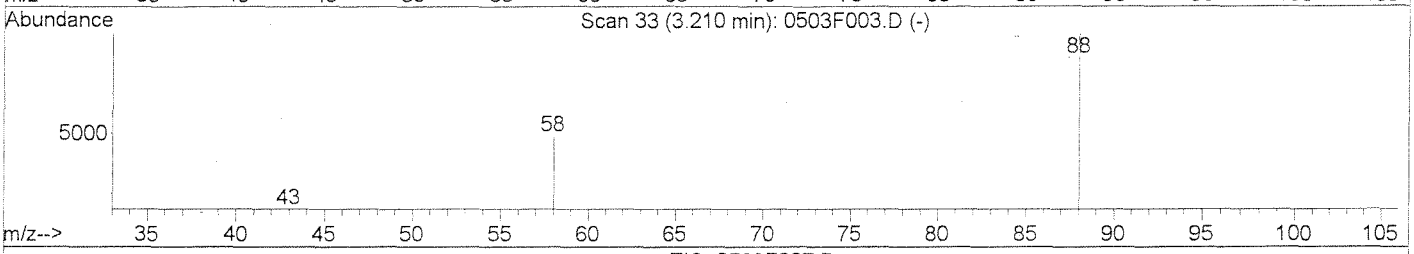
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F007.D

(3) 1,4-Dioxane (T)

3.19min 56.85ng/ml

response 6183

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	51.74#
43.00	15.90	13.70
0.00	0.00	0.00

Manual Integration:

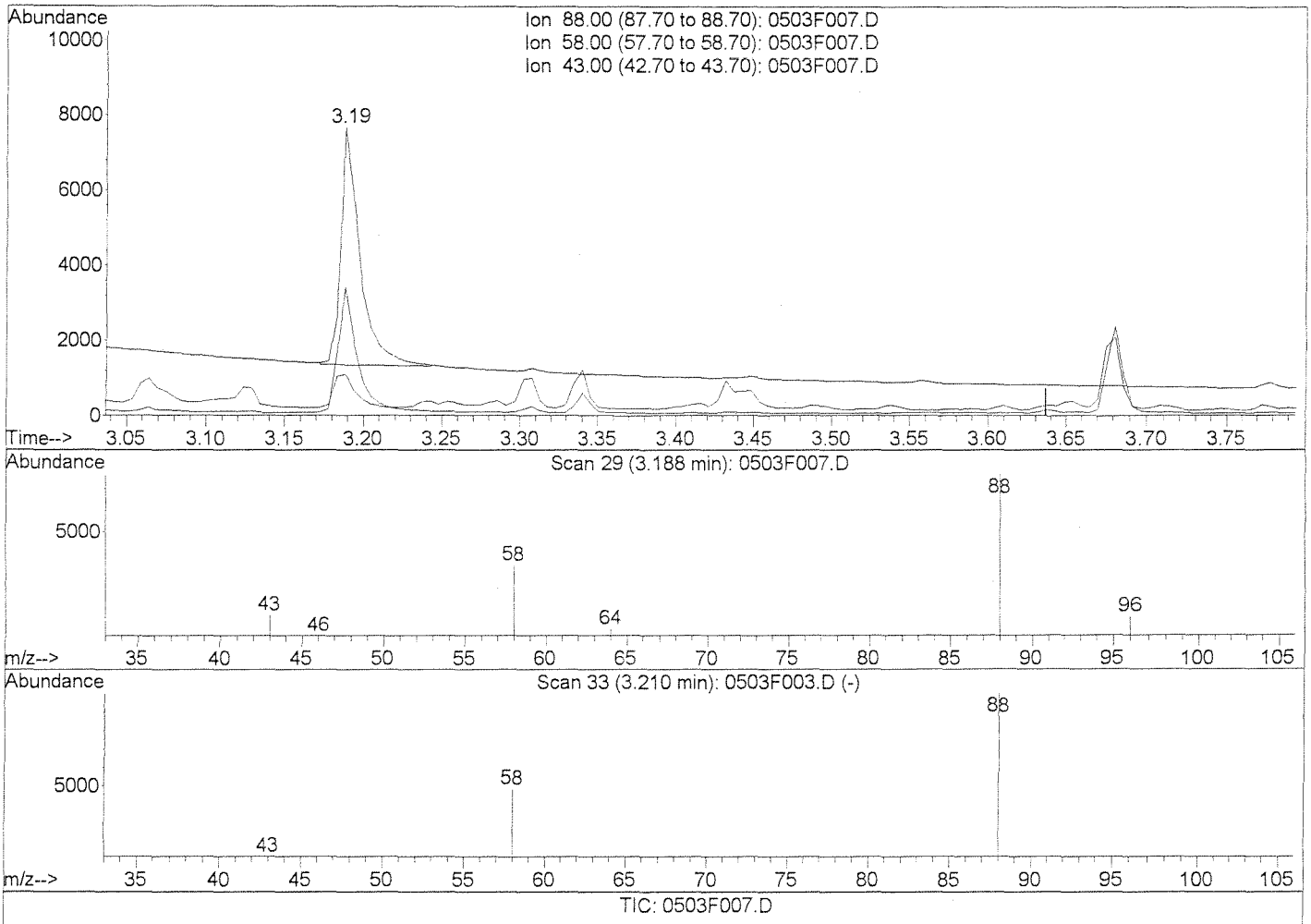
Before

0503F007.D 041112_DX.M Fri May 04 08:47:24 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F007.D

(3) 1,4-Dioxane (T)

3.19min 48.65ng/ml m

response 5291

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	44.73#
43.00	15.90	14.31
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F007.D 041112_DX.M Fri May 04 08:47:29 2012

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201573
Date Collected: NA
Date Received: NA

1,4-Dioxane by GC/MS

Sample Name: Batch QCDMS
Lab Code: KWG1204380-2

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**23.8**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	80	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F008.D
Lab ID: KWG1204380-2 -- K1203834-003DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/03/2012 18:05
Date Quantitated: 05/04/2012 08:47
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
L 3902
P 1573
P 1588
P 1604
P 1630

Primary Review: MAY 04 2012

Secondary Review: 05.04.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F008.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 18:05	**Quant Date:**	05/04/2012 08:47	**Vial:**	8
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1204380-2 -- K1203834-003DMS			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121264	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	13718	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.16	-0.03	0.00	96	4176m	40.03	80	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.18	-0.03	0.00	88	4942m	47.51	23.8		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

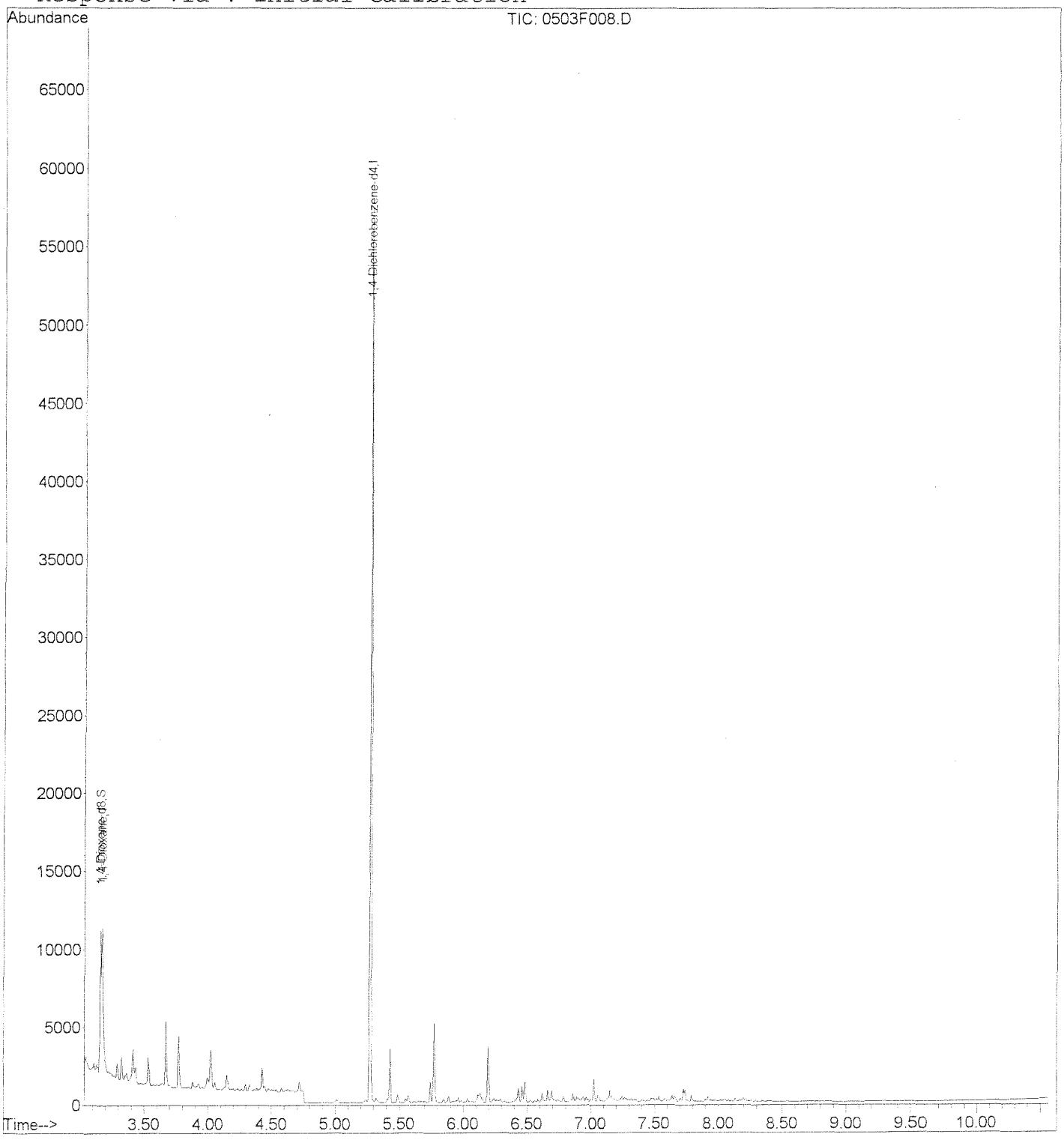
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	13718	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.16	96	4176m	40.03	ng/ml	-0.07
Spiked Amount 50.000			Recovery =	80.06%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.18	88	4942m	47.51	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F008.D 041112_DX.M Fri May 04 08:54:31 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: 041112_DX.RE

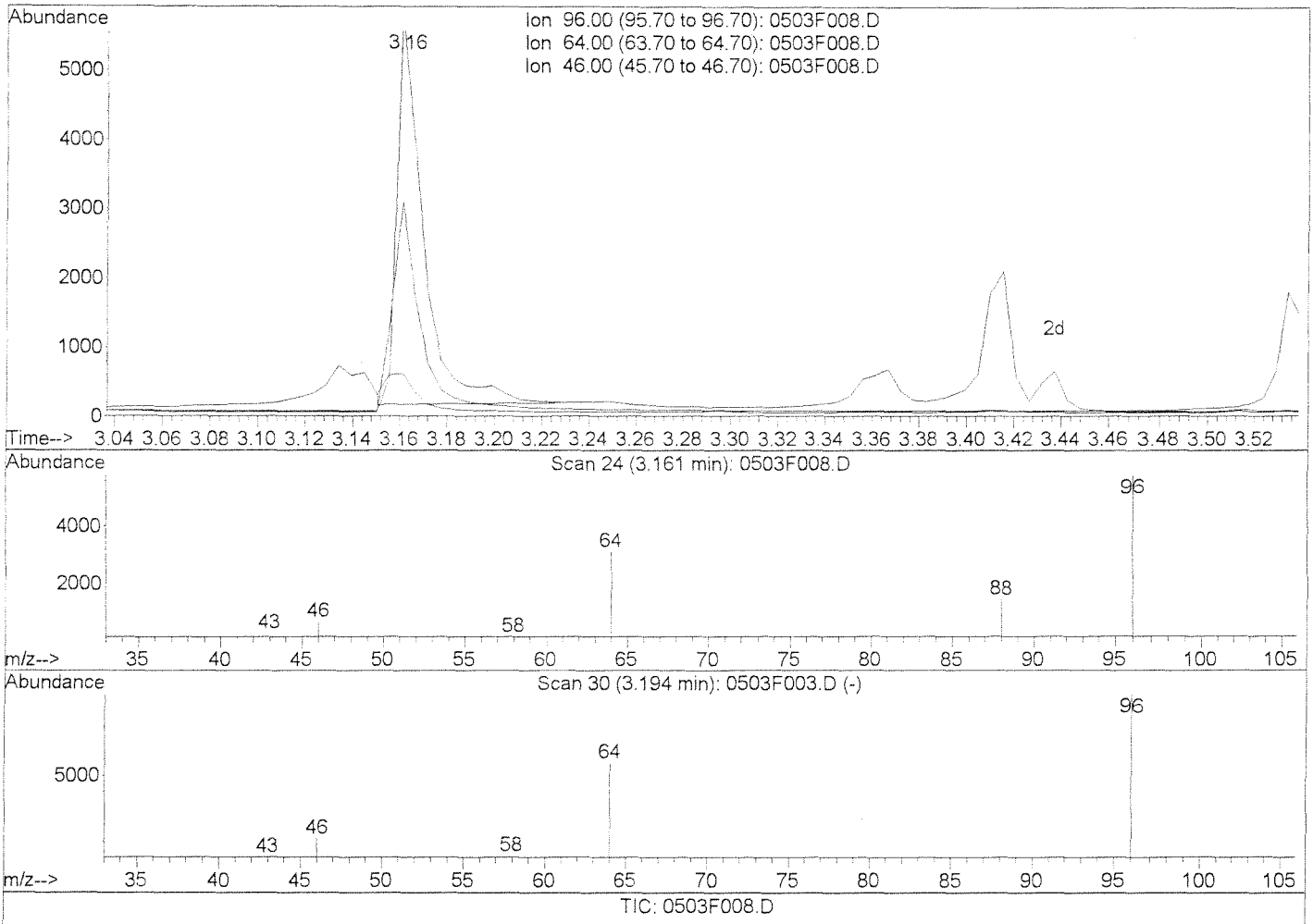
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration



Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



(2) 1,4-Dioxane-d8 (S)

3.16min 41.83ng/ml

response 4364

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	54.05
46.00	9.50	10.07
0.00	0.00	0.00

Manual Integration:

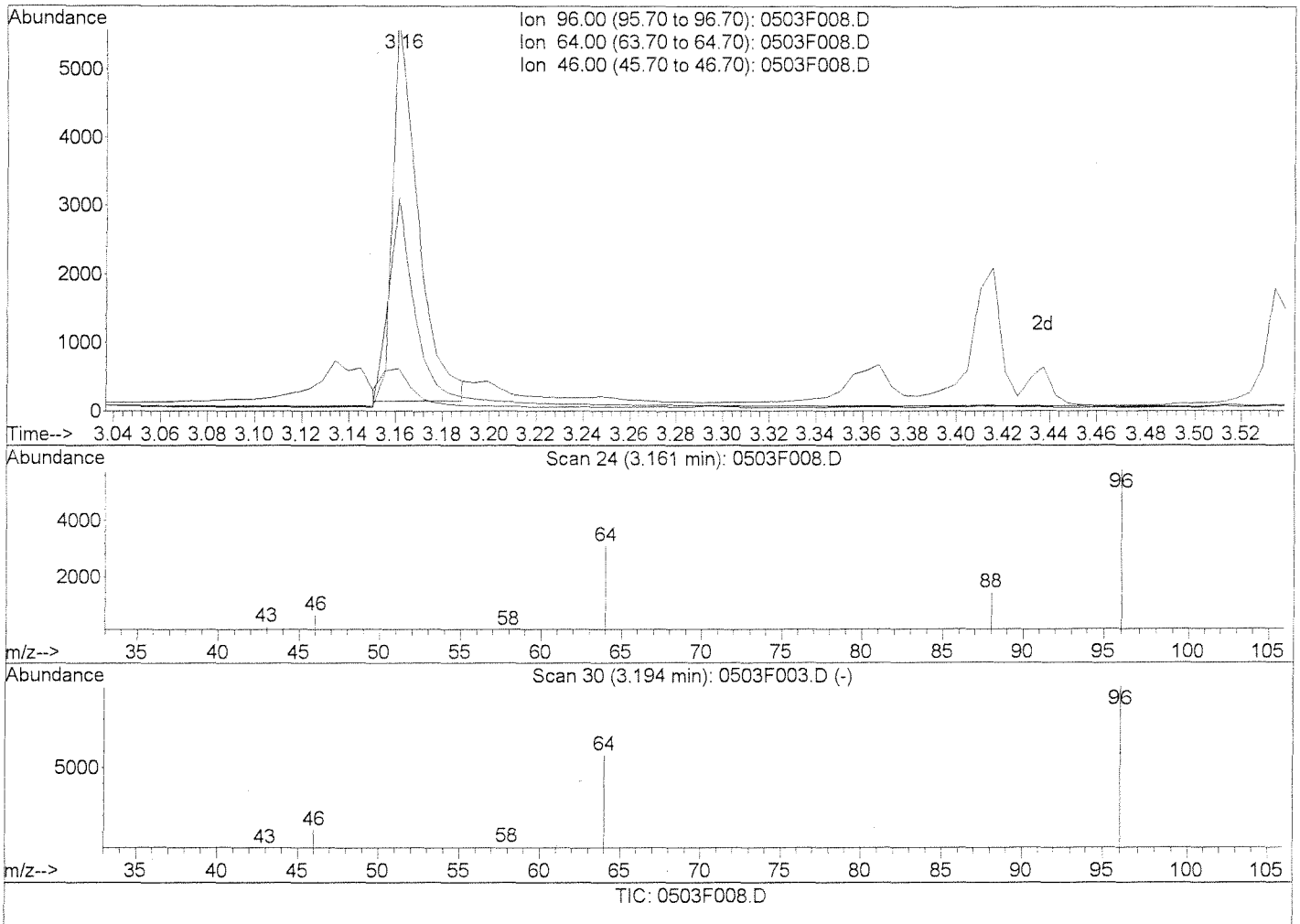
Before

0503F008.D 041112_DX.M Fri May 04 08:47:37 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F008.D

(2) 1,4-Dioxane-d8 (S)

3.16min 40.03ng/ml m

response 4176

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	53.53
46.00	9.50	10.74
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

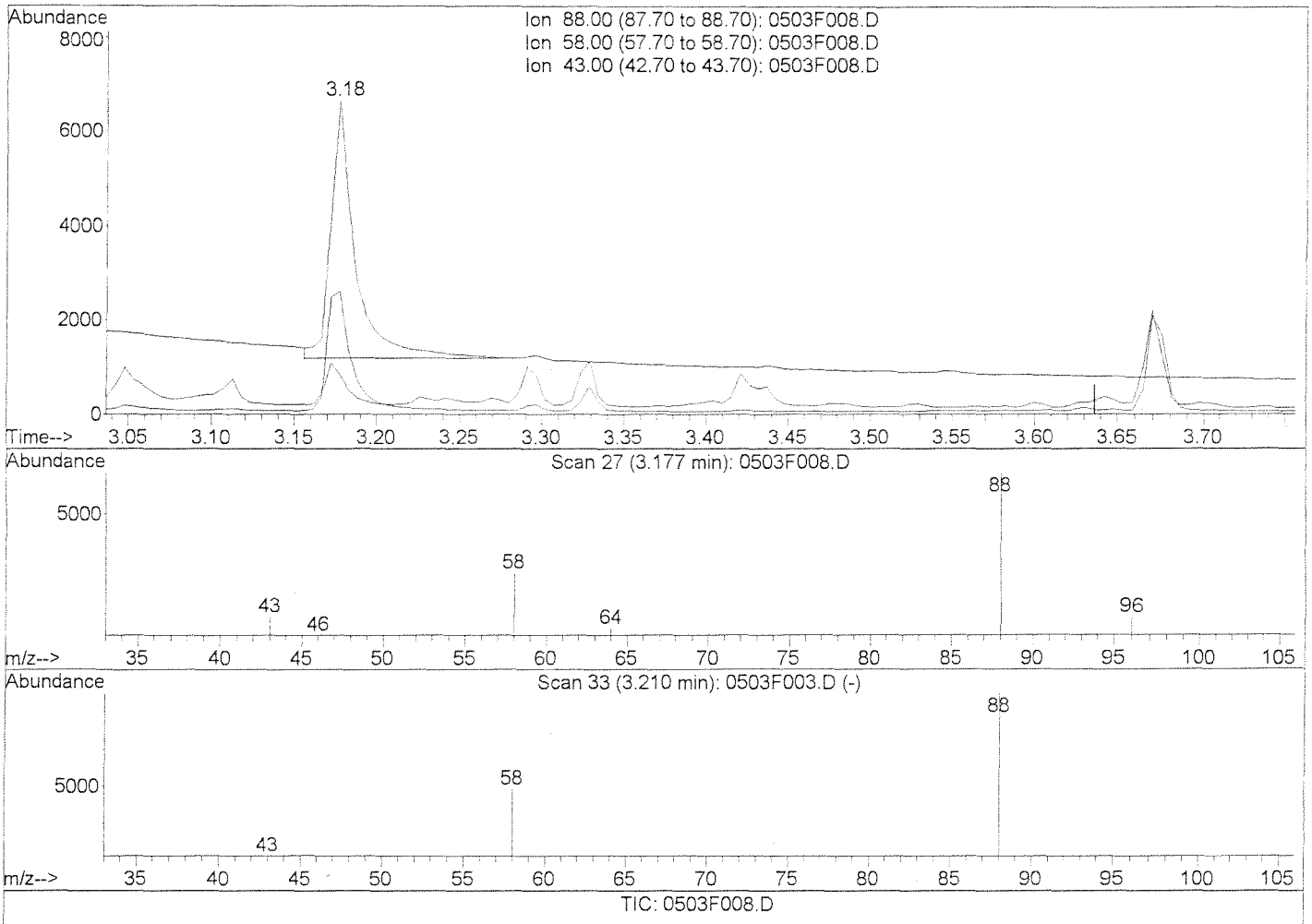
CA 43

0503F008.D 041112_DX.M Fri May 04 08:47:45 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F008.D

(3) 1,4-Dioxane (T)

3.18min 54.17ng/ml

response 5635

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	46.28#
43.00	15.90	11.78
0.00	0.00	0.00

Manual Integration:

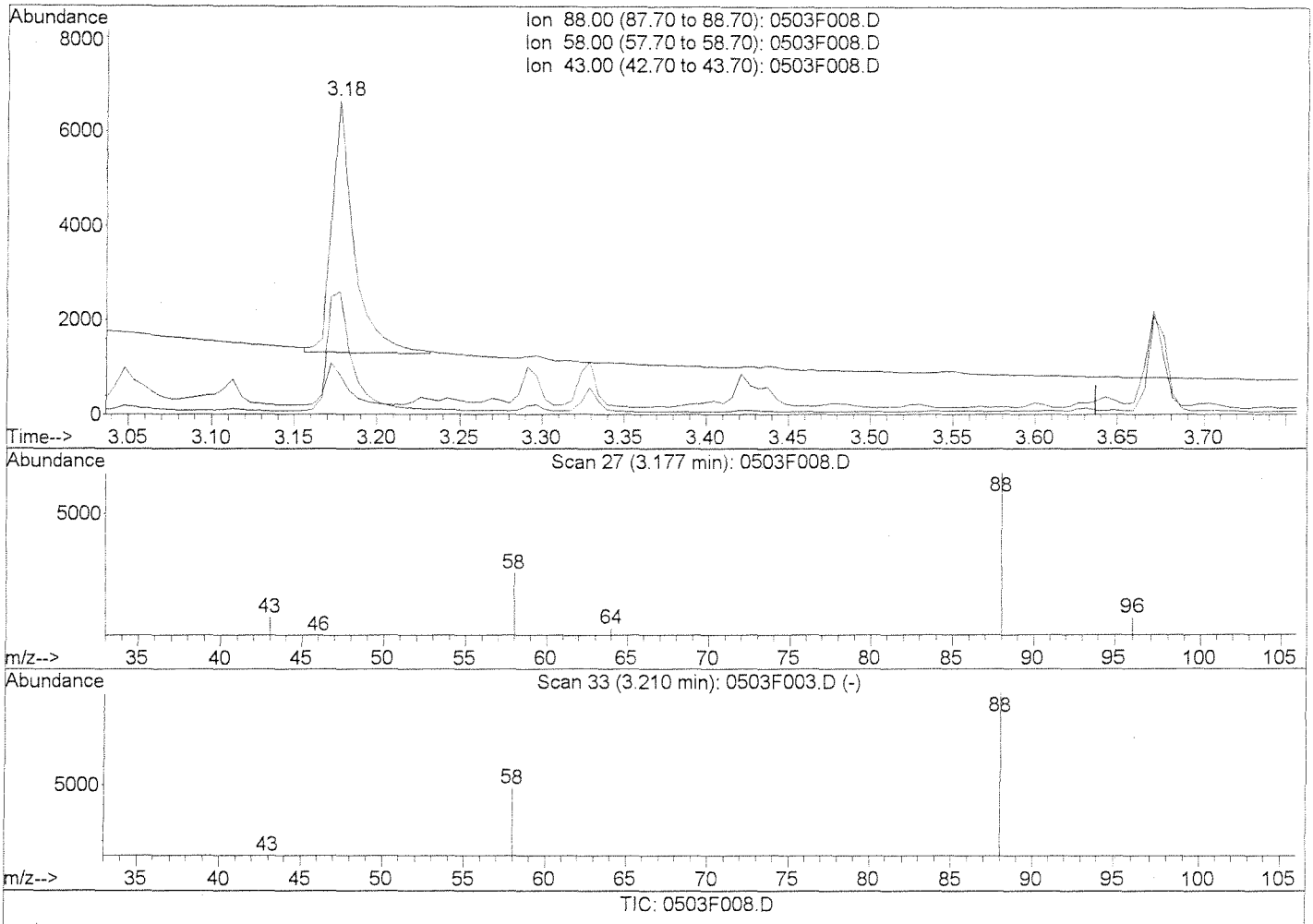
Before

0503F008.D 041112_DX.M Fri May 04 08:47:49 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F008.D

(3) 1,4-Dioxane (T)

3.18min 47.51ng/ml m

response 4942

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	39.25#
43.00	15.90	12.67
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F008.D 041112_DX.M Fri May 04 08:47:57 2012

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1204380-3	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**23.6**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	93	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F005.D
Lab ID: KWG1204380-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/03/2012 17:08
Date Quantitated: 05/04/2012 08:46
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

L3834
L3902
P1573
P1588
P1604
P1630

Primary Review: MAY 04 2012

Secondary Review: 05 04 12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F005.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 17:08	**Quant Date:**	05/04/2012 08:46	**Vial:**	5
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1204380-3			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121265	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.00?	152	15930	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.20	0.01	0.00	96	5614	46.34	93	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.22	0.01	0.00	88	5706m	47.23	23.6		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F005.D Vial: 5
Acq On : 3 May 2012 5:08 pm Operator: KBailey
Sample : KWG1204380-3 | LCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

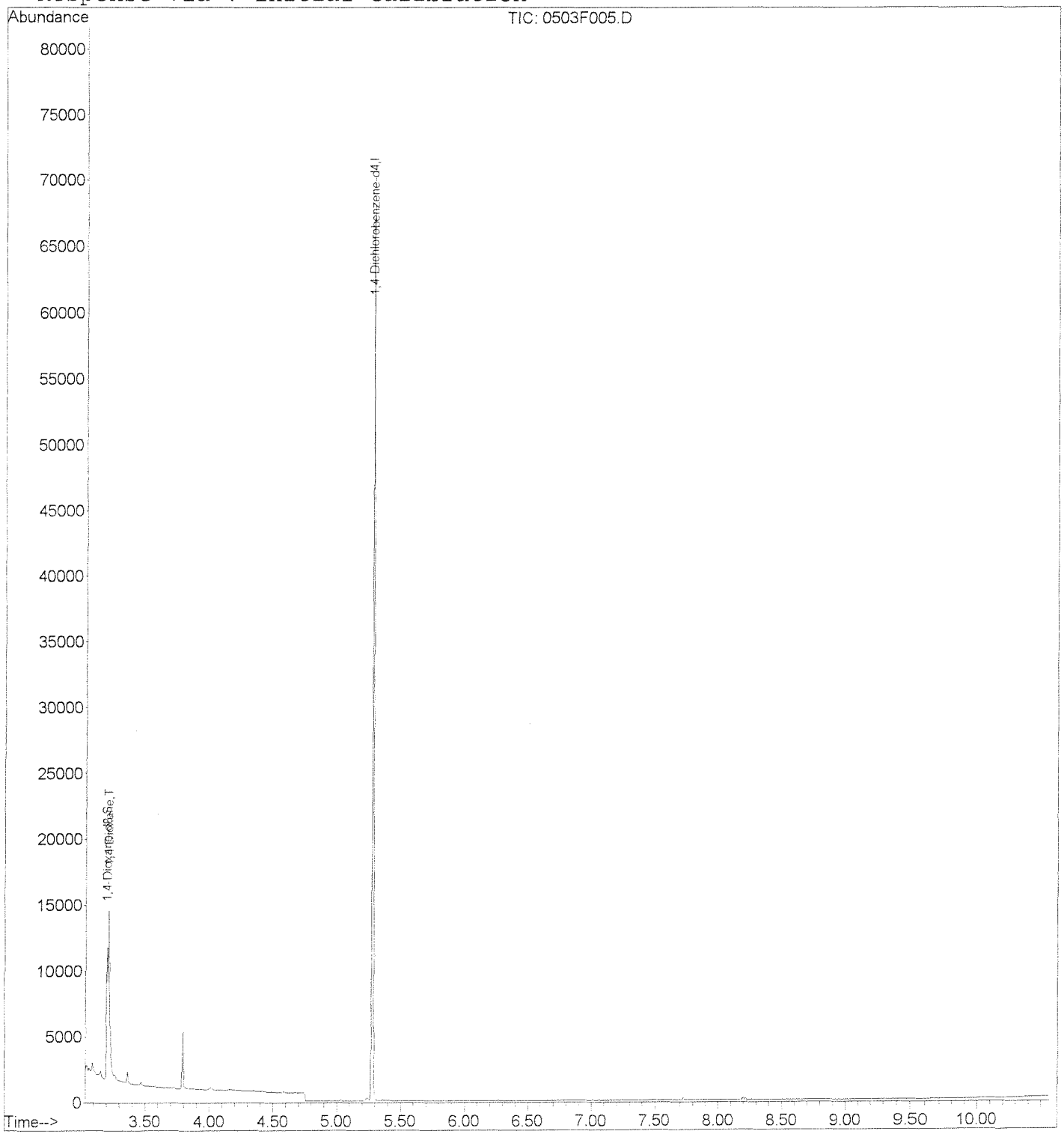
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	15930	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.20	96	5614	46.34	ng/ml	-0.02
Spiked Amount 50.000			Recovery =	92.68%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.22	88	5706m	47.23	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F005.D 041112_DX.M Fri May 04 08:54:29 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F005.D Vial: 5
Acq On : 3 May 2012 5:08 pm Operator: KBailey
Sample : KWG1204380-3 | LCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

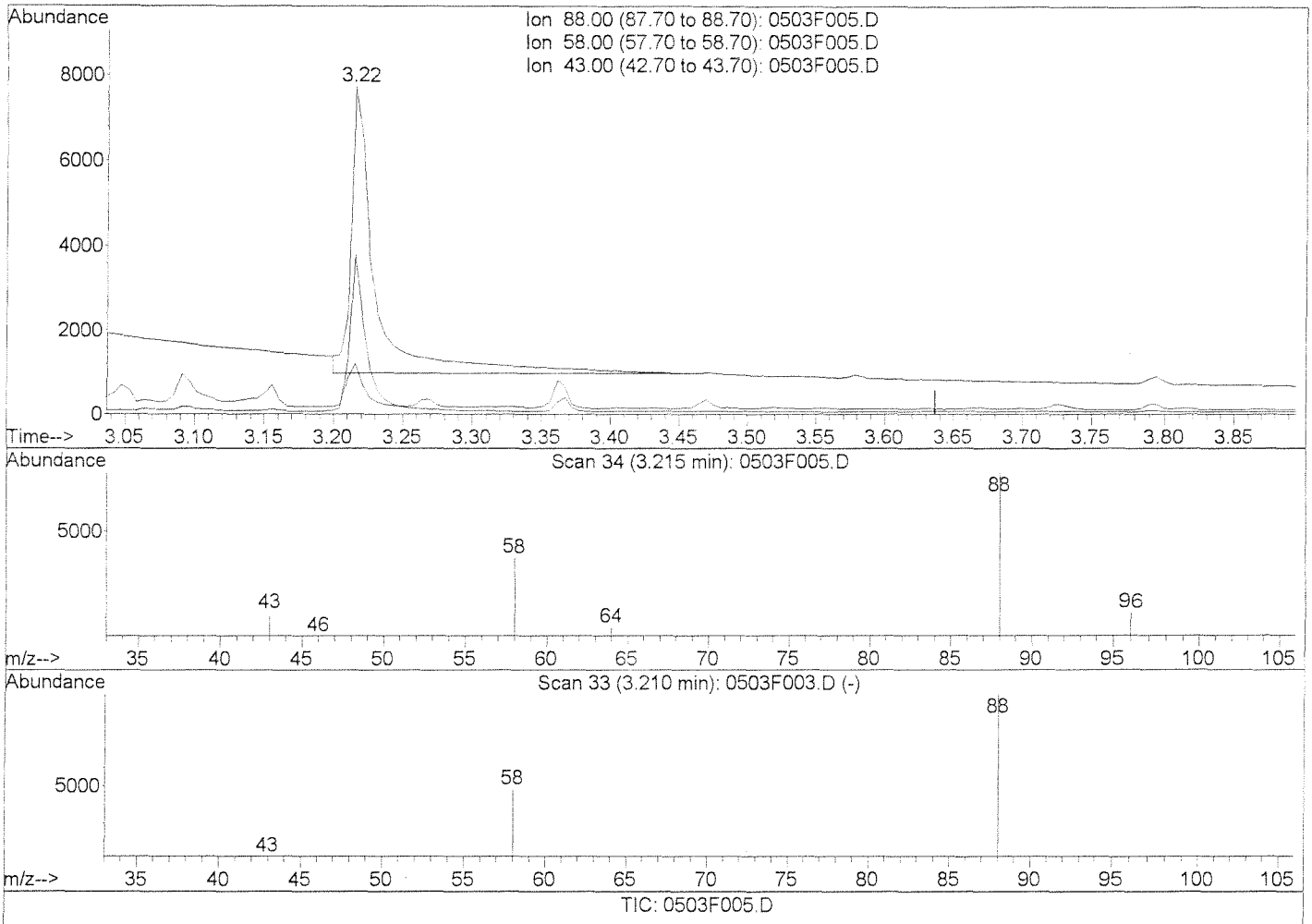


Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F005.D
Acq On : 3 May 2012 5:08 pm
Sample : KWG1204380-3 | LCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012

Vial: 5
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F005.D

(3) 1,4-Dioxane (T)

3.22min 71.24ng/ml

response 8606

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	54.96#
43.00	15.90	15.21
0.00	0.00	0.00

Manual Integration:

Before

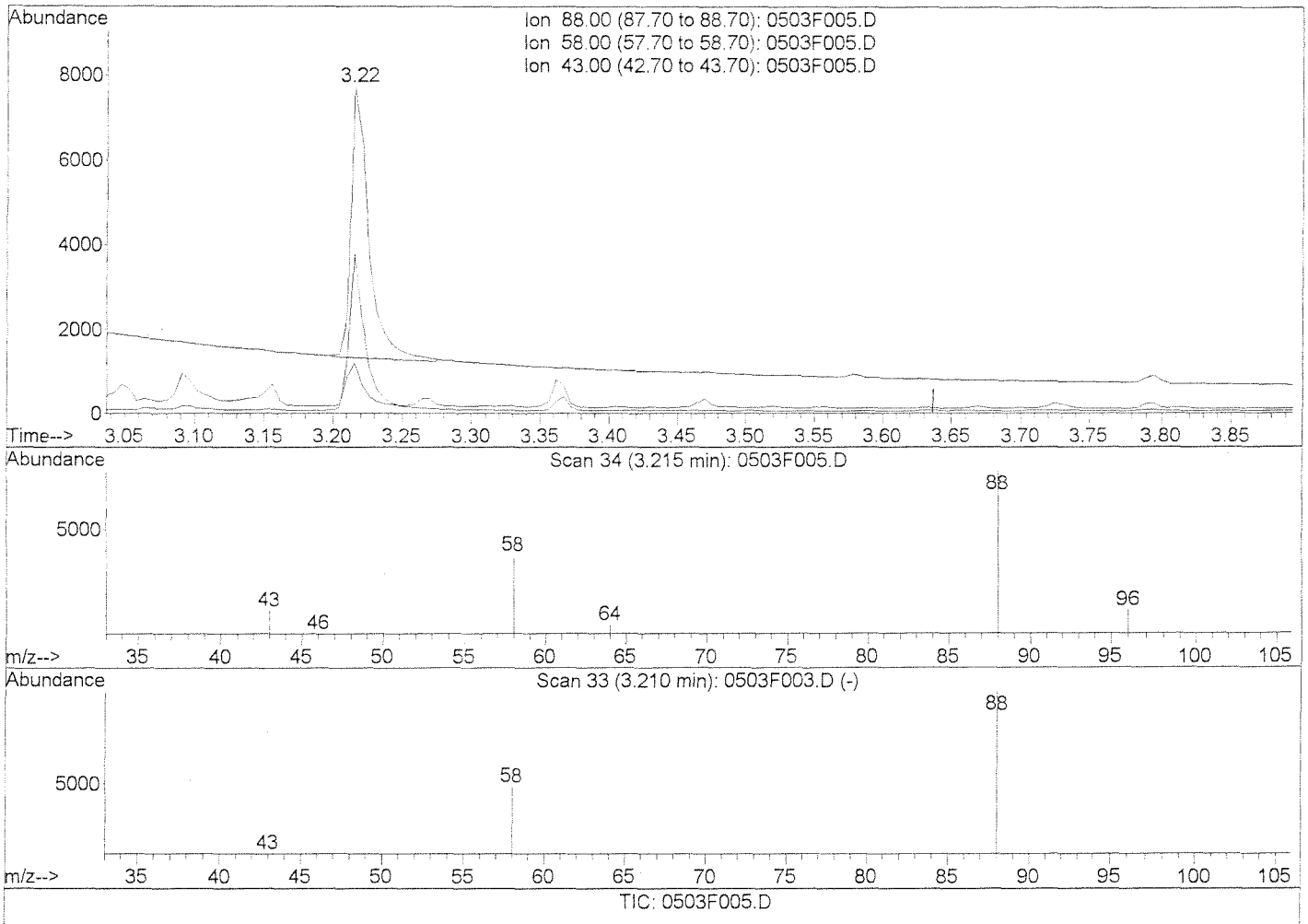
0503F005.D 041112_DX.M Fri May 04 08:46:42 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F005.D
Acq On : 3 May 2012 5:08 pm
Sample : KWG1204380-3 | LCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012

Vial: 5
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F005.D

(3) 1,4-Dioxane (T)

3.22min 47.23ng/ml m

response 5706

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	48.89#
43.00	15.90	15.60
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F005.D 041112_DX.M Fri May 04 08:46:49 2012

Client:	Battelle	**Service Request:**	P1201573
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Duplicate Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1204380-4	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**22.8**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	96	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F006.D
Lab ID: KWG1204380-4
RunType: DLCS
Matrix: WATER

Date Acquired: 05/03/2012 17:27
Date Quantitated: 05/04/2012 08:47
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

L3834
L3902
P1573
P1588
P1604
P1630

Primary Review: MAY 04 2012

Secondary Review: CM 05-04-12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F006.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 17:27	**Quant Date:**	05/04/2012 08:47	**Vial:**	6
Run Type:	DLCS			**Dilution:**	1.0
Lab ID:	KWG1204380-4			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121266	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	14308	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.17	-0.02	0.00	96	5246	48.21	96	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.18	-0.03	0.00	88	4957m	45.68	22.8		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F006.D Vial: 6
Acq On : 3 May 2012 5:27 pm Operator: KBailey
Sample : KWG1204380-4 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

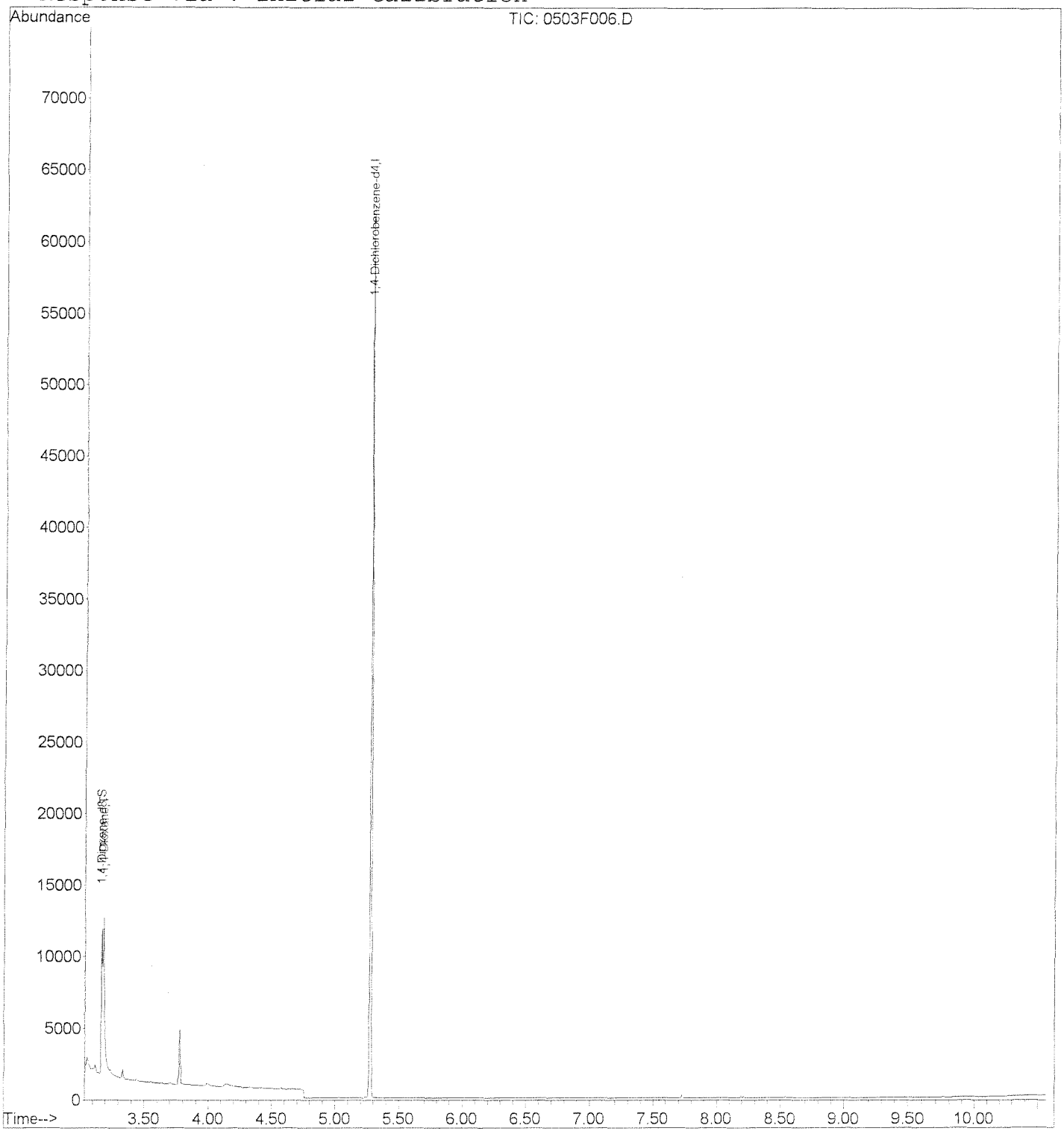
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	14308	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.17	96	5246	48.21	ng/ml	-0.06
Spiked Amount 50.000			Recovery = 96.42%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.18	88	4957m	45.68	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F006.D 041112_DX.M Fri May 04 08:54:30 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F006.D Vial: 6
Acq On : 3 May 2012 5:27 pm Operator: KBailey
Sample : KWG1204380-4 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: 041112_DX.RE

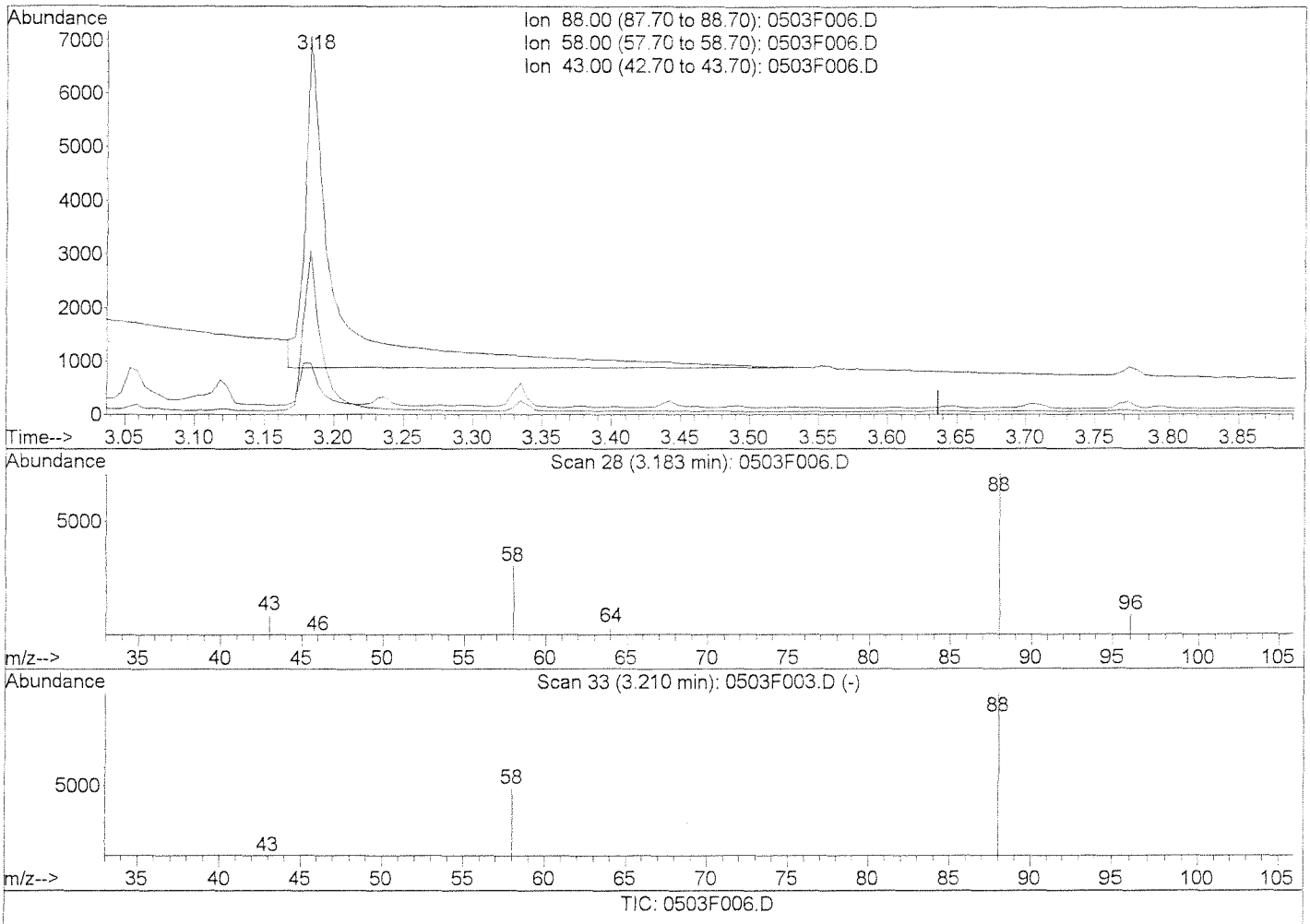
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration



Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F006.D Vial: 6
Acq On : 3 May 2012 5:27 pm Operator: KBailey
Sample : KWG1204380-4 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F006.D

(3) 1,4-Dioxane (T)

3.18min 89.94ng/ml

response 9759

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	48.55#
43.00	15.90	13.38
0.00	0.00	0.00

Manual Integration:

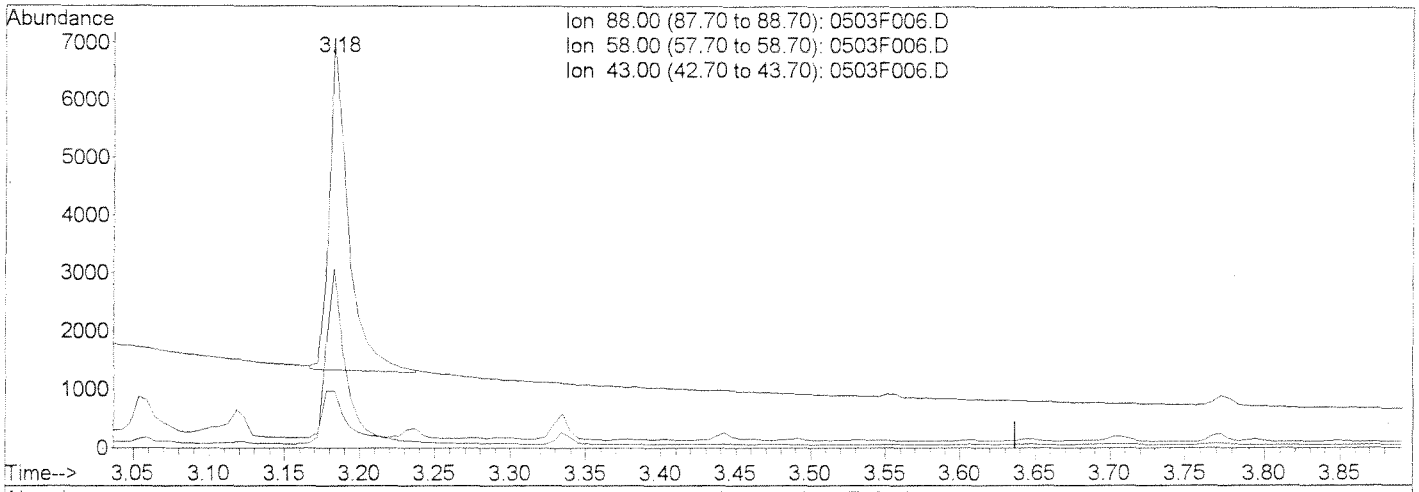
Before

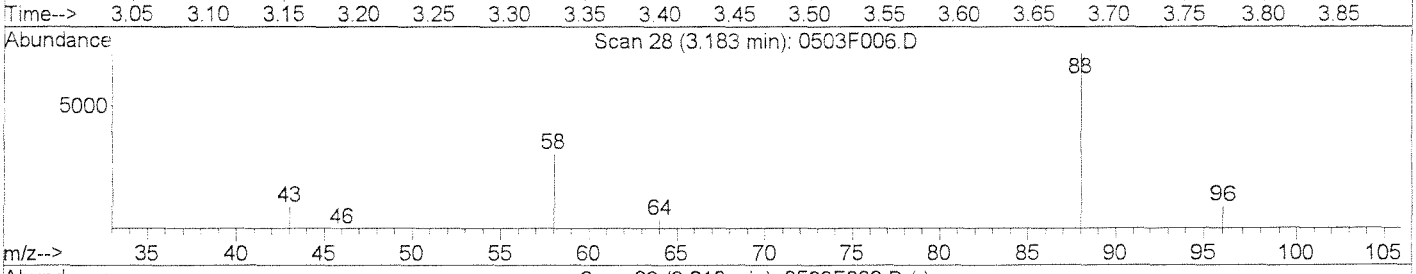
0503F006.D 041112_DX.M Fri May 04 08:46:57 2012

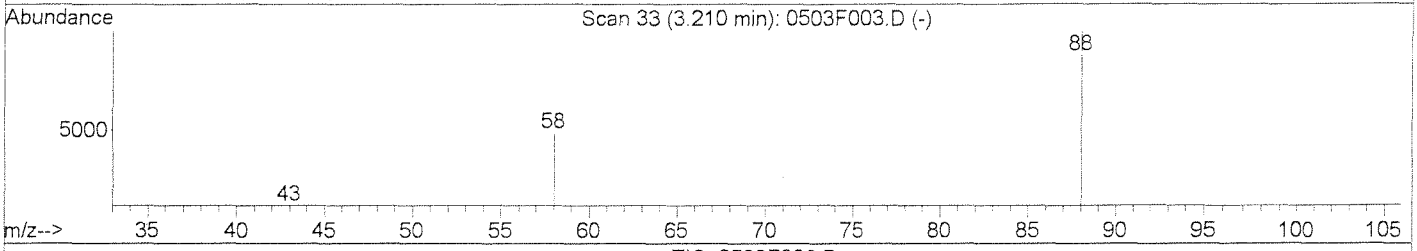
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F006.D Vial: 6
Acq On : 3 May 2012 5:27 pm Operator: KBailey
Sample : KWG1204380-4 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F006.D

(3) 1,4-Dioxane (T)

3.18min 45.68ng/ml m

response 4957

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	43.34#
43.00	15.90	13.74
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F006.D 041112_DX.M Fri May 04 08:47:04 2012

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Standards Data

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Date Analyzed: 05/03/2012
Time Analyzed: 16:10

Tune Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F002.D
Instrument ID: MS26
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1204586

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.9	55287	PASS
68	69	0	2	1.3	1000	PASS
69	198	0	100	23.0	75190	PASS
70	69	0	2	0.4	321	PASS
127	198	10	80	41.2	134864	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	53.1	327258	PASS
199	198	5	9	6.7	22072	PASS
275	198	10	60	28.6	93752	PASS
365	442	1	50	2.1	12870	PASS
441	443	0	100	73.0	87834	PASS
442	442	100	100	100.0	615872	PASS
443	442	15	24	19.5	120280	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1204586-2	J:\MS26\DATA\050312\0503F003.D	05/03/2012	16:29	
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/2012	16:48	
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/2012	17:08	
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/2012	17:27	
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/2012	17:46	
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/2012	18:05	
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/2012	18:24	
MW-16	P1201573-002	J:\MS26\DATA\050312\0503F015.D	05/03/2012	20:19	
DUPE-8-2Q12	P1201573-003	J:\MS26\DATA\050312\0503F016.D	05/03/2012	20:38	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Exception Report

Data File:	J:\MS26\DATA\050312\0503F002.D	**Date Acquired:**	05/03/2012 16:10
Lab ID:	KWG1204586-1	**Date Quantitated:**	
RunType:	TUNE	**Batch ID:**	KWG1204586
Matrix:	WATER	**Analysis Method:**	DFTPP
		ListJoinID:	LJ1965

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Ion Ratio	NA	NA	NA	x	

Primary Review: MAY 04 2012

Secondary Review: 05-25 05-12

Printed: 05/04/2012 09:11:28

u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F002.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 16:10	**Quant Date:**		**Vial:**	2
Run Type:	TUNE			**Dilution:**	1.0
Lab ID:	KWG1204586-1			**Soln Conc. Units:**	

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-DIOXA	**Collect Date:**		**Receive Date:**	05/04/2012

Analysis Lot:	KWG1204586	**Prep Lot:**		**Report Group:**	
Analysis Method:	DFTPP	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS26\METHODS\SIM\A_DFTPP.M			**Calibration ID:**	CAL11446
Title:				**Report List ID:**	LJ1965
Tune Ref:				**Method ID:**	MJ190
MB Ref:				**Quant based on Report List**	

Tune Results

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.9	55287	Pass
68	69	0	2	1.3	1000	Pass
69	198	0	100	23.0	75190	Pass
70	69	0	2	0.4	321	Pass
127	198	10	80	41.2	134864	Pass
197	198	0	2	0.0	0	Pass
198	442	30	100	53.1	327258	Pass
199	198	5	9	6.7	22072	Pass
275	198	10	60	28.6	93752	Pass
365	442	1	50	2.1	12870	Pass
441	443	0.01	100	73.0	87834	Pass
442	442	100	100	100.0	615872	Pass
443	442	15	24	19.5	120280	Pass

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

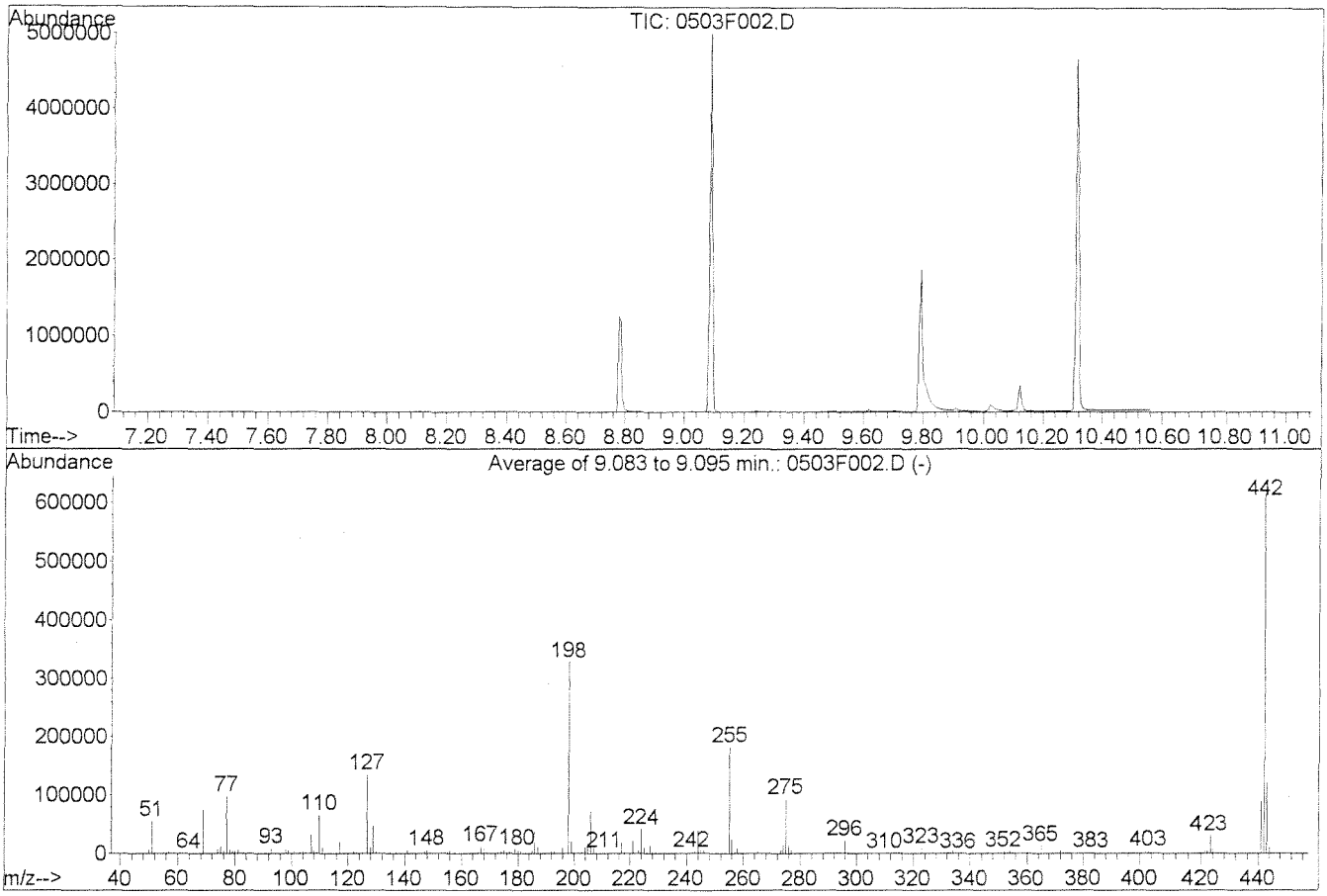
D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

DFTPP

Data File : J:\MS26\DATA\050312\0503F002.D
Acq On : 3 May 2012 4:10 pm
Sample : 3.0ug/mL DFTPP | SVM38-66A
Misc :
MS Integration Params: rteint.p
Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix

Vial: 2
Operator: KBailey
Inst : MS26
Multiplr: 1.00



AutoFind: Scans 1048, 1049, 1050; Background Corrected with Scan 1044

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	16.9	55287	PASS
68	69	0.00	2	1.3	1000	PASS
69	198	0.00	100	23.0	75190	PASS
70	69	0.00	2	0.4	321	PASS
127	198	10	80	41.2	134864	PASS
197	198	0.00	2	0.0	0	PASS
198	442	30	100	53.1	327258	PASS
199	198	5	9	6.7	22072	PASS
275	198	10	60	28.6	93752	PASS
365	442	1	50	2.1	12870	PASS
441	443	0.01	100	73.0	87834	PASS
442	442	30	100	100.0	615872	PASS
443	442	15	24	19.5	120280	PASS

0503F002.D A_DFTPP.M Fri May 04 08:45:18 2012

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
50.00	6876	64.00	352	78.10	6815	88.95	161
51.10	55287	65.00	1502	79.00	5089	91.00	1410
52.05	2927	65.95	106	80.00	4015	92.00	1577
53.00	135	68.00	1000	81.00	6202	93.00	9215
55.00	256	69.00	75190	82.00	1575	94.00	617
56.00	1557	70.00	321	83.00	1681	95.05	167
57.00	4279	73.00	509	83.90	104	96.00	498
58.00	188	74.00	6705	85.00	1392	96.90	79
61.00	705	75.00	11971	85.95	1570	97.10	99
62.00	796	76.00	4210	87.00	908	98.00	6875
63.00	2549	77.10	97394	88.00	337	99.00	6754

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
100.00	510	111.00	9455	123.00	3121	134.00	1247
101.00	4100	112.00	1239	124.00	1428	135.00	3756
102.00	218	113.00	306	125.00	1441	136.00	1479
103.00	1256	114.10	50	126.05	241	137.00	2070
104.00	2334	116.00	1561	127.00	134864	137.85	421
105.00	2171	117.00	19510	128.00	10194	138.95	163
106.00	689	118.00	1575	129.00	47451	139.95	508
107.00	31702	118.90	255	130.00	4014	141.00	5477
108.00	5271	120.00	381	131.00	749	142.00	1958
109.00	781	121.00	66	132.00	455	142.95	1384
110.00	66449	122.00	1934	132.95	258	144.00	325

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
144.95	293	156.00	5404	167.00	12018	177.95	713
146.00	931	157.00	1113	168.00	7575	179.00	8907
147.00	2906	157.95	1089	169.00	1154	180.00	6888
148.00	5927	159.00	825	169.95	362	181.00	3151
149.00	1447	160.00	1871	170.90	470	182.00	433
149.95	396	161.00	2982	172.00	984	182.90	281
151.10	779	162.00	848	173.00	1464	184.00	658
151.80	181	163.00	239	174.00	2668	185.00	4322
153.00	1783	164.00	326	175.00	5114	186.00	37907
154.00	1449	165.00	2037	176.00	1660	187.00	10647
155.00	3313	166.00	1818	177.00	2145	188.00	1095

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
189.00	1957	201.50	1683	214.90	632	226.00	1108
189.95	311	203.00	1589	216.00	1430	227.00	14673
191.00	1030	204.00	9553	217.00	18216	228.00	2135
192.00	3098	205.00	16374	218.00	2285	229.00	3510
193.00	3297	206.00	72696	219.00	194	230.00	469
194.00	720	207.00	9550	220.20	60	231.00	1631
194.95	438	208.00	2084	221.00	20205	231.95	261
196.00	9416	209.00	728	221.80	408	232.95	236
198.00	327258	210.20	153	223.00	4122	234.00	937
199.00	22072	211.00	2734	224.00	41417	235.00	1098
200.00	1602	213.00	198	225.00	10316	236.00	677

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
237.00	1501	247.90	239	259.00	1465	273.00	6086
237.95	195	249.00	1370	259.95	224	274.00	15645
239.00	586	249.95	241	260.95	308	275.00	93752
240.00	473	250.90	238	263.00	52	276.00	12590
240.95	912	251.95	217	263.95	241	277.00	6285
242.00	2242	252.95	657	265.00	3503	278.00	1128
243.00	2447	253.95	792	265.90	436	279.00	194
244.05	37994	255.00	181877	267.90	55	280.90	105
245.00	5014	256.00	27027	269.80	111	281.95	229
246.00	5672	257.00	2053	270.95	281	283.00	795
247.00	1174	258.00	8980	272.00	425	284.00	583

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
285.00	1358	298.00	177	314.00	1192	327.00	1587
286.00	192	301.00	341	315.00	2593	328.00	870
289.00	224	302.00	432	316.00	1598	328.90	91
290.00	256	303.00	2986	317.00	300	332.00	676
291.00	84	304.00	753	320.00	58	333.00	886
292.00	322	304.90	56	321.00	882	334.00	6024
293.00	1644	308.00	368	322.00	456	335.10	1591
294.00	405	309.00	166	323.00	9485	336.00	110
295.00	401	310.00	396	324.00	1758	338.90	91
296.00	22619	310.90	51	325.10	108	340.00	82
297.00	3206	313.00	150	325.90	110	341.00	1104

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
342.00	334	366.90	75	391.00	630	423.00	30156
346.00	2241	369.95	281	392.05	411	424.00	7187
347.00	379	371.00	928	400.90	431	425.10	825
351.00	103	372.00	6222	402.00	2732	441.05	87834
352.00	3157	373.00	1596	403.00	4078	442.10	615872
353.00	2071	374.00	106	404.00	1407	443.05	120280
354.00	3214	376.90	100	405.00	235	444.05	11372
355.00	604	383.00	1794	409.90	62	445.05	660
359.00	223	384.00	501	415.00	172		
365.00	12870	385.00	87	421.00	3968		
366.00	2005	390.00	921	422.00	3564		

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26

Column: MS

Level ID	File ID
A	J:\MS26\DATA\041112\0411F009.D
B	J:\MS26\DATA\041112\0411F010.D
C	J:\MS26\DATA\041112\0411F011.D
D	J:\MS26\DATA\041112\0411F012.D
E	J:\MS26\DATA\041112\0411F013.D
F	J:\MS26\DATA\041112\0411F014.D
G	J:\MS26\DATA\041112\0411F015.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,4-Dioxane	A	2.0	0.346	B	4.0	0.323	C	10	0.385	D	20	0.376	E	50	0.406
	F	100	0.417	G	200	0.401									
1,4-Dioxane-d8	A	2.0	0.360	B	4.0	0.348	C	10	0.389	D	20	0.384	E	50	0.381
	F	100	0.407	G	200	0.394									

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,4-Dioxane	MS	AverageRF	% RSD	9.0		≤ 20	0.379		0.01
1,4-Dioxane-d8	SURR	AverageRF	% RSD	5.4		≤ 20	0.380		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201573
Calibration Date: 04/11/2012
Date Analyzed: 04/11/2012

Second Source Calibration Verification
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL11446
Units: ng/ml

File ID: J:\MS26\DATA\041112\0411F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	21	0.379	0.404	7	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Injection Log

Directory: J:\MS26\DATA\041112

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0411F001.d	1.	PR		11 Apr 2012 08:4
2	1	0411F002.d	1.	PR		11 Apr 2012 09:0
3	1	0411F003.d	1.	PR		11 Apr 2012 09:2
4	1	0411F004.d	1.	PR		11 Apr 2012 09:4
5	1	0411F005.d	1.	PR		11 Apr 2012 10:0
6	1	0411F006.d	1.	PR		11 Apr 2012 10:2
7	1	0411F007.d	1.	3.0ug/mL DFTPP | SVM37-61C		11 Apr 2012 10:4
8	2	0411F008.d	1.	IB		11 Apr 2012 11:0
9	3	0411F009.d	1.	2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A		11 Apr 2012 11:1
10	4	0411F010.d	1.	4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B		11 Apr 2012 11:3
11	5	0411F011.d	1.	10ng/mL ICAL 1,4-Dioxane | SVM37-76C		11 Apr 2012 11:5
12	6	0411F012.d	1.	20ng/mL ICAL 1,4-Dioxane | SVM37-76D / CCV		11 Apr 2012 12:1
13	7	0411F013.d	1.	50ng/mL ICAL 1,4-Dioxane | SVM37-76E		11 Apr 2012 12:3
14	8	0411F014.d	1.	100ng/mL ICAL 1,4-Dioxane | SVM37-76F		11 Apr 2012 12:5
15	9	0411F015.d	1.	200ng/mL ICAL 1,4-Dioxane | SVM37-76G		11 Apr 2012 13:1
16	10	0411F016.d	1.	20ng/mL ICV 1,4-Dioxane | SVM38-29B		11 Apr 2012 13:3
17	11	0411F017.d	1.	KWG1202790-5 | MB		11 Apr 2012 14:0
18	12	0411F018.d	1.	KWG1202790-1 | LOD		11 Apr 2012 14:2
19	13	0411F019.d	1.	KWG1202790-2 | LOD		11 Apr 2012 14:4
20	14	0411F020.d	1.	KWG1202790-3 | LOD		11 Apr 2012 14:5
21	15	0411F021.d	1.	KWG1202790-4 | LOQ		11 Apr 2012 15:1
22	16	0411F022.d	1.	KWG1202878-8 | MB		11 Apr 2012 15:3
23	17	0411F023.d	1.	KWG1202878-4 | LOD		11 Apr 2012 15:5
24	18	0411F024.d	1.	KWG1202878-5 | LOD		11 Apr 2012 16:1
25	19	0411F025.d	1.	KWG1202878-6 | LOD		11 Apr 2012 16:3
26	20	0411F026.d	1.	KWG1202878-7 | LOQ		11 Apr 2012 16:5

NR

Soil LOD's / LOQ

NR

CAL 11441

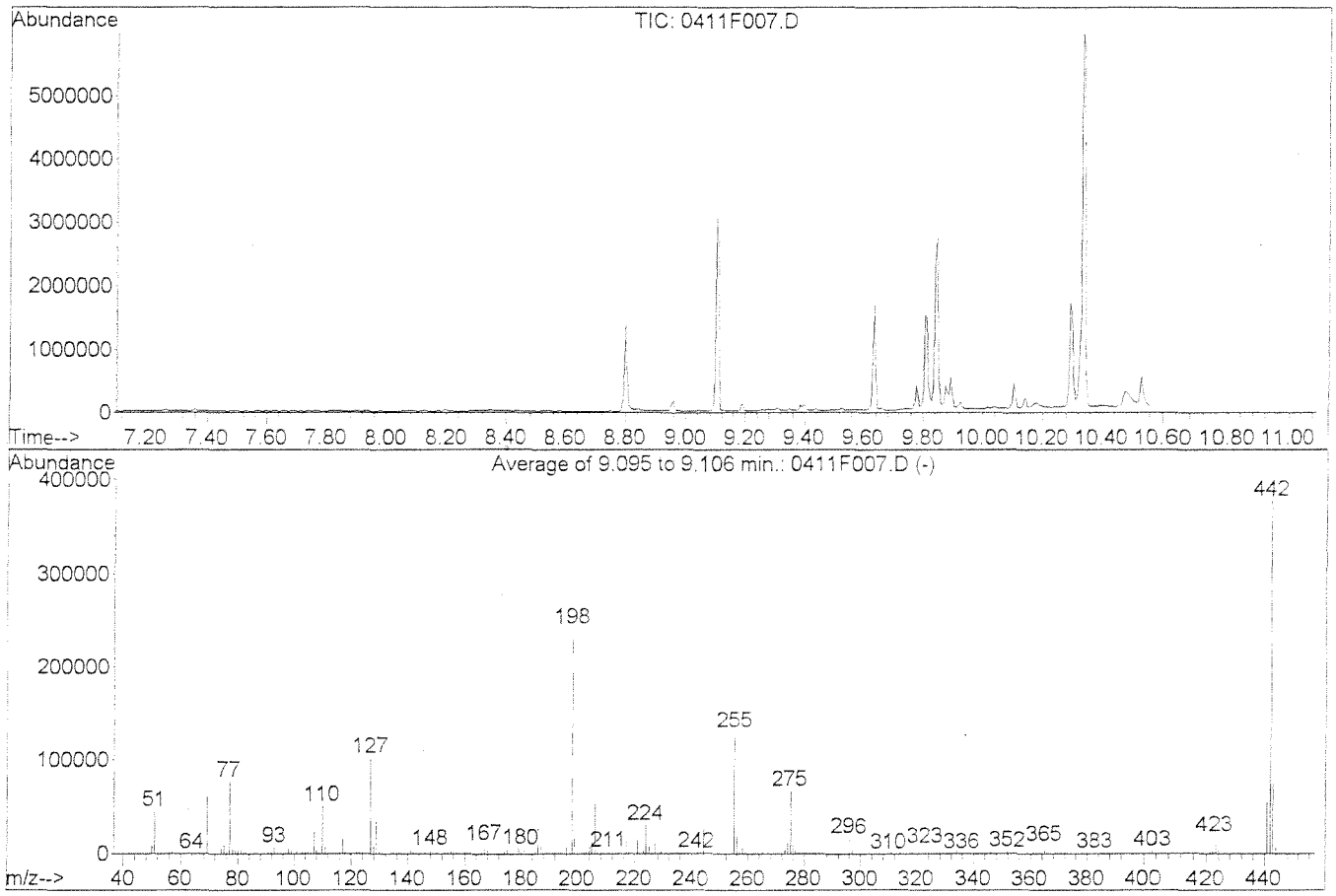
LB

APR 20 2012

CA 04-23-12

DFTPP

Data File : J:\MS26\DATA\041112\0411F007.D Vial: 1
Acq On : 11 Apr 2012 10:41 am Operator: KBailey
Sample : 3.0ug/mL DFTPP | SVM37-61C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix



AutoFind: Scans 1050, 1051, 1052; Background Corrected with Scan 1046

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	18.8	45513	PASS
68	69	0.00	2	1.3	787	PASS
69	198	0.00	100	25.2	60927	PASS
70	69	0.00	2	0.6	395	PASS
127	198	10	80	42.4	102442	PASS
197	198	0.00	2	0.0	81	PASS
198	442	30	100	63.0	241866	PASS
199	198	5	9	6.8	16472	PASS
275	198	10	60	27.6	66830	PASS
365	442	1	50	2.3	8721	PASS
441	443	0.01	100	72.5	54989	PASS
442	442	30	100	100.0	384122	PASS
443	442	15	24	19.7	75860	PASS

0411F007.D A_DFTPP.M Fri Apr 20 15:55:37 2012

APR 2 3 2012

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
50.05	9042	63.90	305	75.00	9570	87.00	741
51.00	45513	64.95	1170	76.10	3311	87.90	257
52.05	2433	65.90	27	77.05	76896	89.00	156
53.00	218	66.95	14	78.10	5645	91.00	1007
55.00	207	68.00	787	79.00	3998	92.00	1250
56.00	1413	69.00	60927	80.00	3175	93.00	7123
57.00	3547	70.00	395	81.00	4752	94.00	599
58.00	235	71.10	8	82.00	1230	94.95	117
61.00	612	72.00	158	83.00	1414	95.95	435
62.00	665	73.00	383	84.95	1127	97.05	223
63.00	2173	74.00	5511	85.90	761	98.00	5412

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
99.00	5076	110.00	50992	121.00	138	132.05	379
99.95	480	111.00	7373	122.00	1552	132.90	112
101.00	3277	111.95	963	123.00	2393	134.00	965
102.00	167	112.95	347	124.00	1200	135.00	2783
103.00	1009	113.90	53	125.00	1214	136.00	1175
104.00	1792	114.90	189	126.05	288	137.00	1568
105.00	1691	116.00	1246	127.00	102442	137.85	421
106.00	648	117.00	15489	128.00	7501	139.00	194
107.00	23908	118.00	1257	129.00	35771	139.95	460
108.00	4050	119.00	304	130.00	3102	141.00	4135
109.00	582	120.00	332	131.00	706	142.00	1473

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
142.95	1149	154.00	1125	165.00	1538	176.00	1237
144.00	339	155.00	2521	166.00	1349	177.00	1727
145.00	320	156.00	3927	167.00	9218	178.00	557
146.00	742	157.00	836	168.00	4967	179.00	6513
147.00	2358	157.95	818	169.00	829	180.00	4999
148.00	4480	159.00	634	170.00	293	181.00	2441
149.00	1168	160.00	1335	170.90	443	182.00	427
150.00	314	161.00	2203	171.95	758	182.95	246
151.15	648	161.95	670	173.00	1152	184.00	505
151.80	356	162.95	190	174.00	1988	185.00	3338
153.00	1442	164.00	297	175.05	3754	186.00	27785

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
187.00	7790	198.00	241866	210.30	505	224.00	30477
188.05	784	199.00	16472	211.00	2072	225.00	7686
189.00	1382	200.00	1269	213.00	130	226.00	775
190.00	266	201.50	1223	214.95	416	227.00	11131
191.10	777	203.00	1384	216.00	1045	228.00	1512
192.00	2338	204.00	7195	217.00	13414	229.00	2665
193.00	2567	205.00	12496	218.00	1765	230.00	408
194.00	604	206.00	53876	218.95	182	231.00	1191
195.05	293	207.00	7081	221.00	15072	232.00	193
196.00	7048	208.00	1454	221.80	200	232.95	187
196.90	81	209.00	601	223.00	3145	234.00	677

OK
APR 23 2012

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
235.00	913	246.00	4147	257.00	1525	271.95	331
235.95	534	247.00	852	258.00	6574	273.00	4314
237.00	984	247.95	194	259.00	1050	274.00	11381
238.00	145	249.00	981	260.00	220	275.00	66830
239.00	386	249.95	182	260.95	214	276.00	9067
240.00	326	250.95	180	263.85	332	277.00	4502
241.00	685	251.95	167	265.00	2545	278.00	777
242.00	1745	253.00	442	265.85	393	278.95	149
243.05	1834	254.00	548	267.70	73	280.95	111
244.00	27432	255.00	130301	269.95	166	282.00	143
245.00	3713	256.00	19632	270.90	216	283.00	548

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
284.00	366	296.00	16243	314.00	897	328.00	621
285.00	860	297.00	2402	315.00	1899	328.90	61
286.00	179	298.00	153	316.00	1183	332.00	537
288.90	195	300.90	210	317.05	214	333.00	621
290.00	192	302.00	294	321.00	549	334.00	4228
290.80	51	303.05	2164	321.95	322	335.00	1082
291.00	60	304.00	521	323.00	6596	336.05	131
292.00	241	308.00	227	324.00	1317	338.90	57
293.00	1156	309.00	149	324.95	123	341.00	816
294.05	243	310.00	252	326.00	116	342.00	186
295.00	282	313.00	162	326.90	1122	346.00	1700

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
346.95	309	370.95	575	402.00	1868	442.05	384122
350.95	132	372.00	4201	403.00	2705	443.05	75860
352.00	2094	373.00	935	404.00	981	444.10	7088
353.05	1360	374.00	59	404.95	135	445.00	402
354.00	2293	377.00	63	414.90	77		
355.10	420	383.00	1093	421.00	2436		
358.95	172	383.90	347	422.00	2275		
365.00	8721	390.00	554	423.00	18632		
366.00	1367	391.00	382	424.00	3795		
366.90	56	392.05	328	425.00	378		
370.00	215	400.95	281	441.05	54989		

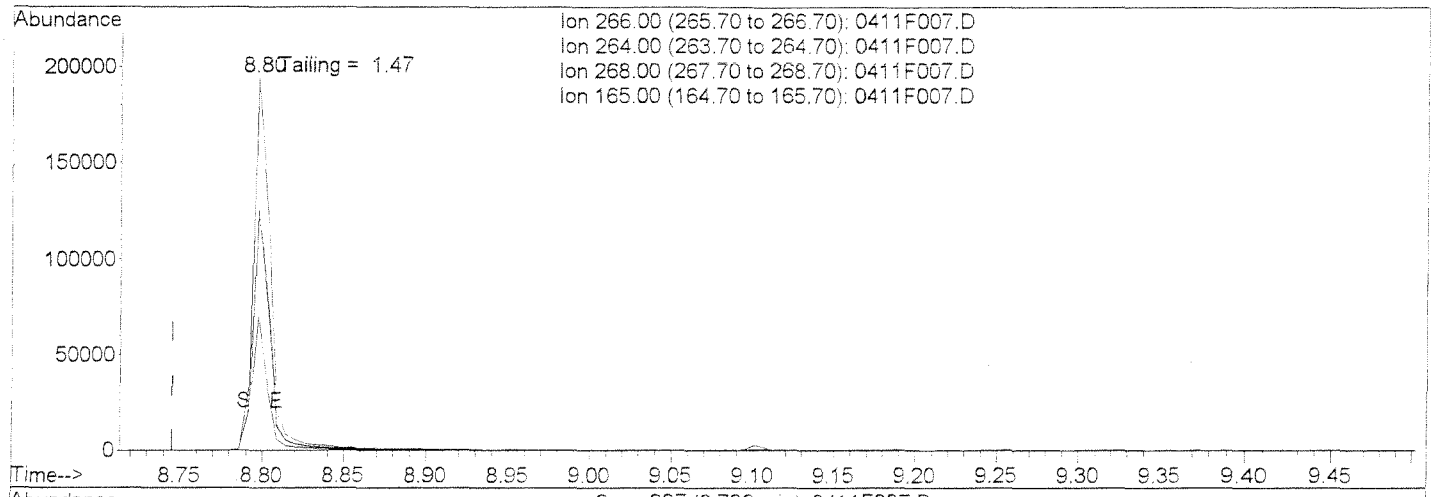
APR 20 2012

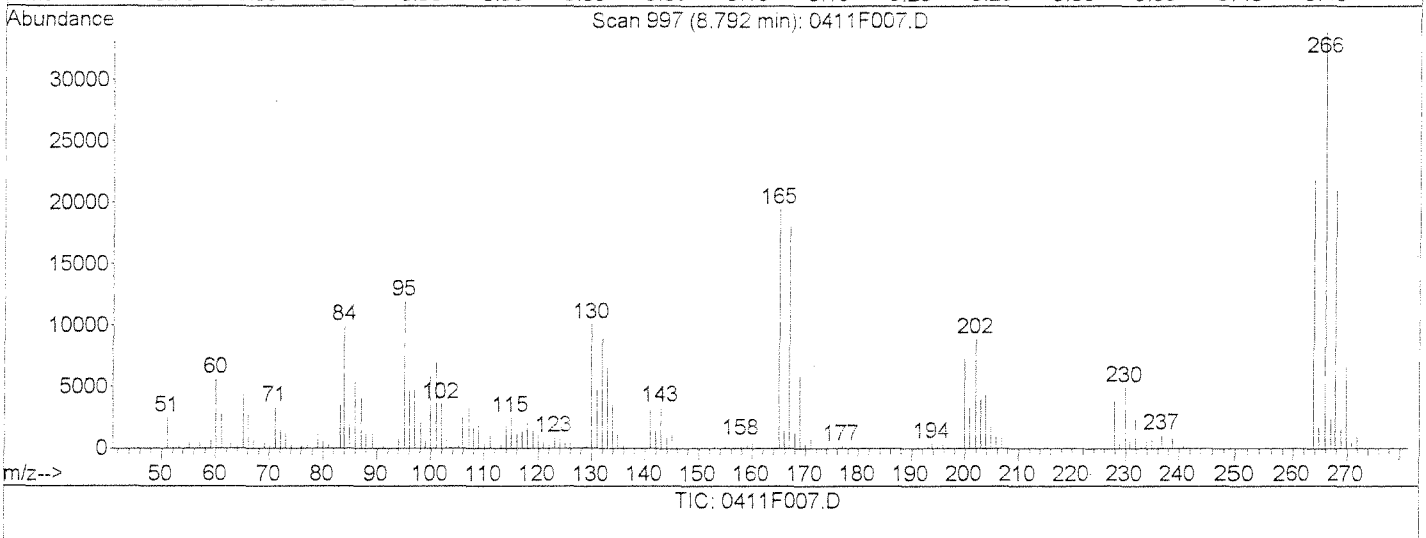
APR 23 2012

Quantitation Report

Data File : J:\MS26\DATA\041112\0411F007.D Vial: 1
Acq On : 11 Apr 2012 10:41 am Operator: KBailey
Sample : 3.0ug/mL DFTPP | SVM37-61C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: rteint.p

Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix
Last Update : Tue Nov 22 15:57:47 2011
Response via : Initial Calibration





TIC: 0411F007.D

(1) Pentachlorophenol

Exp R.T. 9.25min

response 0

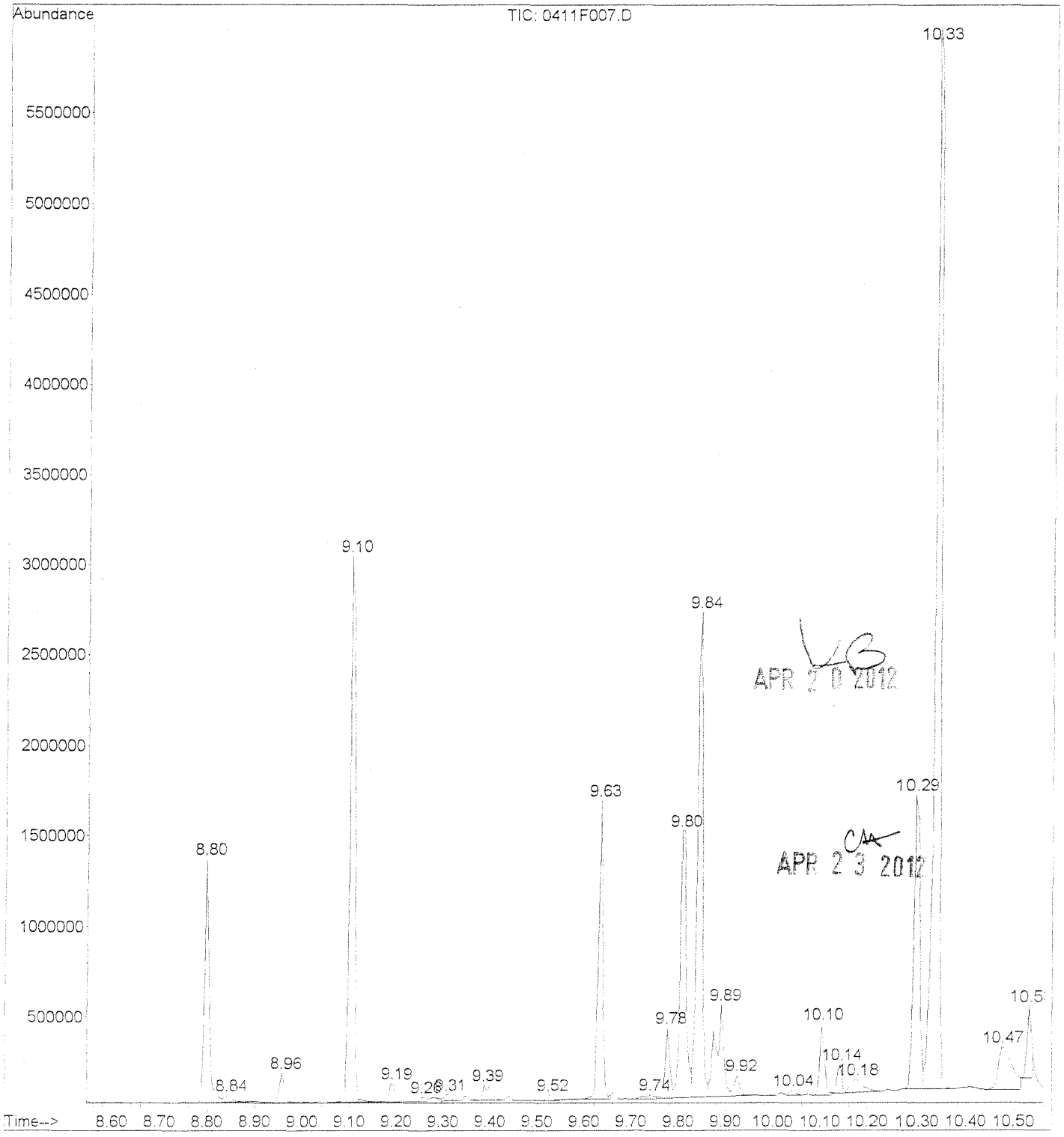
Ion	Exp%	Act%
266.00	100	100
264.00	0.00	64.74
268.00	0.00	62.17
165.00	0.00	57.67

APR 20 2012

APR 23 2012

0411F007.D A_DFTPP.M Fri Apr 20 15:55:57 2012

File : J:\MS26\DATA\041112\0411F007.D
Operator : KBailey
Acquired : 11 Apr 2012 10:41 am using AcqMethod TUNE14DX
Instrument : MS26
Sample Name: 3.0ug/mL DFTPP | SVM37-61C
Misc Info :
Vial Number: 1



APR 2 0 2012

APR 2 3 2012

1	3.791	rVB	0.069		33163	3.773	3.842
2	4.306	rVB	0.080		26100	4.288	4.368
3	4.849	rBV	0.040		24096	4.826	4.866
4	4.941	rVB	0.052		27968	4.918	4.969
5	5.278	rVB	0.034		23779	5.261	5.295
6	5.376	rBV	0.046		103298	5.353	5.398
7	5.507	rBV	0.080		90384	5.467	5.547
8	5.564	rBV	0.034		30855	5.547	5.582
9	5.650	rBV	0.046		27717	5.633	5.679
10	5.839	rVB	0.046		25401	5.816	5.862
11	6.142	rBV	0.040		24548	6.119	6.159
12	6.680	rVB	0.057		163712	6.657	6.714
13	7.264	rVB	0.069		28093	7.241	7.310
14	7.361	rBV	0.034		21076	7.344	7.378
15	8.196	rVB	0.097		37037	8.156	8.254
16	8.345	rVB	0.092		34196	8.305	8.397
17	8.797	rBV	0.063		919010	8.769	8.832
18	8.843	rVB	0.057		38087	8.832	8.889
19	8.957	rVB	0.063		113424	8.935	8.998
20	9.101	rBV	0.103		2248601	9.066	9.169
21	9.192	rVB	0.040		77660	9.169	9.209
22	9.255	rBV	0.034		23121	9.232	9.266
23	9.307	rVV	0.040		34046	9.295	9.335
24	9.387	rVB	0.063		113926	9.364	9.427
25	9.524	rBV	0.040		25688	9.507	9.547
26	9.633	rBV	0.063		1053543	9.593	9.656
27	9.741	rBV	0.046		38112	9.707	9.753
28	9.776	rVV	0.034		265686	9.753	9.787
29	9.804	rVV	0.040		1369413	9.787	9.827
30	9.844	rVV	0.034		2108008	9.827	9.862
31	9.890	rVV	0.052		617847	9.862	9.913
32	9.924	rVB	0.040	DDE	81597	9.913	9.953
33	10.039	rVB	0.034		24273	10.027	10.062
34	10.102	rBV	0.040		277908	10.085	10.125
35	10.142	rVV	0.029	DDD	114143	10.125	10.153
36	10.176	rVB	0.074		141948	10.153	10.228
37	10.291	rBV	0.040		1330979	10.268	10.308
38	10.331	rVB	0.063	DDT	4965607	10.308	10.371
39	10.474	rBV	0.069		484196	10.445	10.514
40	10.531	rBV	0.023		259658	10.514	10.537

Breakdown = 3.87.

LB
APR 2 3 2012

APR 2 3 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F008.D Vial: 2
Acq On : 11 Apr 2012 11:00 am Operator: KBailey
Sample : IB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 11 11:27:32 2012 Quant Results File: 040412_DX.RES

Quant Method : J:\MS26\METHODS\SIM\040412_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	13330	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	0.00	96	0	0.00	ng/ml	
Spiked Amount 50.000			Recovery =	0.00%		

Target Compounds Qvalue

APR 2 0 2012

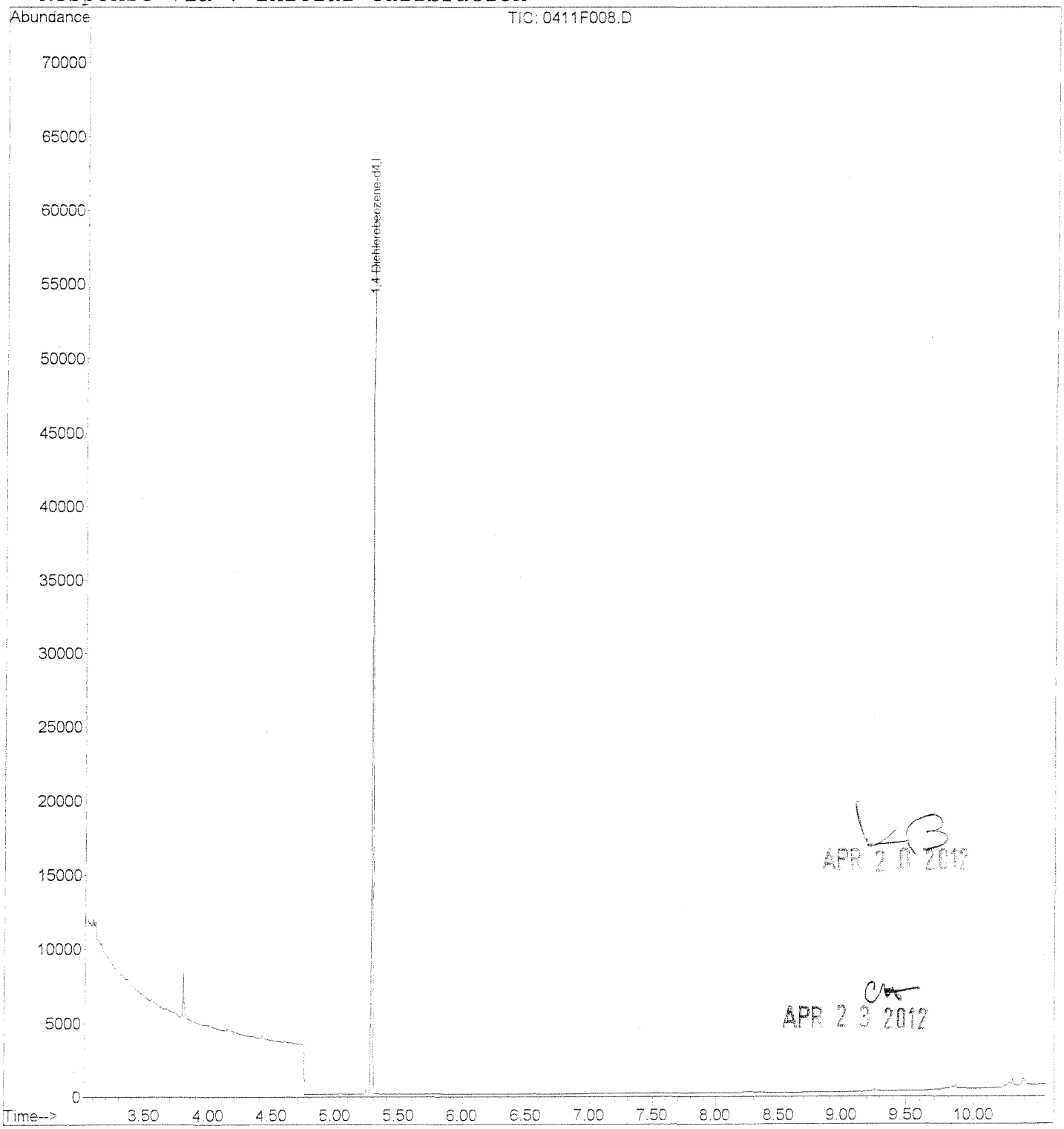
APR 2 3 2012

(#) = qualifier out of range (m) = manual integration
0411F008.D 040412_DX.M Fri Apr 20 15:56:43 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F008.D Vial: 2
Acq On : 11 Apr 2012 11:00 am Operator: KBailey
Sample : IB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 11 11:27 2012 Quant Results File: 040412_DX.RE

Method : J:\MS26\METHODS\SIM\040412_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration



APR 2 0 2012

APR 2 3 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:13 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14601	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	210m	1.99	ng/ml	0.00
Spiked Amount 50.000			Recovery =	3.98%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	202m	1.88	ng/ml	

APR 2 0 2012

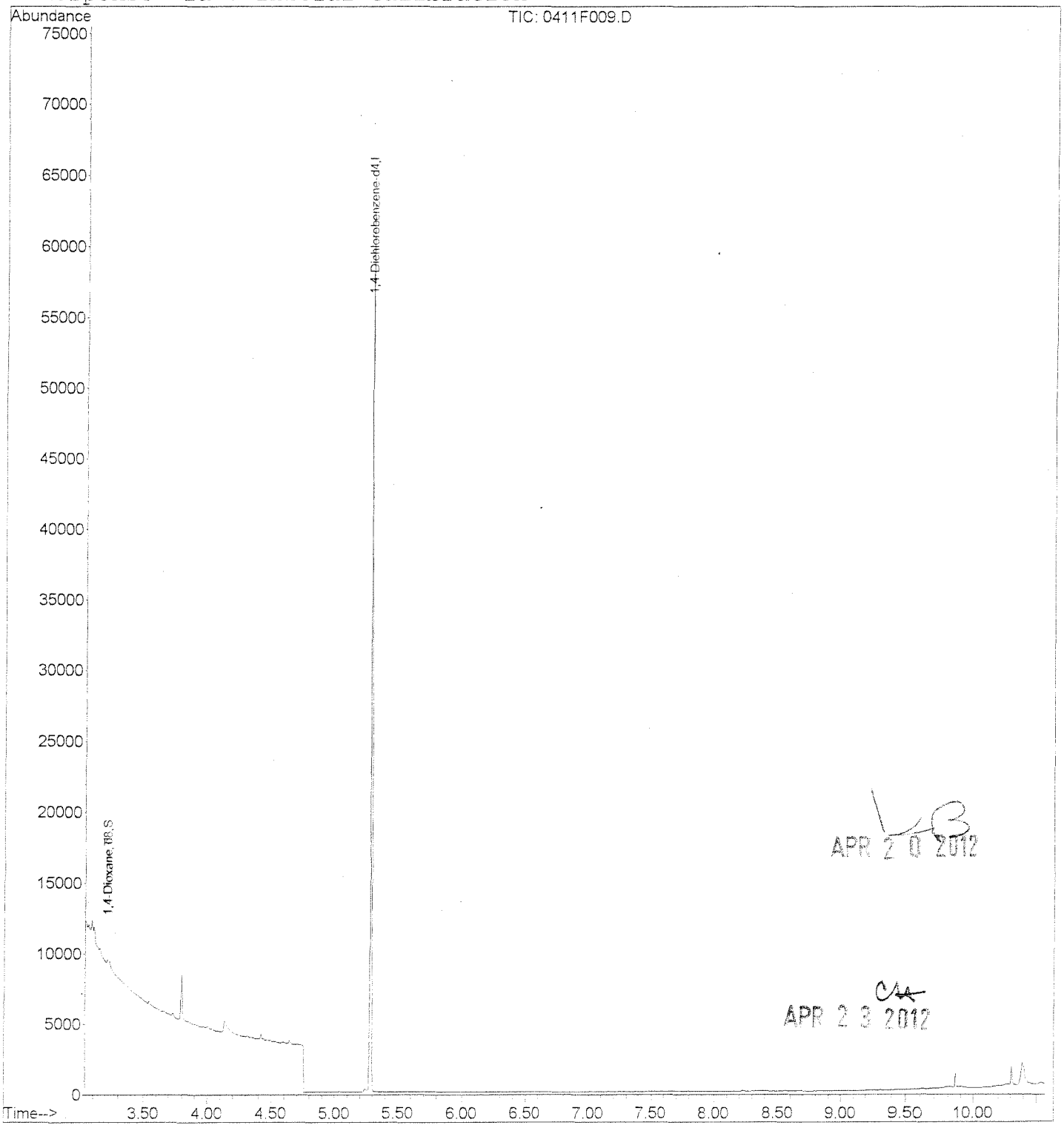
APR 2 3 2012

(#) = qualifier out of range (m) = manual integration
0411F009.D 041112_DX.M Fri Apr 20 15:55:04 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



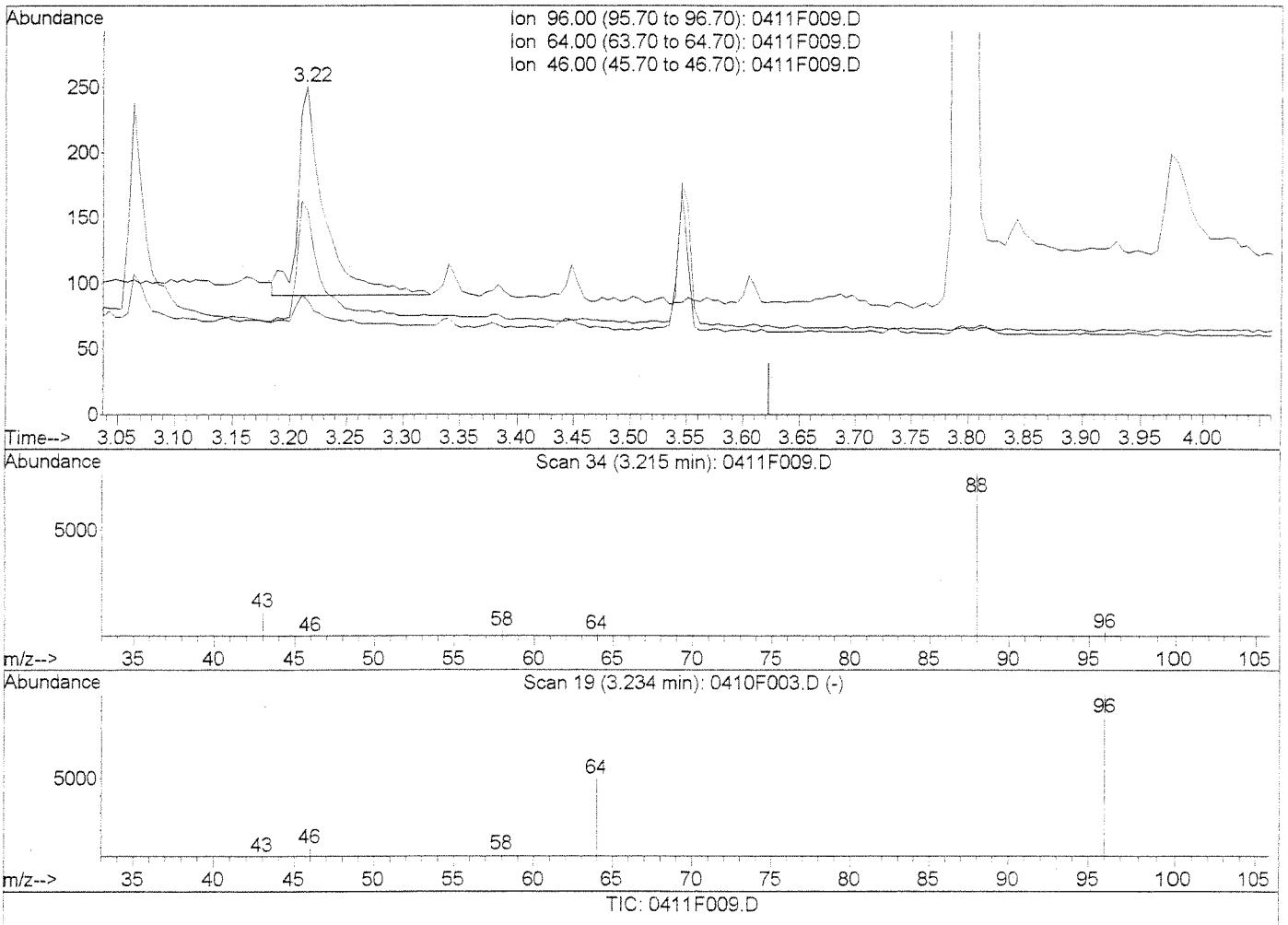
APR 20 2012

APR 23 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F009.D

(2) 1,4-Dioxane-d8 (S)

3.22min 2.44ng/ml

response 258

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	52.50
46.00	9.50	11.88
0.00	0.00	0.00

Manual Integration:

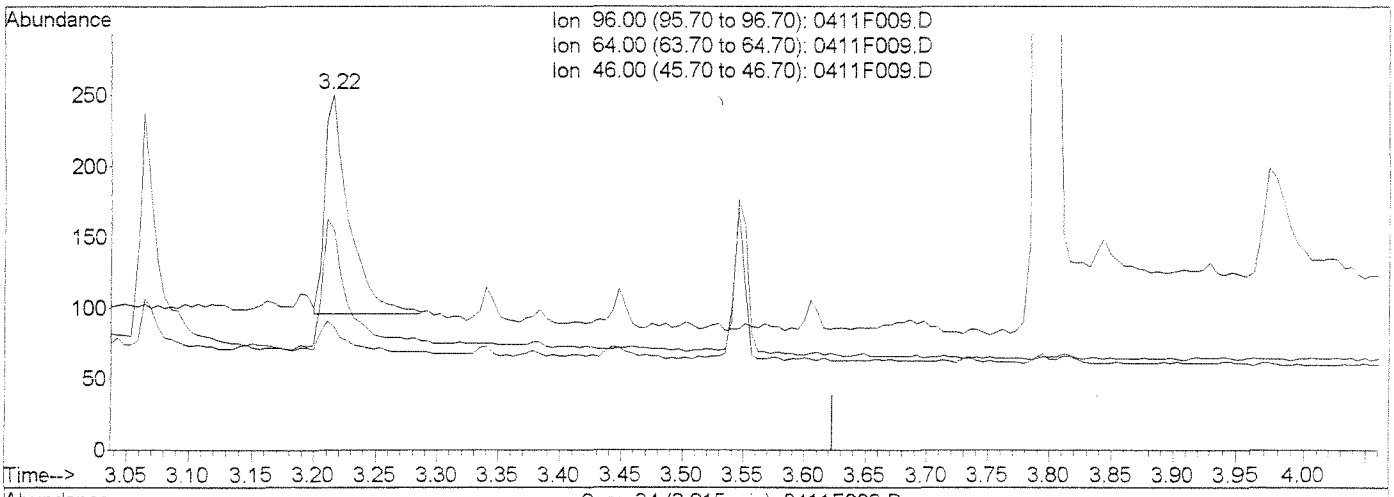
Before

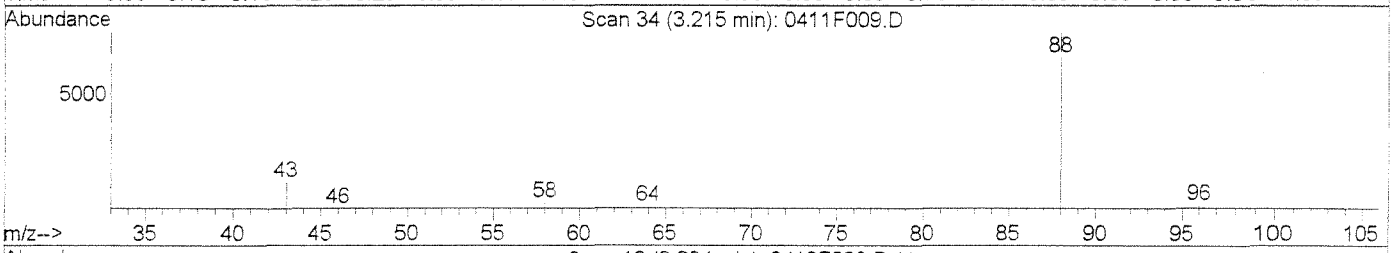
0411F009.D 041112_DX.M Thu Apr 19 19:36:34 2012

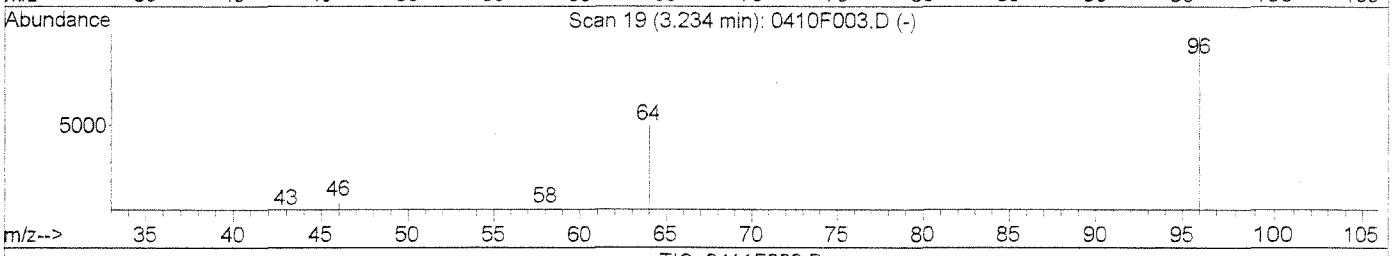
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F009.D

(2) 1,4-Dioxane-d8 (S)

3.22min 1.99ng/ml m

response 210

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	61.75
46.00	9.50	34.66#
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

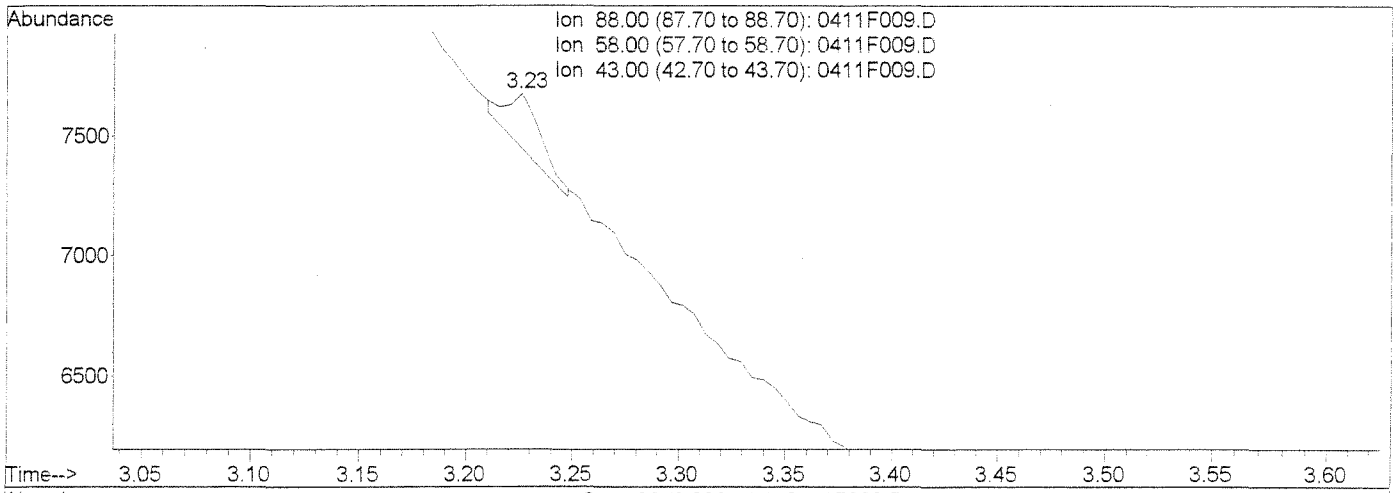
APR 2 3 2012

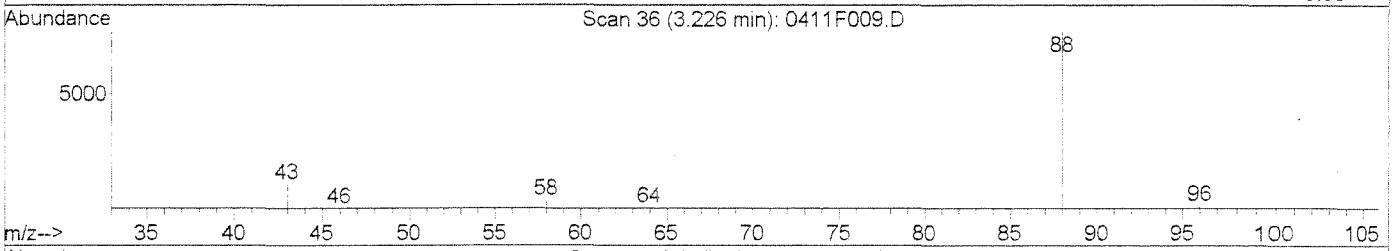
0411F009.D 041112_DX.M Thu Apr 19 19:36:43 2012

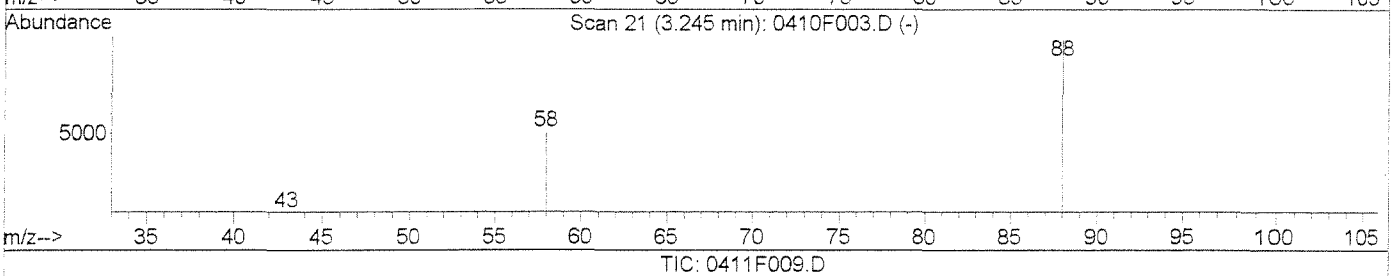
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F009.D

(3) 1,4-Dioxane (T)

3.23min 1.88ng/ml m

response 202

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	5.18
43.00	15.90	14.42
0.00	0.00	0.00

Manual Integration:

After

MP

04/19/12

APR 23 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14818	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	412m	3.84	ng/ml	0.00
Spiked Amount 50.000			Recovery =	7.68%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	383m	3.52	ng/ml	

APR 20 2012

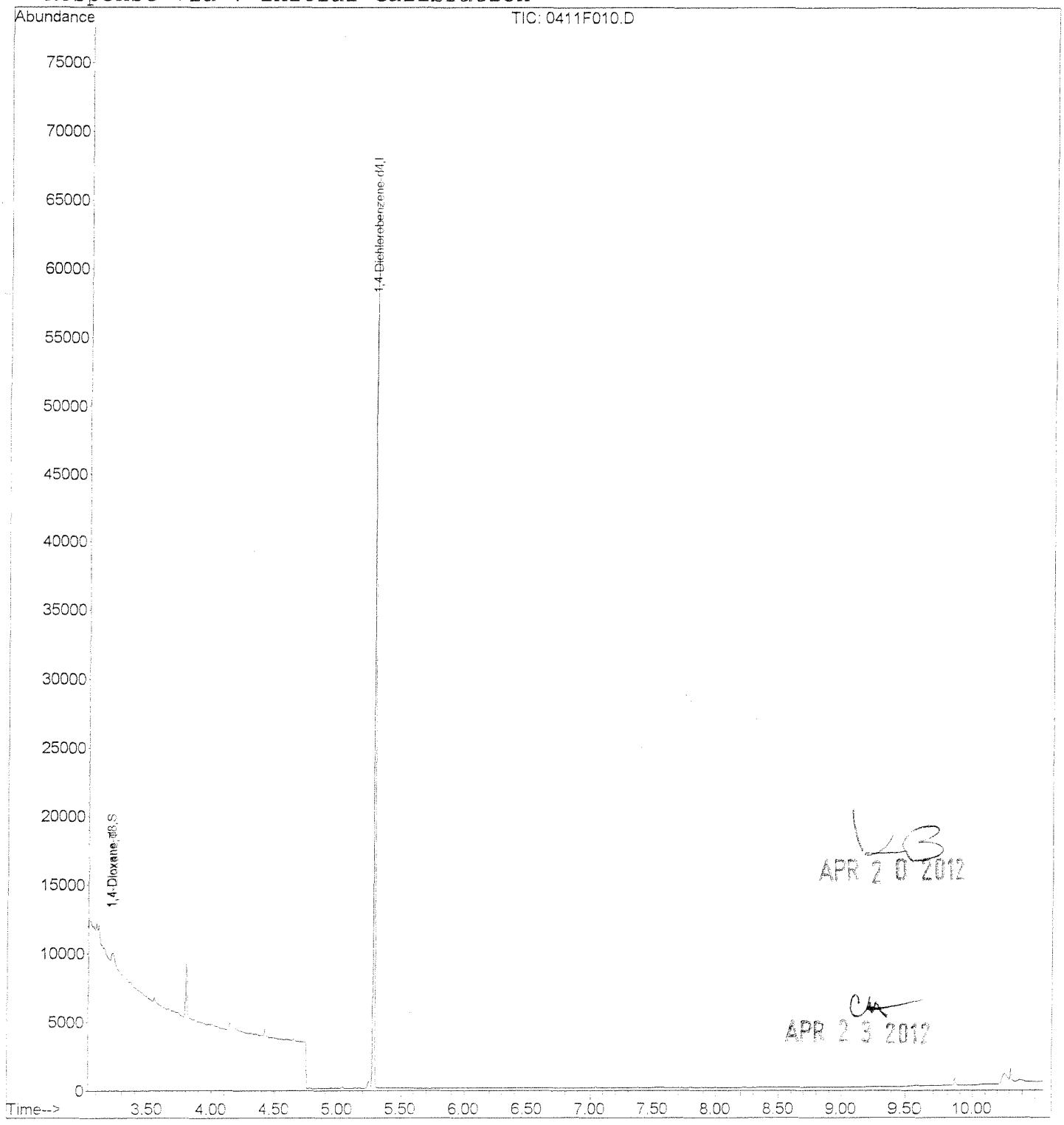
APP 23 2012

(#) = qualifier out of range (m) = manual integration
0411F010.D 041112_DX.M Fri Apr 20 15:55:04 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration

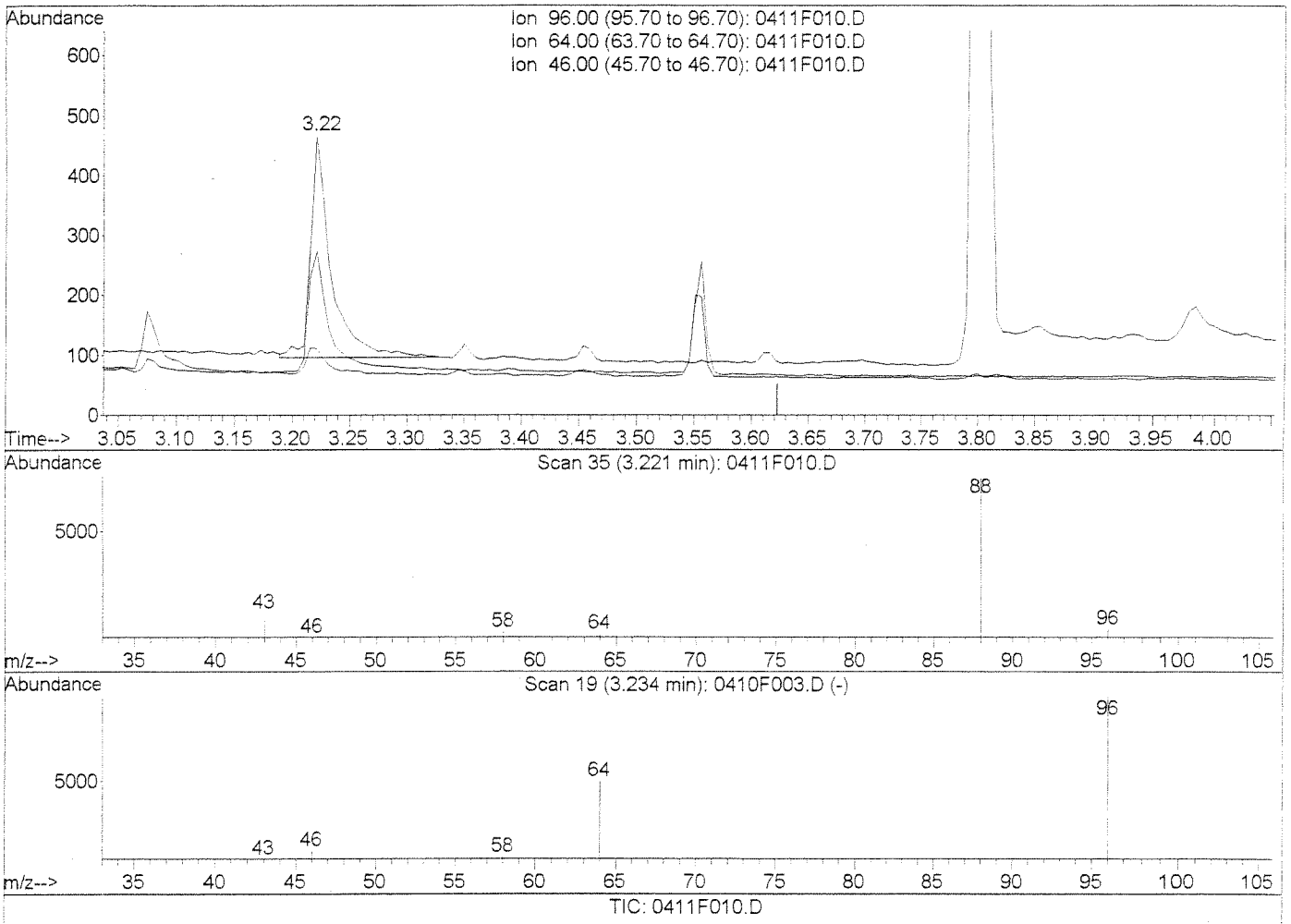


0411F010.D 041112_DX.M Fri Apr 20 15:55:04 2012 Page 2

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F010.D

(2) 1,4-Dioxane-d8 (S)

3.22min 4.30ng/ml

response 461

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	54.18
46.00	9.50	11.59
0.00	0.00	0.00

Manual Integration:

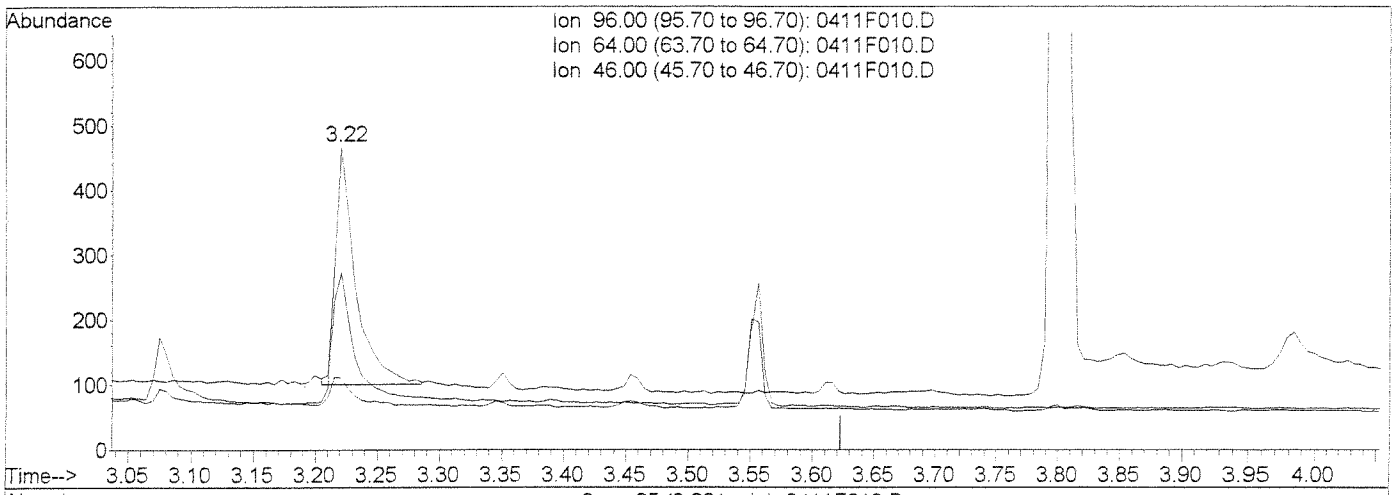
Before

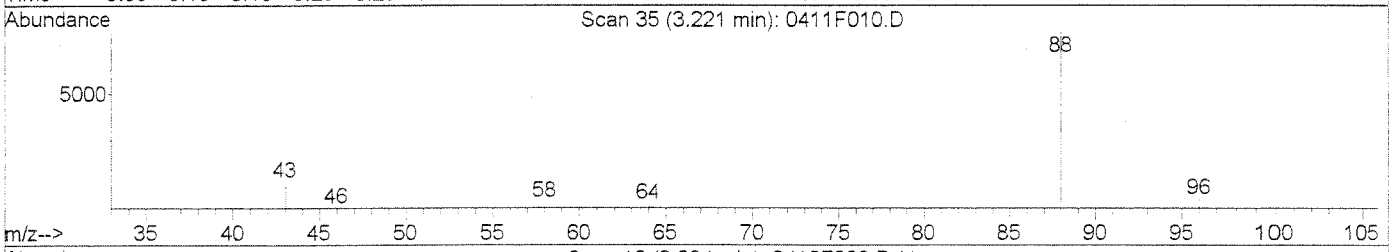
0411F010.D 041112_DX.M Thu Apr 19 19:37:22 2012

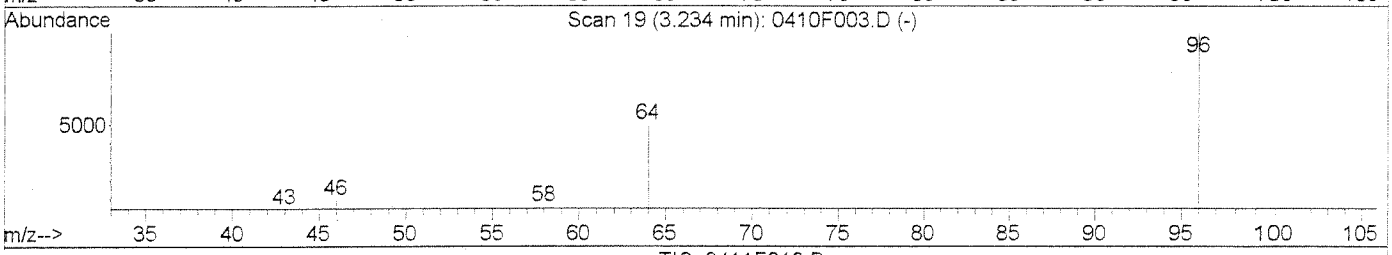
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F010.D

(2) 1,4-Dioxane-d8 (S)

3.22min 3.84ng/ml m

response 412

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	58.46
46.00	9.50	23.77
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

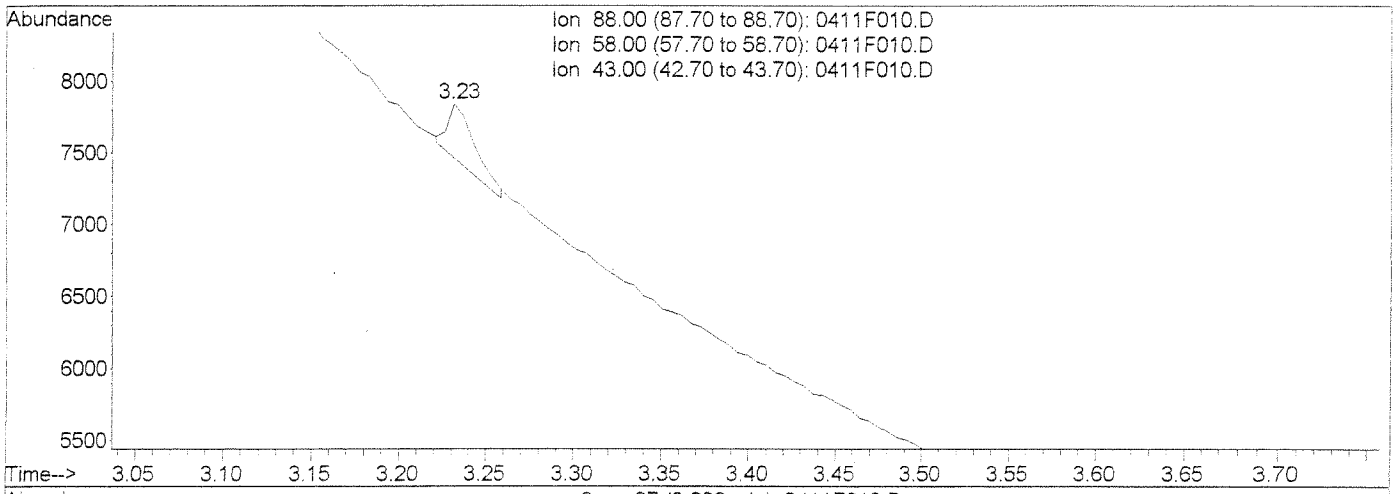
APR 2 3 2012

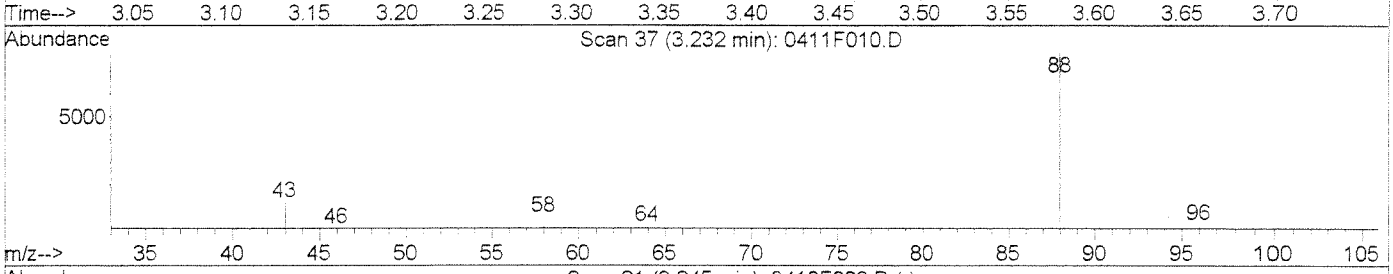
0411F010.D 041112_DX.M Thu Apr 19 19:37:28 2012

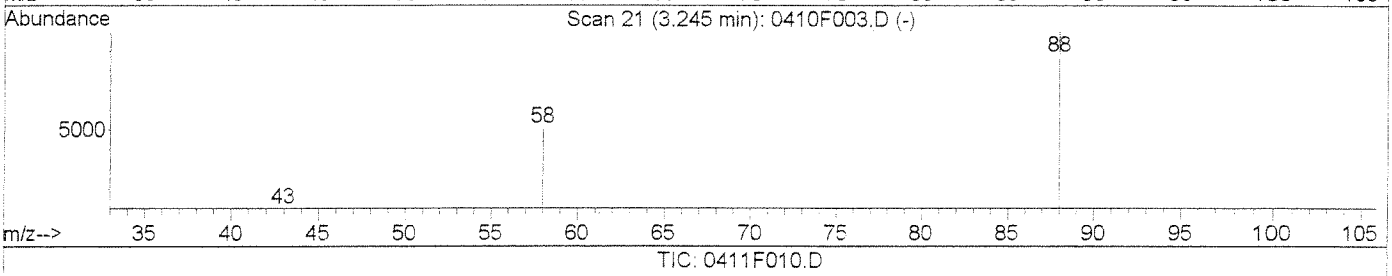
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F010.D

(3) 1,4-Dioxane (T)

3.23min 3.52ng/ml m

response 383

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	6.89
43.00	15.90	15.57
0.00	0.00	0.00

Manual Integration:

After

MP

04/19/12

APR 2 3 2012

0411F010.D 041112_DX.M Thu Apr 19 19:37:44 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	14921	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	1162	10.75	ng/ml	0.00
Spiked Amount 50.000			Recovery =	21.50%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.24	88	1150m	10.49	ng/ml	

APR 20 2012

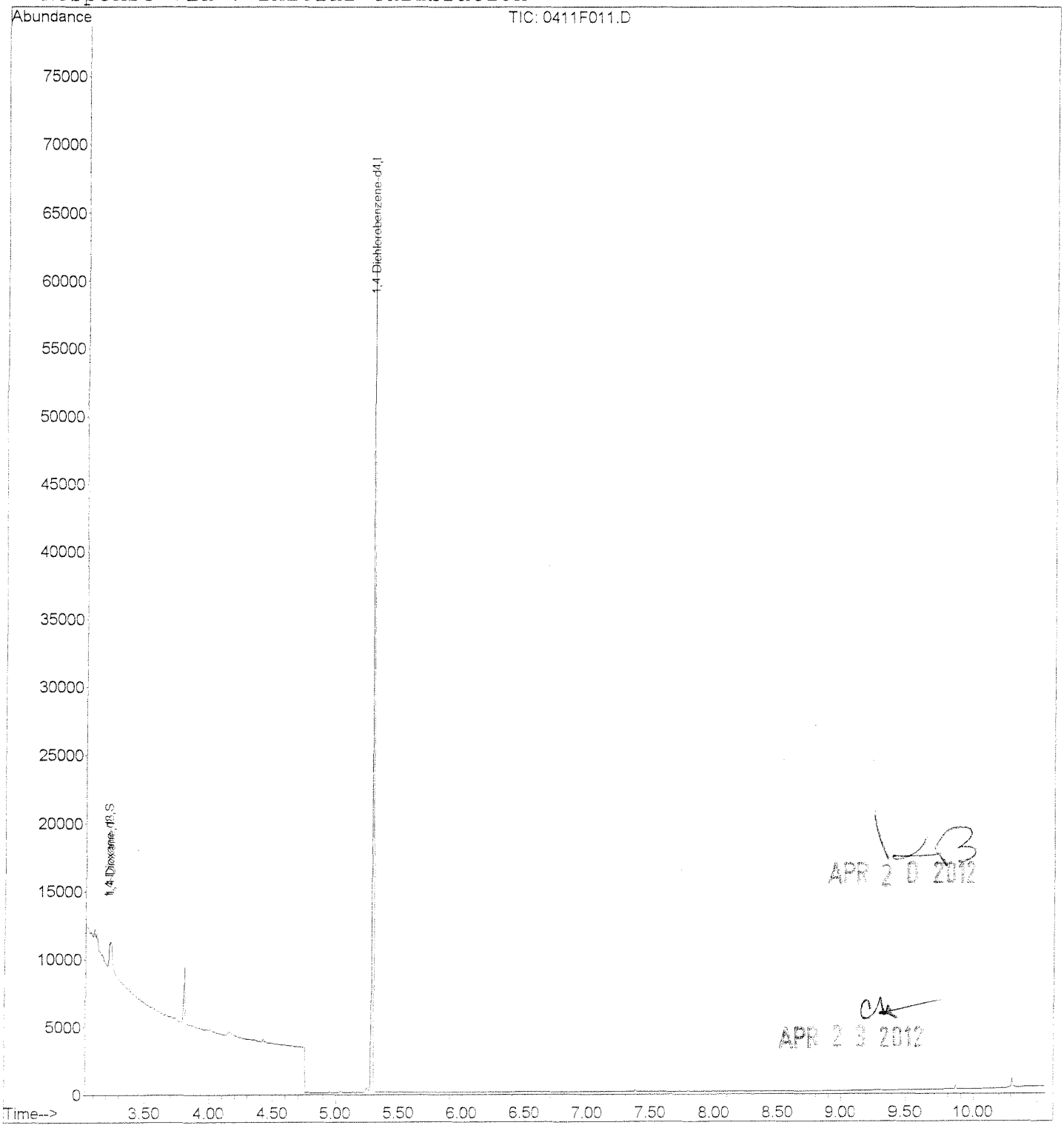
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F011.D 041112_DX.M Fri Apr 20 15:55:05 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



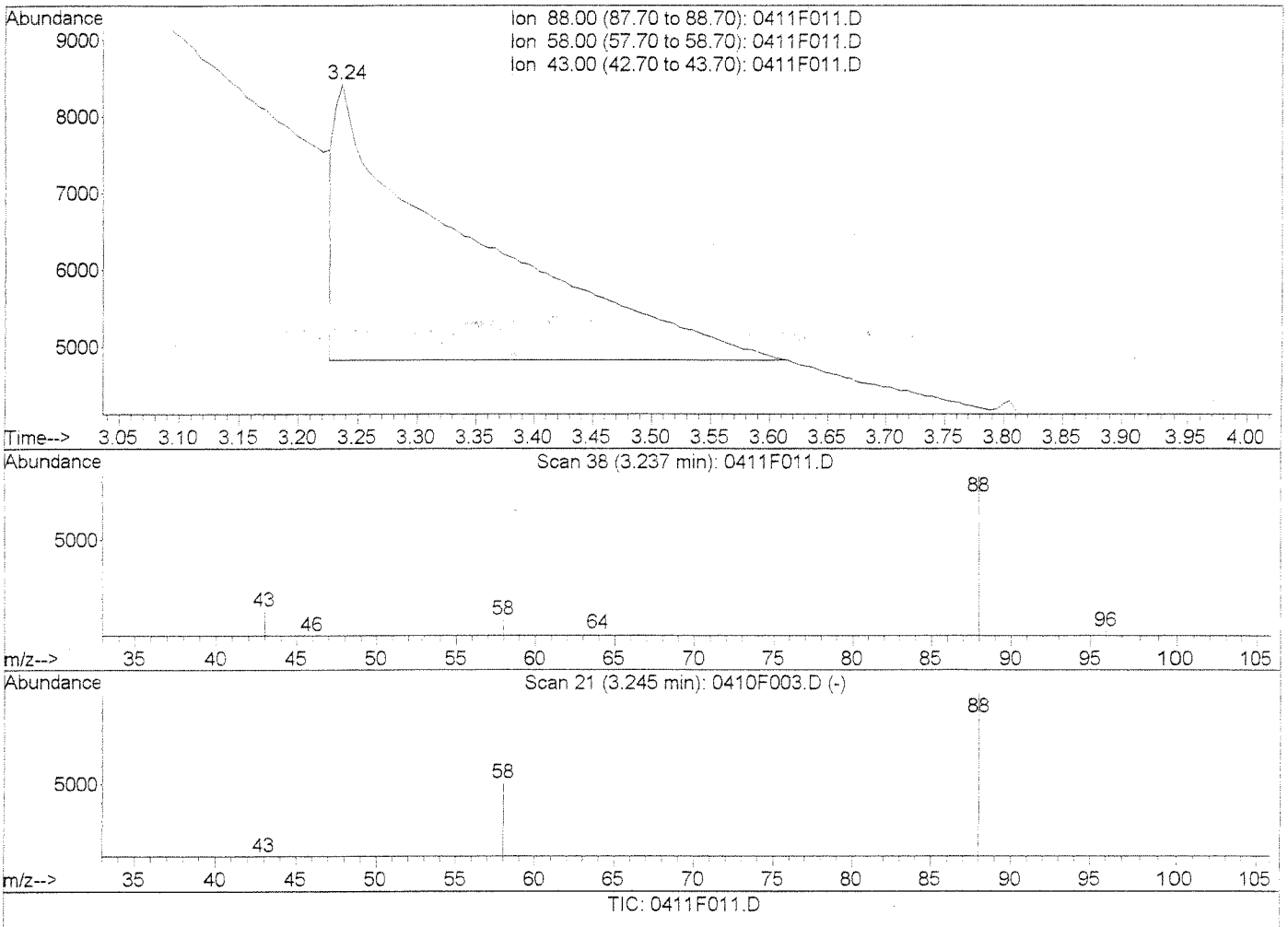
APR 20 2012

APR 23 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F011.D

(3) 1,4-Dioxane (T)

3.24min 247.95ng/ml

response 27180

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	17.73
43.00	15.90	13.56
0.00	0.00	0.00

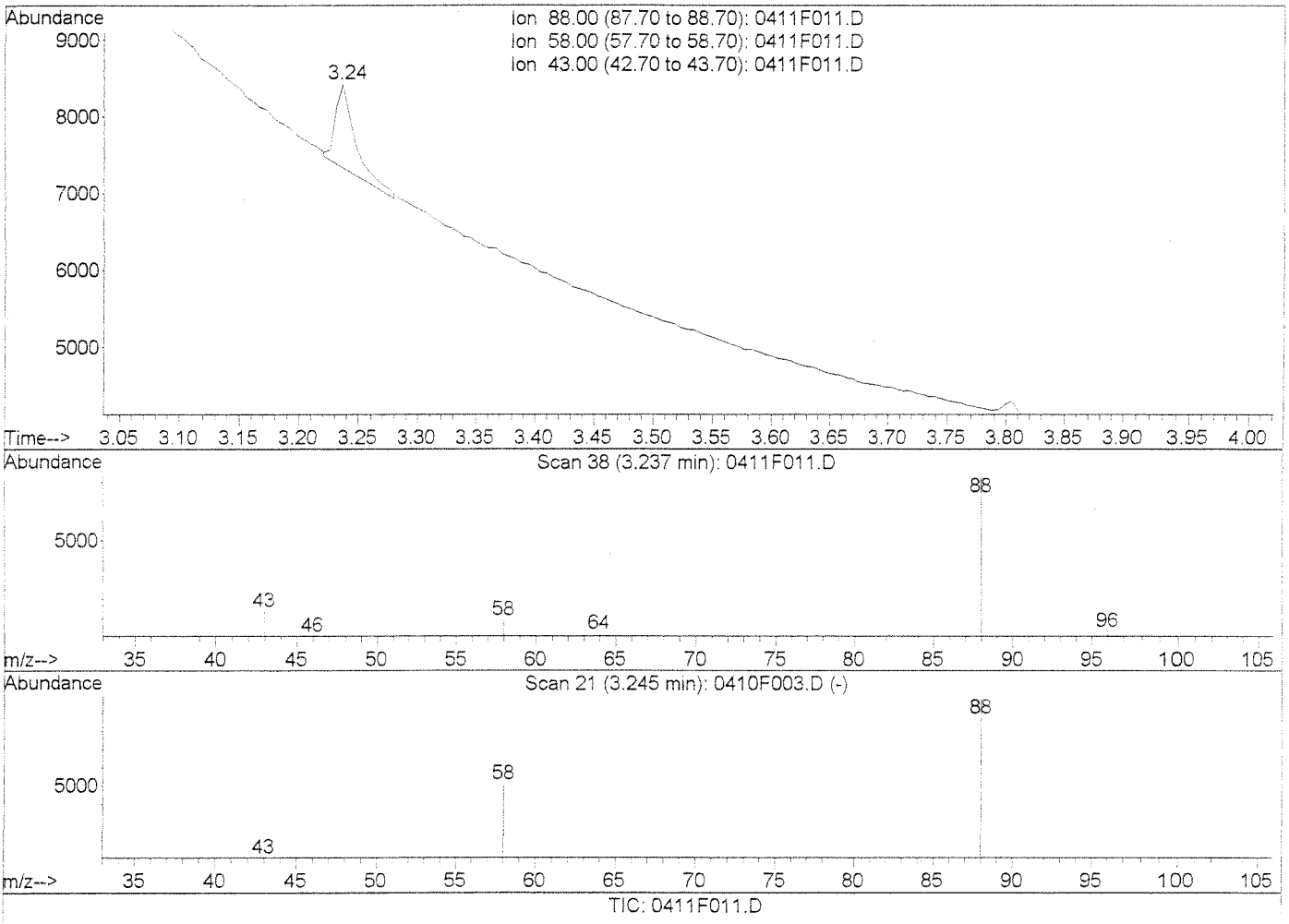
Manual Integration:

Before

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F011.D

(3) 1,4-Dioxane (T)

3.24min 10.49ng/ml m

response 1150

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	10.69
43.00	15.90	15.92
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 23 2012

0411F011.D 041112_DX.M Thu Apr 19 19:38:10 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	15754	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.23	96	2418	21.19	ng/ml	0.00
Spiked Amount 50.000			Recovery = 42.38%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.24	88	2370m	20.48	ng/ml	

APR 20 2012

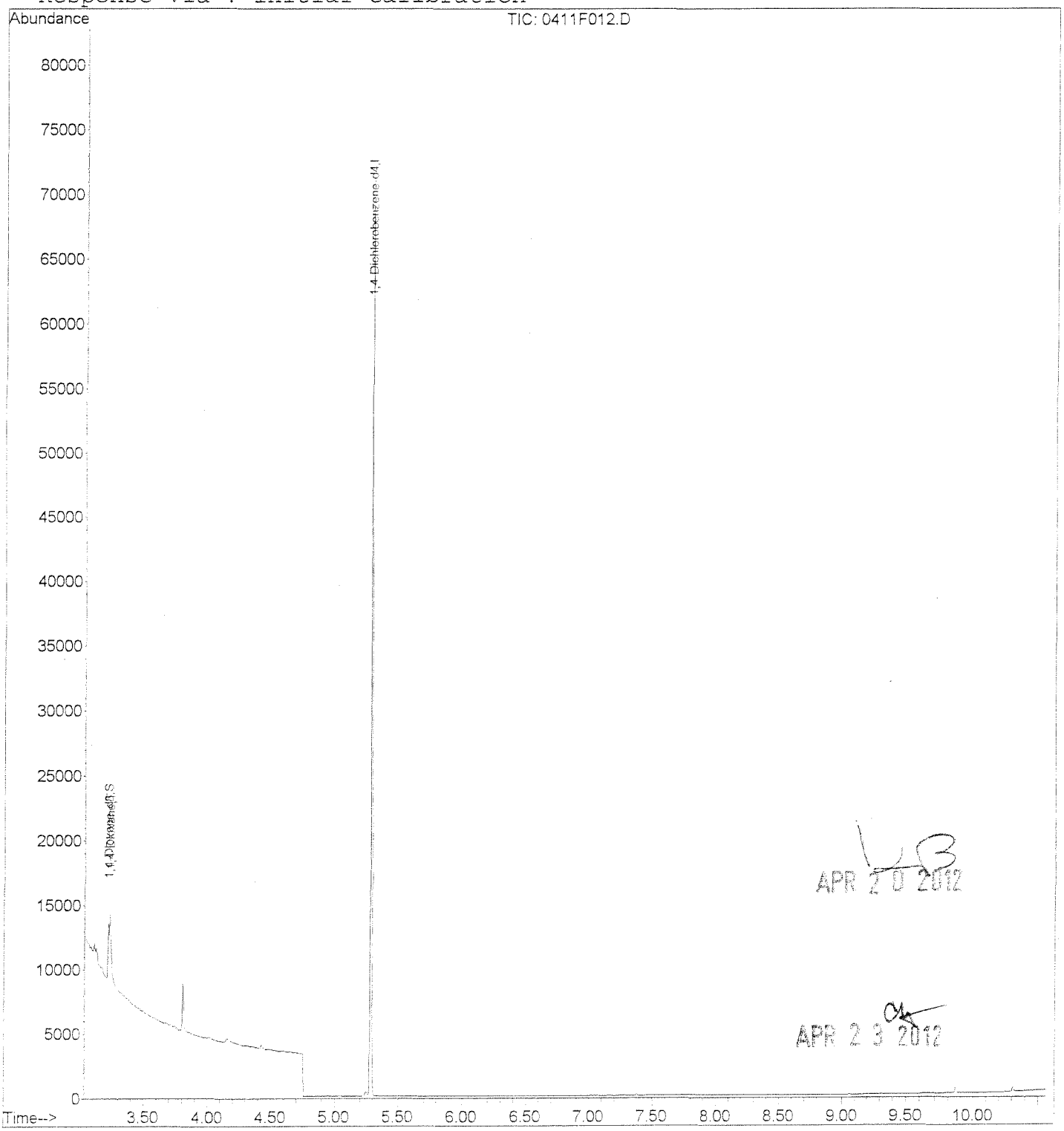
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F012.D 041112_DX.M Fri Apr 20 15:55:05 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



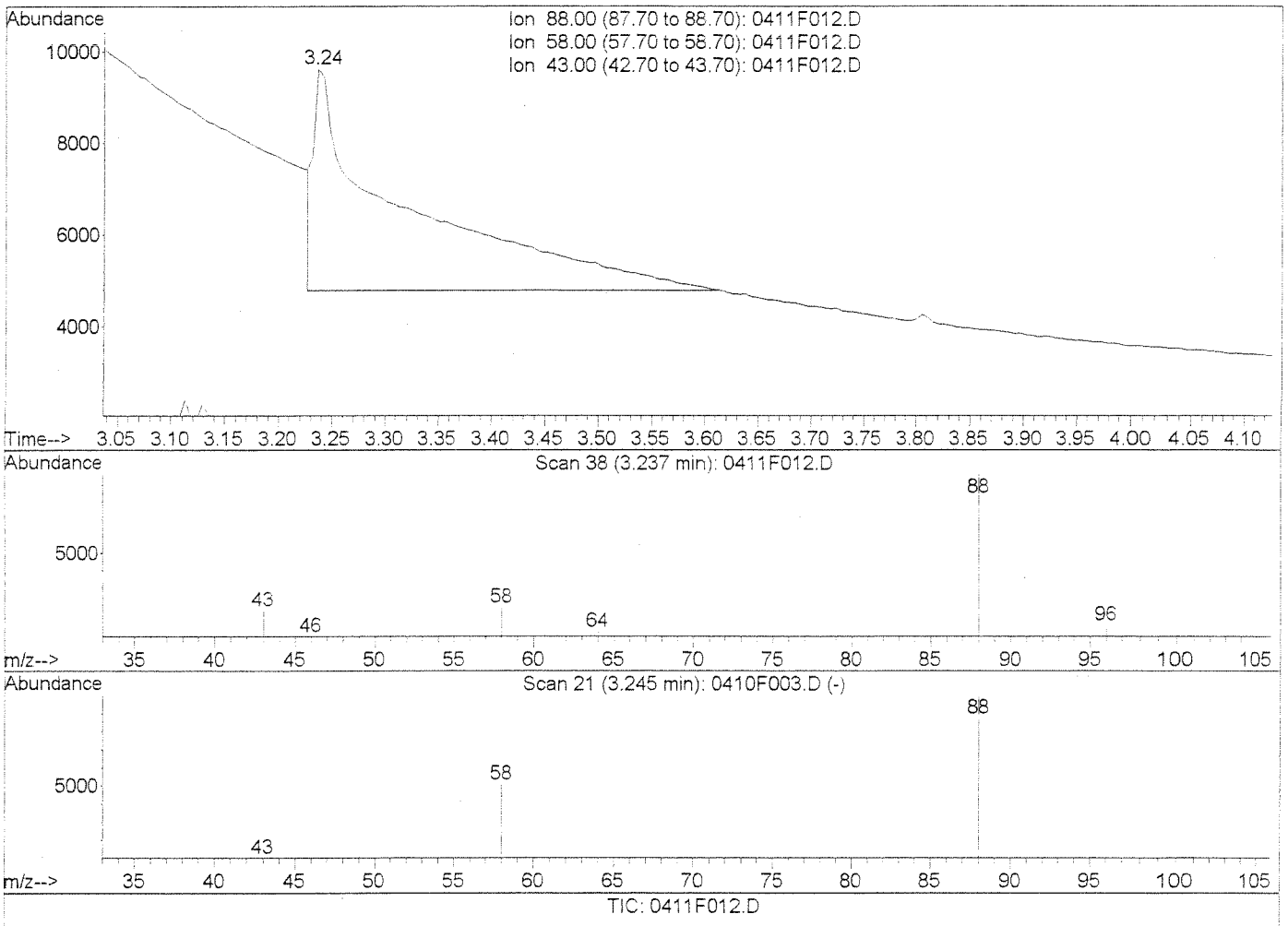
APR 20 2012

APR 23 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F012.D

(3) 1,4-Dioxane (T)

3.24min 244.22ng/ml

response 28266

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	32.06
43.00	15.90	16.64
0.00	0.00	0.00

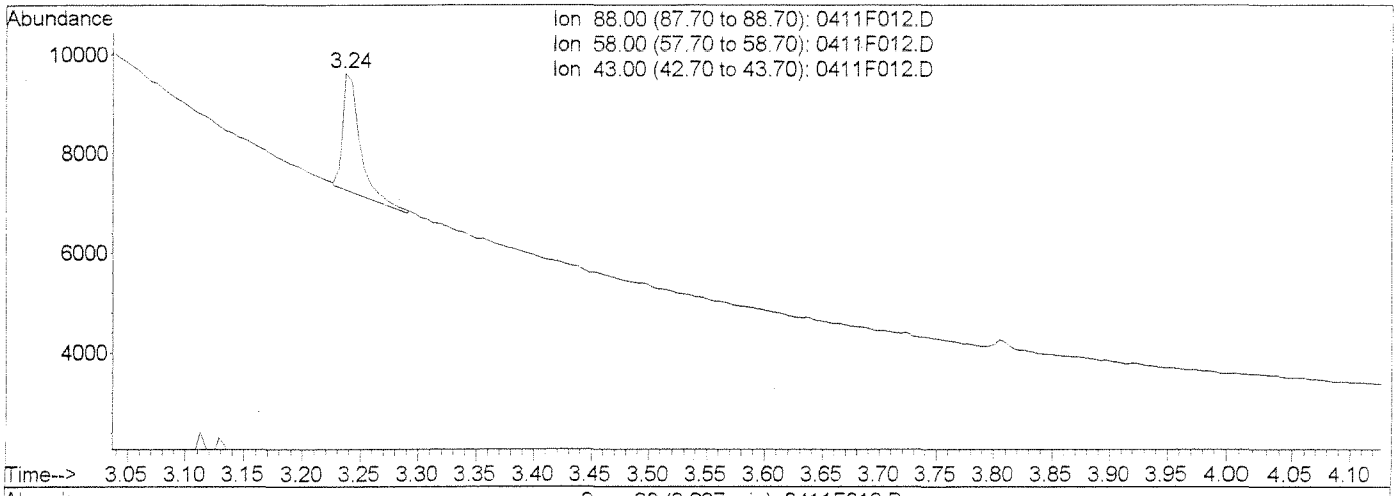
Manual Integration:

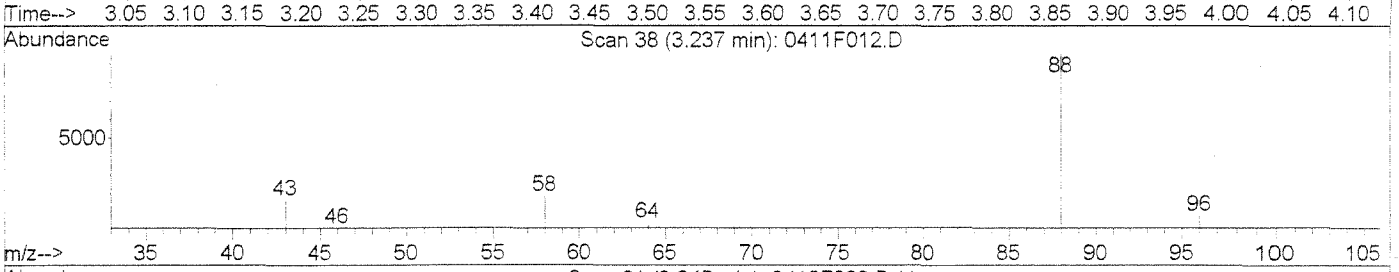
Before

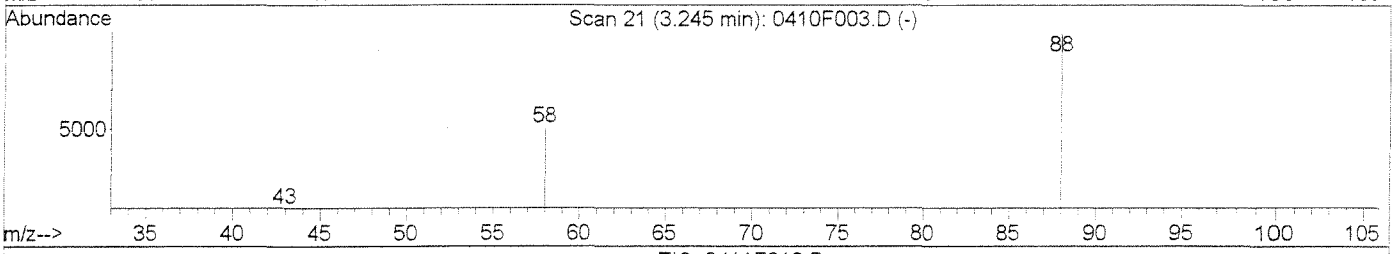
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F012.D

(3) 1,4-Dioxane (T)

3.24min 20.48ng/ml m

response 2370

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	18.82
43.00	15.90	16.96
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F012.D 041112_DX.M Thu Apr 19 19:38:26 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14927	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	5680	52.55	ng/ml	0.00
Spiked Amount 50.000			Recovery = 105.10%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.24	88	6061m	55.27	ng/ml	

APR 20 2012

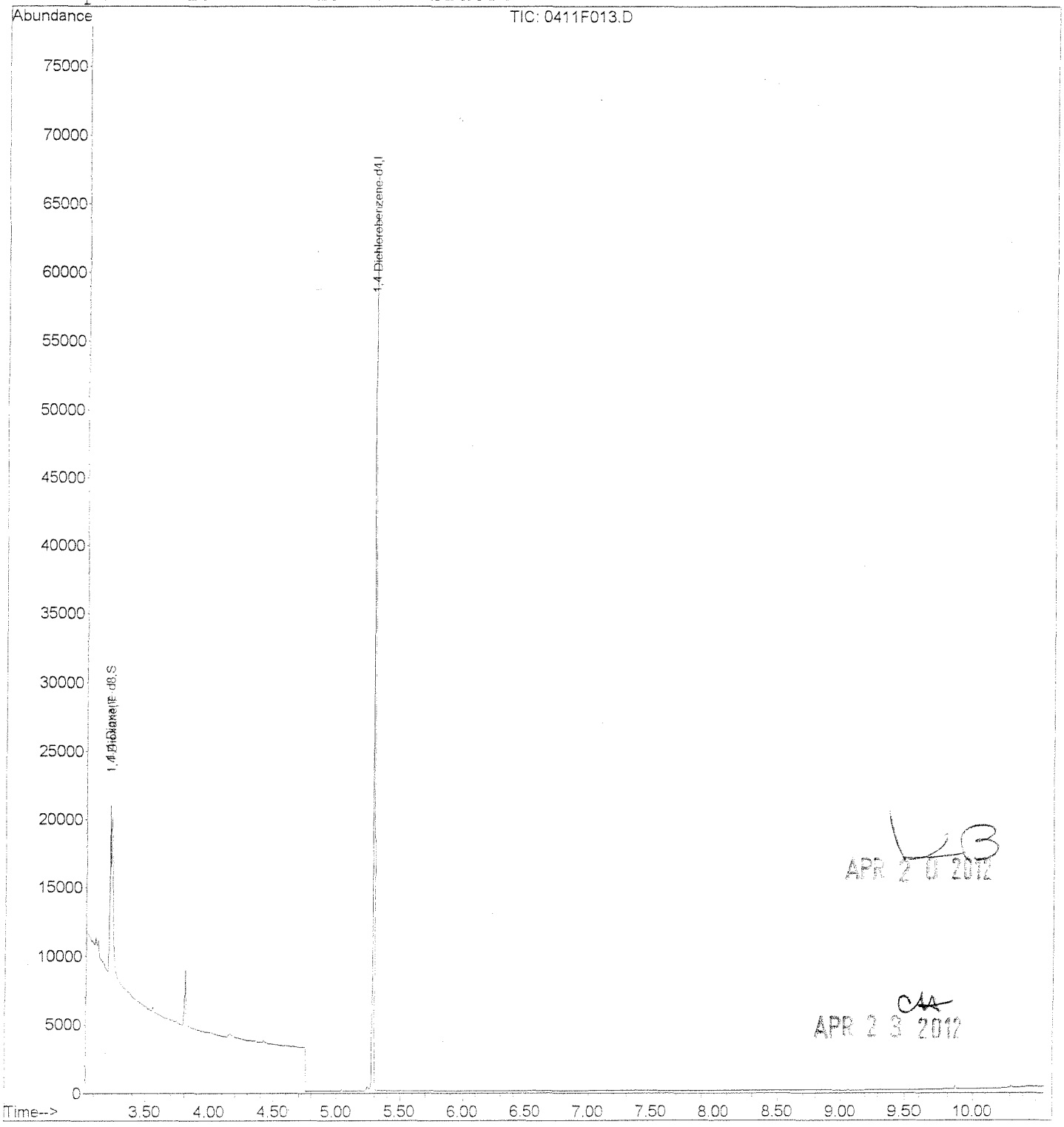
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F013.D 041112_DX.M Fri Apr 20 15:55:06 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



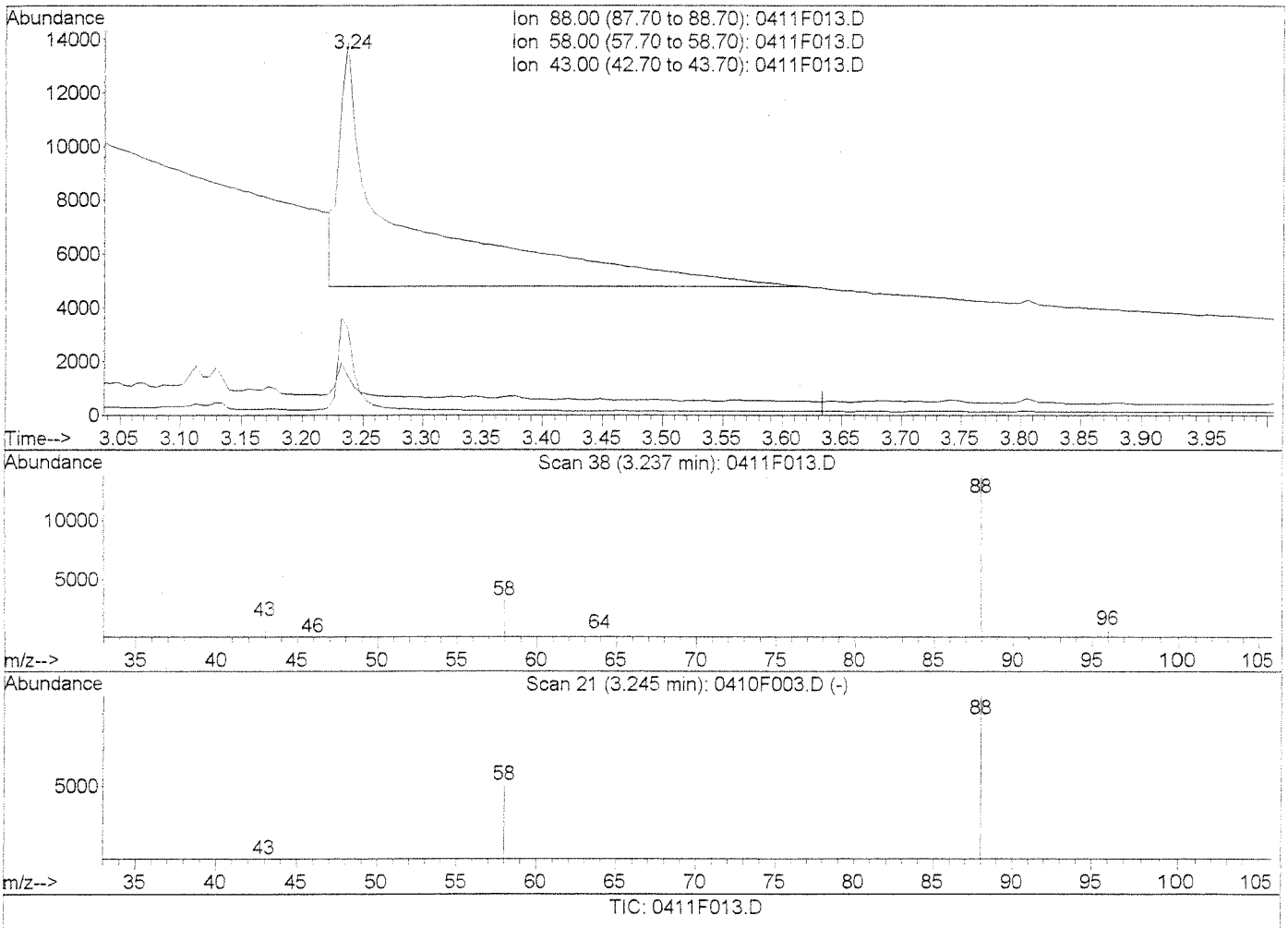
APR 20 2012

APR 23 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F013.D

(3) 1,4-Dioxane (T)

3.24min 302.49ng/ml

response 33172

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	33.96
43.00	15.90	10.53
0.00	0.00	0.00

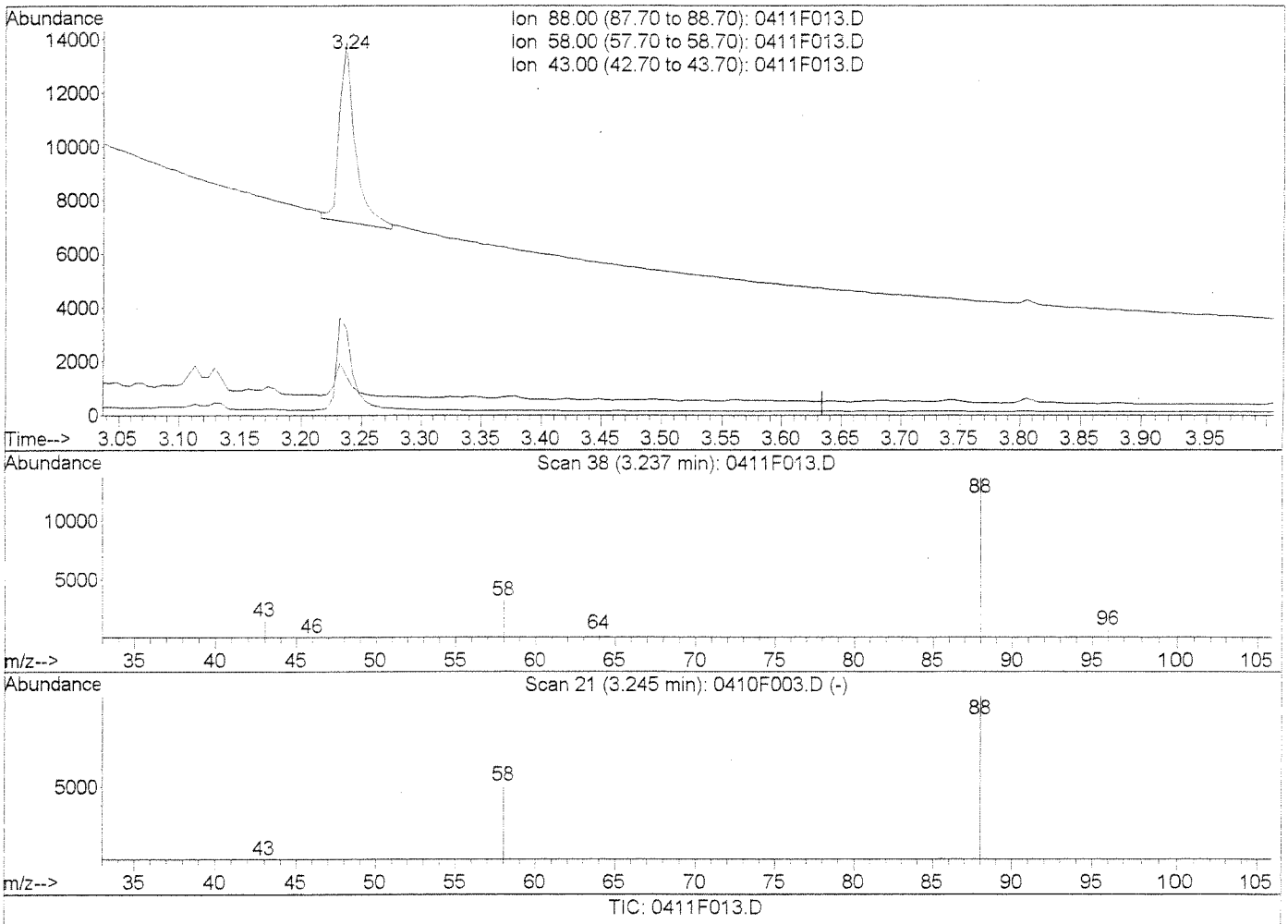
Manual Integration:

Before

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F013.D

(3) 1,4-Dioxane (T)

3.24min 55.27ng/ml m

response 6061

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	23.28
43.00	15.90	10.69
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F013.D 041112_DX.M Thu Apr 19 19:38:38 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:15 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	15153	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	12332	112.38	ng/ml	0.00
Spiked Amount 50.000			Recovery = 224.76%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	12635m	113.50	ng/ml	

APR 2 0 2012

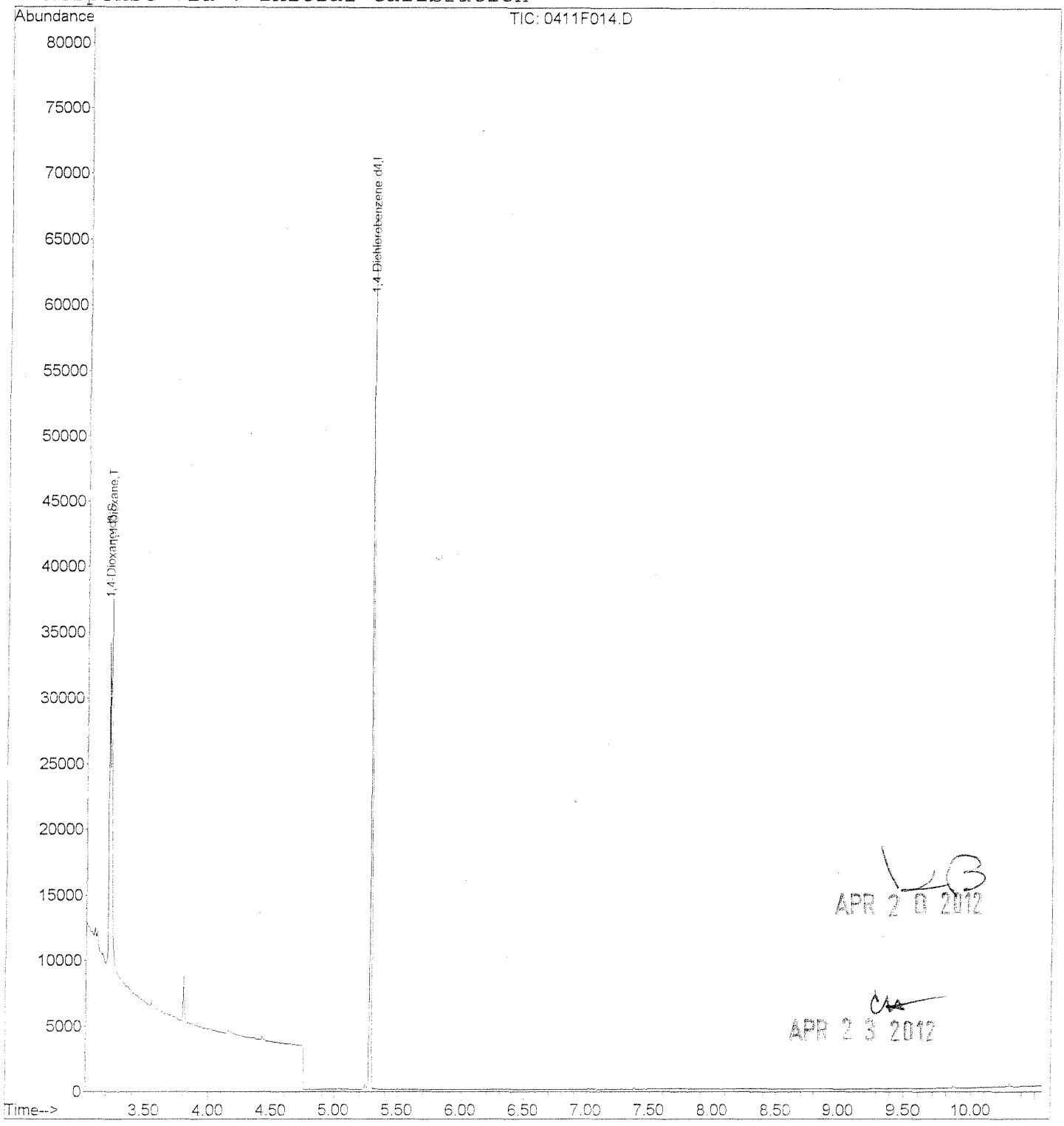
APR 2 3 2012

(#) = qualifier out of range (m) = manual integration
0411F014.D 041112_DX.M Fri Apr 20 15:55:07 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



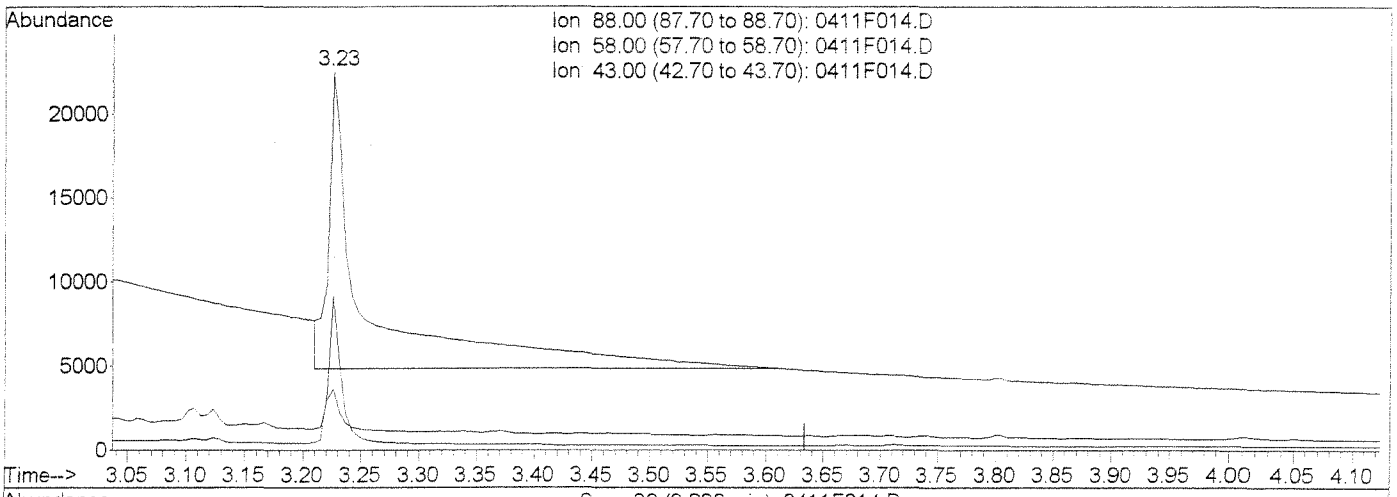
APR 20 2012

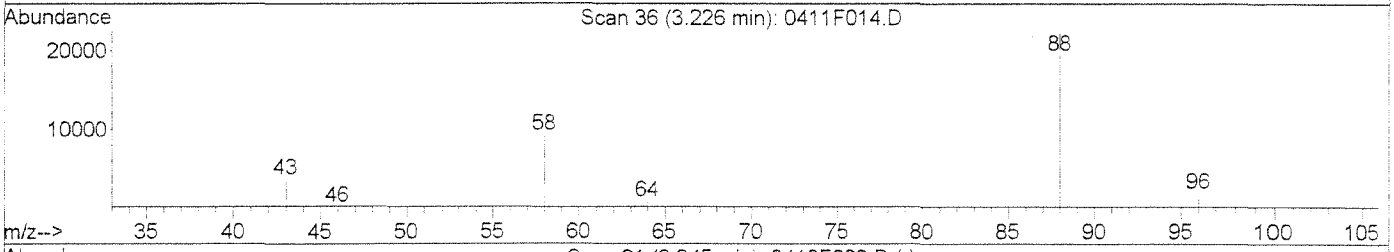
APR 23 2012

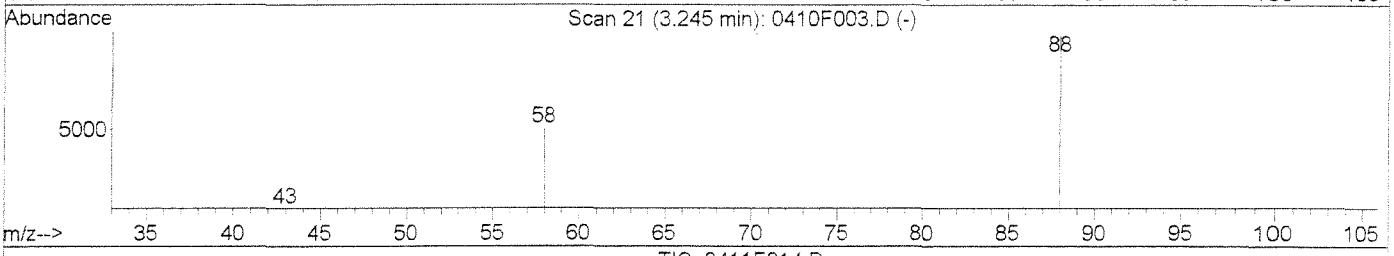
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F014.D

(3) 1,4-Dioxane (T)

3.23min 371.62ng/ml

response 41370

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	50.15#
43.00	15.90	15.75
0.00	0.00	0.00

Manual Integration:

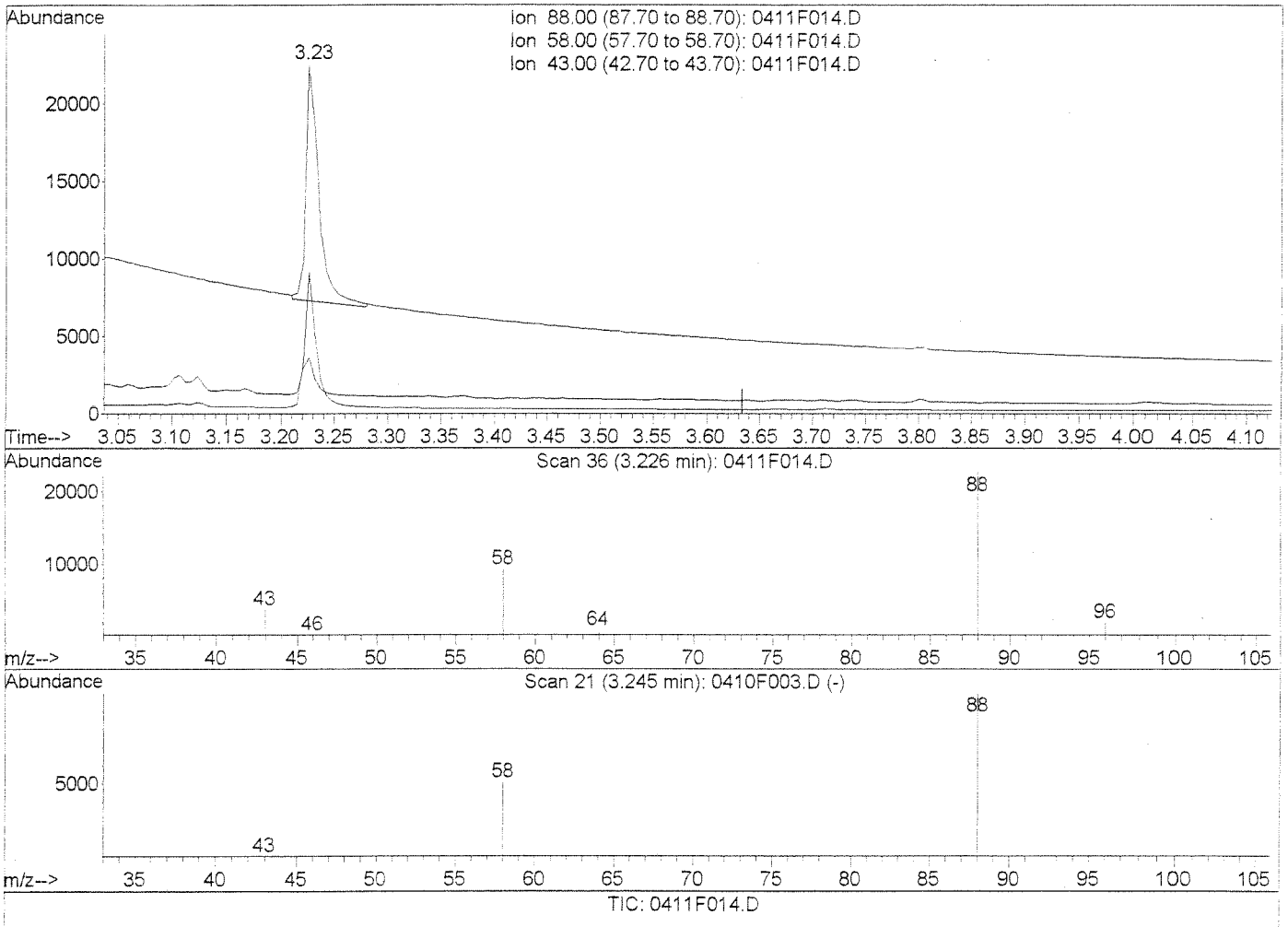
Before

0411F014.D 041112_DX.M Thu Apr 19 19:38:45 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F014.D

(3) 1,4-Dioxane (T)

3.23min 113.50ng/ml m

response 12635

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	40.65#
43.00	15.90	16.18
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F014.D 041112_DX.M Thu Apr 19 19:39:00 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:15 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	16838	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.21	96	26537	217.63	ng/ml	-0.01
Spiked Amount 50.000			Recovery =	435.26%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	26999m	218.26	ng/ml	

APR 20 2012

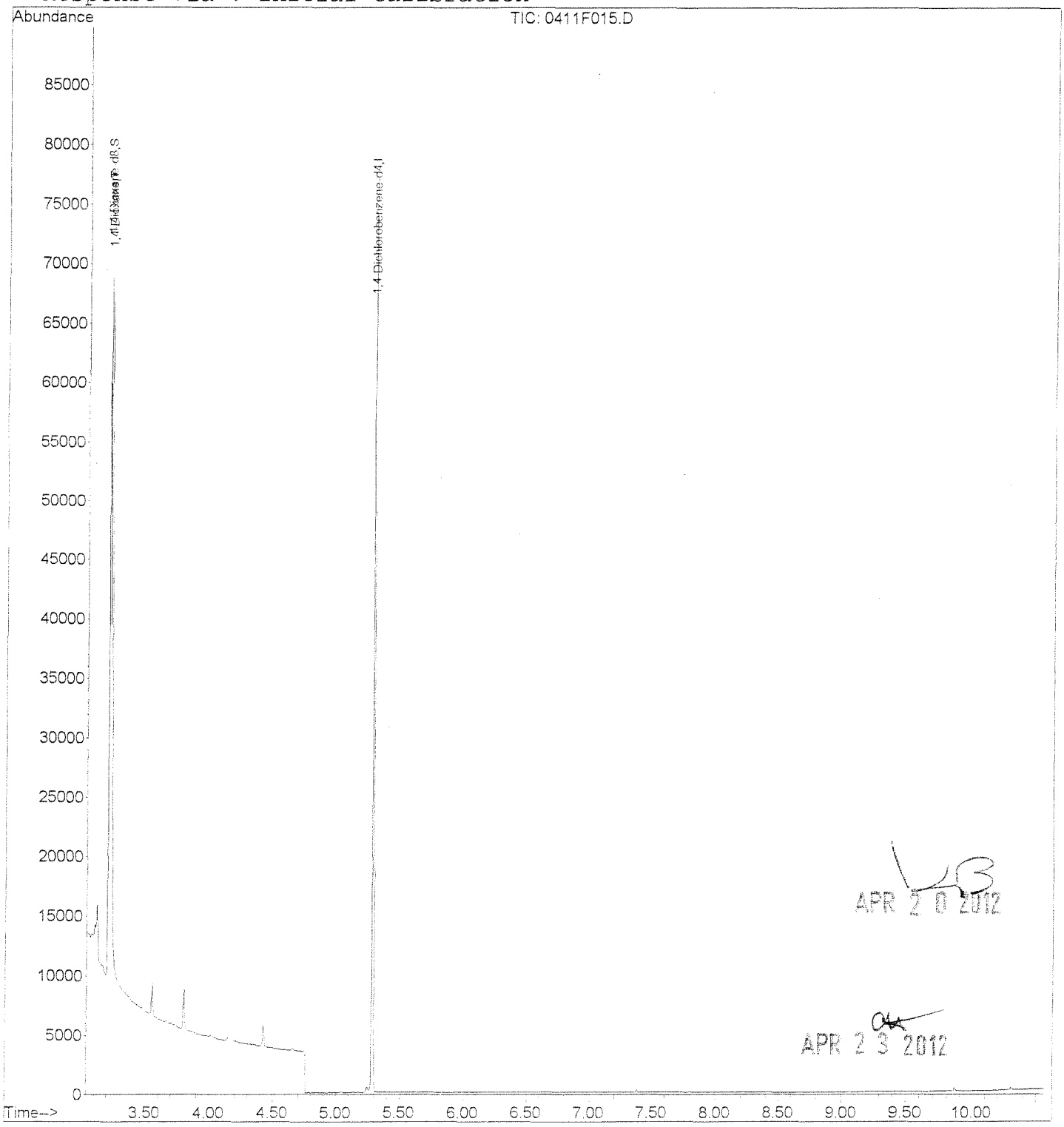
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F015.D 041112_DX.M Fri Apr 20 15:55:07 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:39 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



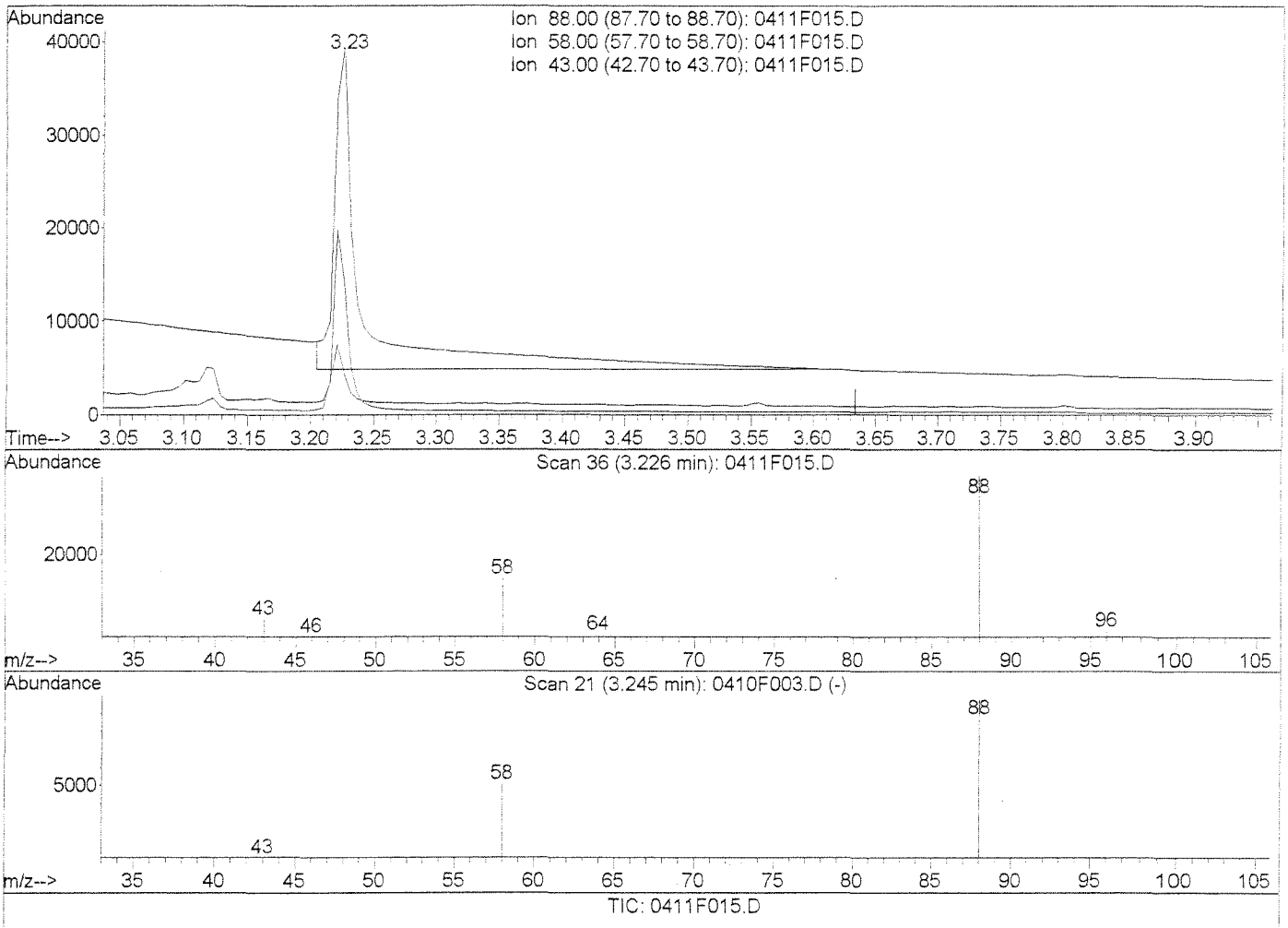
APR 20 2012

APR 23 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F015.D

(3) 1,4-Dioxane (T)

3.23min 462.03ng/ml

response 57154

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	39.94#
43.00	15.90	10.01
0.00	0.00	0.00

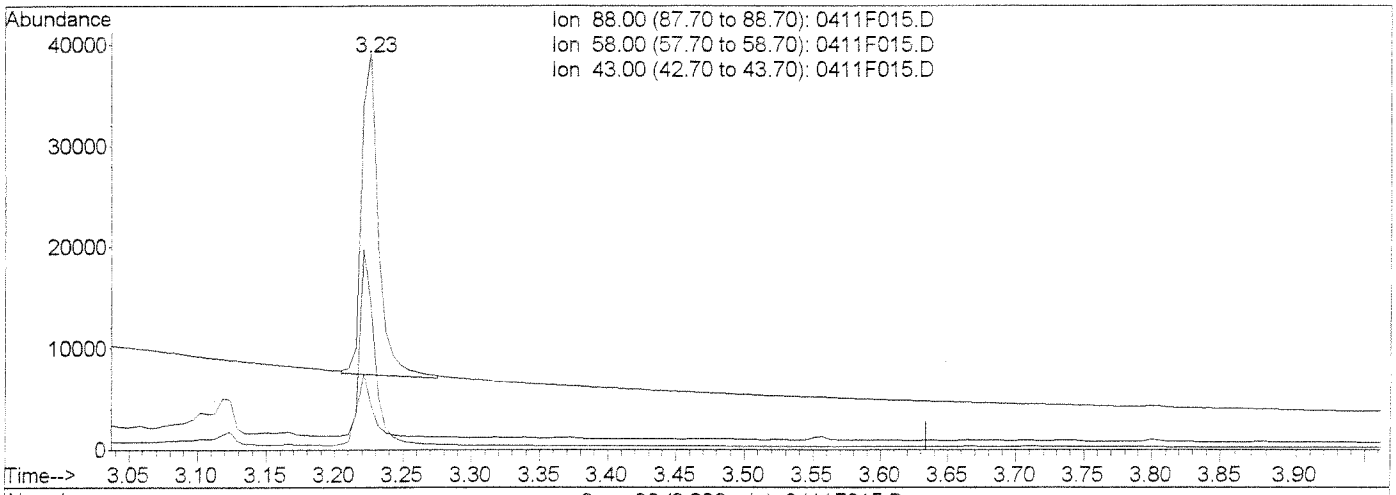
Manual Integration:

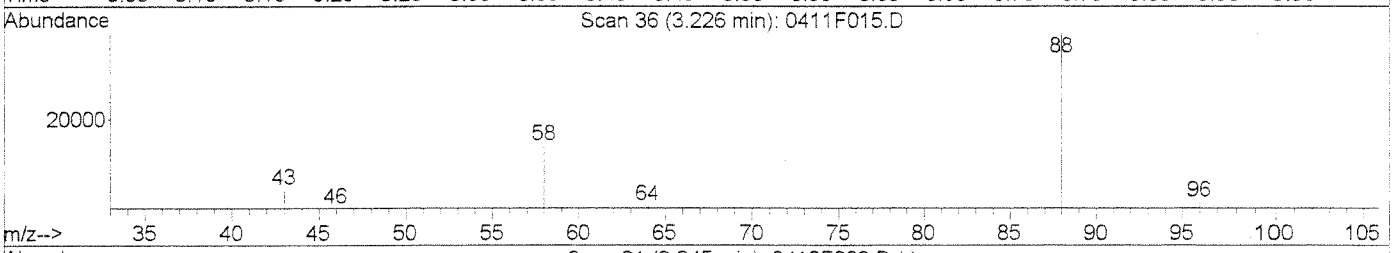
Before

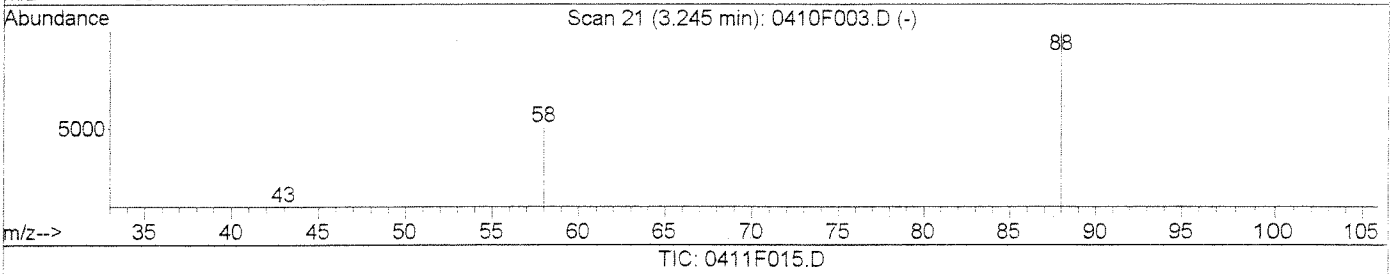
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:39 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F015.D

(3) 1,4-Dioxane (T)

3.23min 218.26ng/ml m

response 26999

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	35.79#
43.00	15.90	11.12
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F015.D 041112_DX.M Thu Apr 19 19:39:14 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:41:00 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14739	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	2243	20.01	ng/ml	-0.01
Spiked Amount 50.000			Recovery =	40.02%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	2384m	21.33	ng/ml	

APR 20 2012

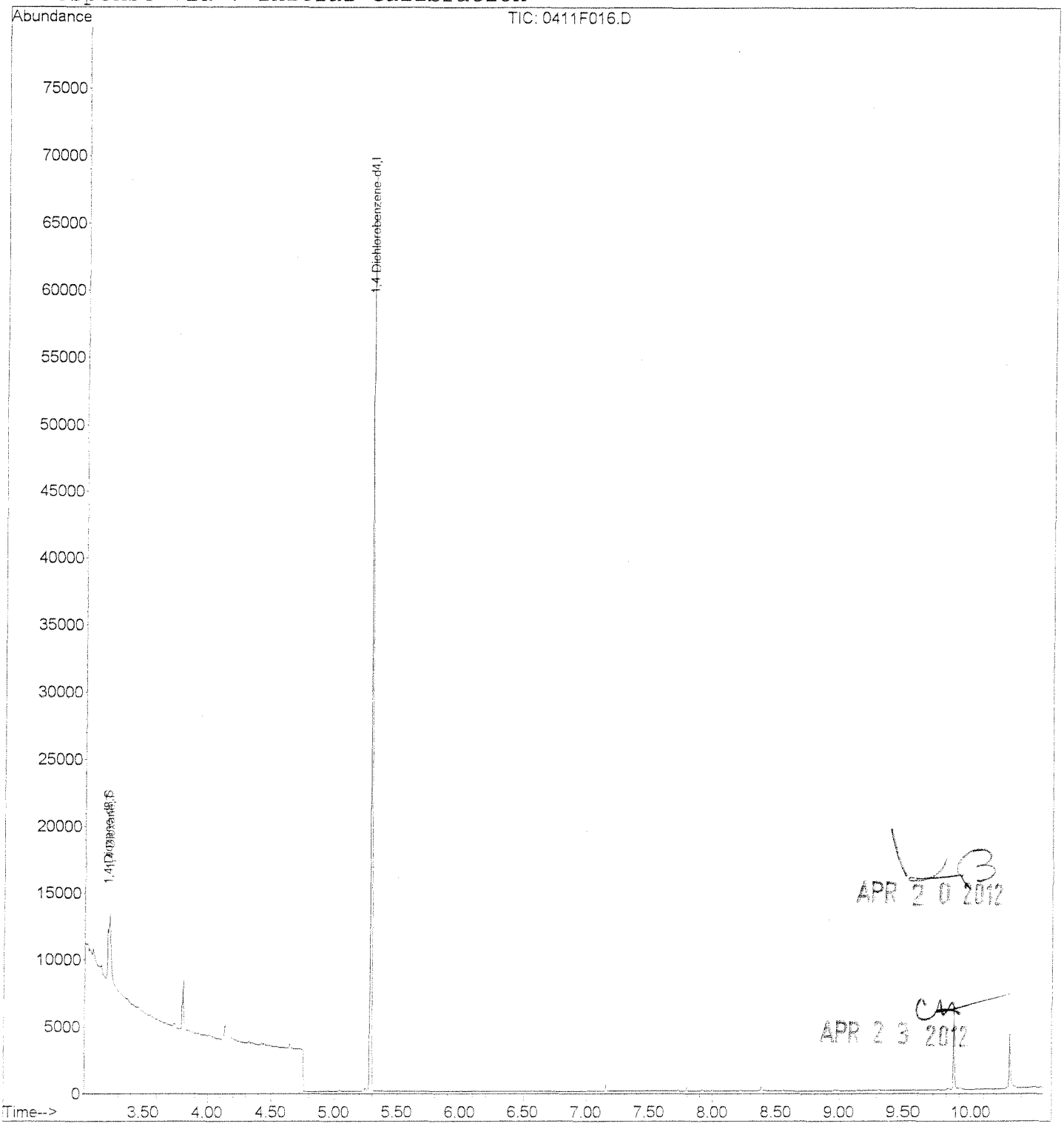
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F016.D 041112_DX.M Fri Apr 20 15:55:08 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:41 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



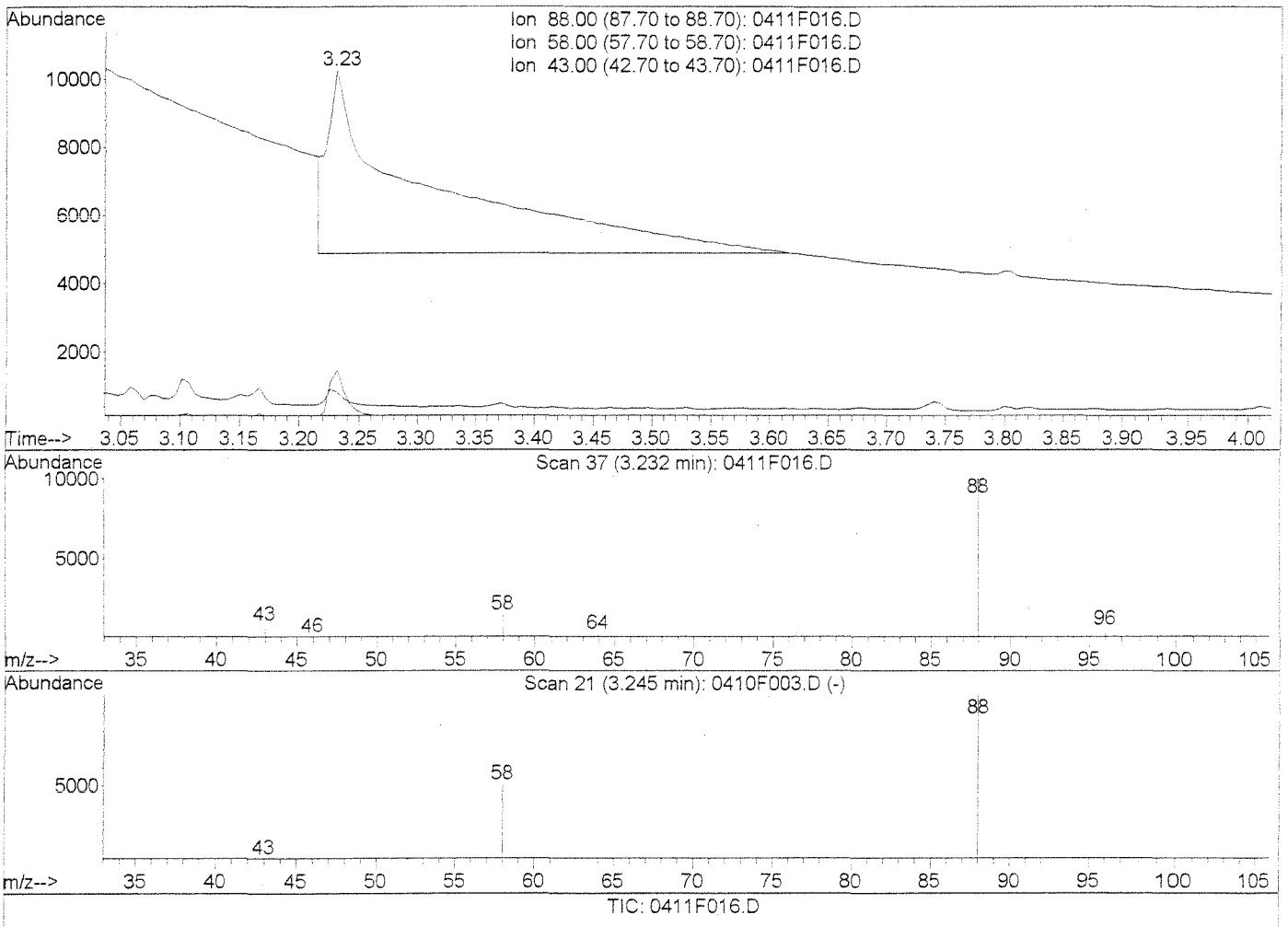
APR 2 0 2012

APR 2 3 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:40 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration



TIC: 0411F016.D

(3) 1,4-Dioxane (T)

3.23min 281.47ng/ml

response 31461

ion	Exp%	Act%
88.00	100	100
58.00	15.50	26.09
43.00	15.90	9.16
0.00	0.00	0.00

Manual Integration:

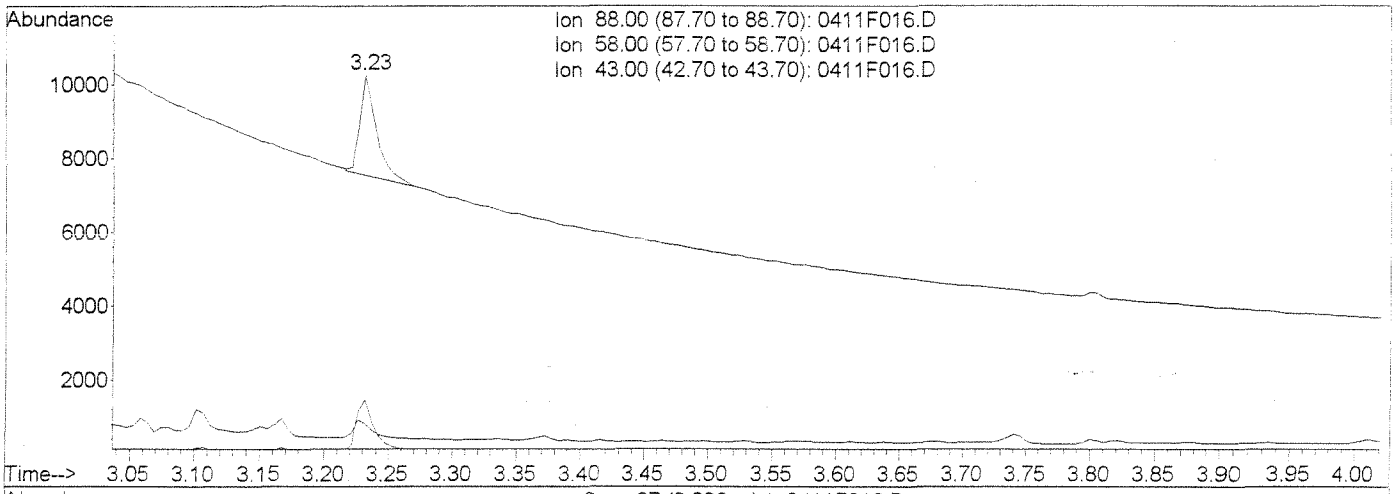
Before

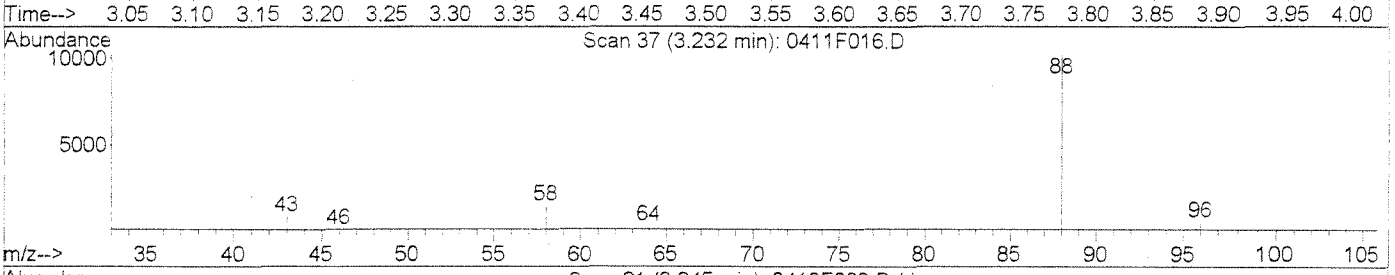
0411F016.D 041112_DX.M Thu Apr 19 19:41:12 2012

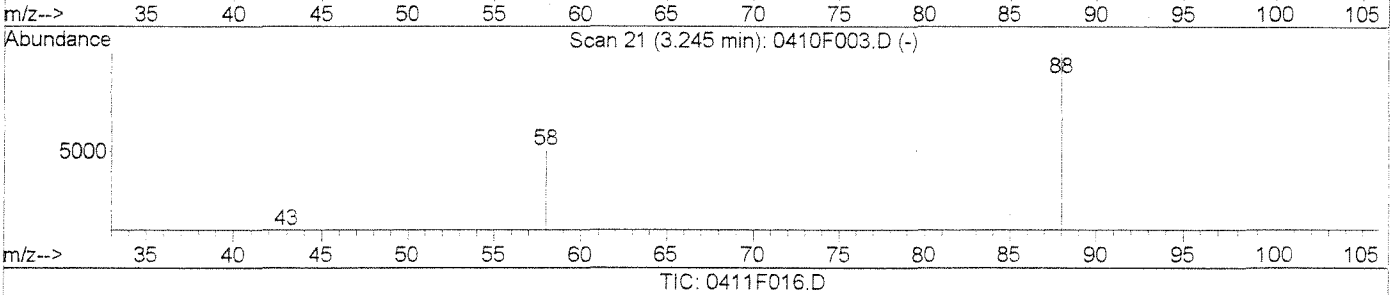
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:41 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0411F016.D

(3) 1,4-Dioxane (T)

3.23min 21.33ng/ml m

response 2384

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	14.30
43.00	15.90	8.05
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F016.D 041112_DX.M Thu Apr 19 19:41:44 2012

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201573
Date Analyzed: 05/03/2012

Continuing Calibration Verification Summary
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM
Calibration Date: 04/11/2012
Calibration ID: CAL11446
Analysis Lot: KWG1204586
Units: ng/ml

File ID: J:\MS26\DATA\050312\0503F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	20	0.01	0.379	0.376	-1	NA	± 20 %	AverageRF
1,4-Dioxane-d8	20	17	0.01	0.380	0.314	-17	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Exception Report

Data File:	J:\MS26\DATA\050312\0503F003.D	**Date Acquired:**	05/03/2012 16:29
Lab ID:	KWG1204586-2	**Date Quantitated:**	05/04/2012 08:45
RunType:	CCV	**Batch ID:**	KWG1204586
Matrix:	WATER	**Analysis Method:**	8270D SIM
		MethodJoinID:	MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: MAY 04 2012

Secondary Review: 05.03.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F003.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 16:29	**Quant Date:**	05/04/2012 08:45	**Vial:**	3
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204586-2			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-DIOXA	**Collect Date:**		**Receive Date:**	05/04/2012

Analysis Lot:	KWG1204586	**Prep Lot:**		**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	-0.01?	152	14092	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.19			96	1771	16.53		48-118	NA

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.21			88	2122m	19.86			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:45:24 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

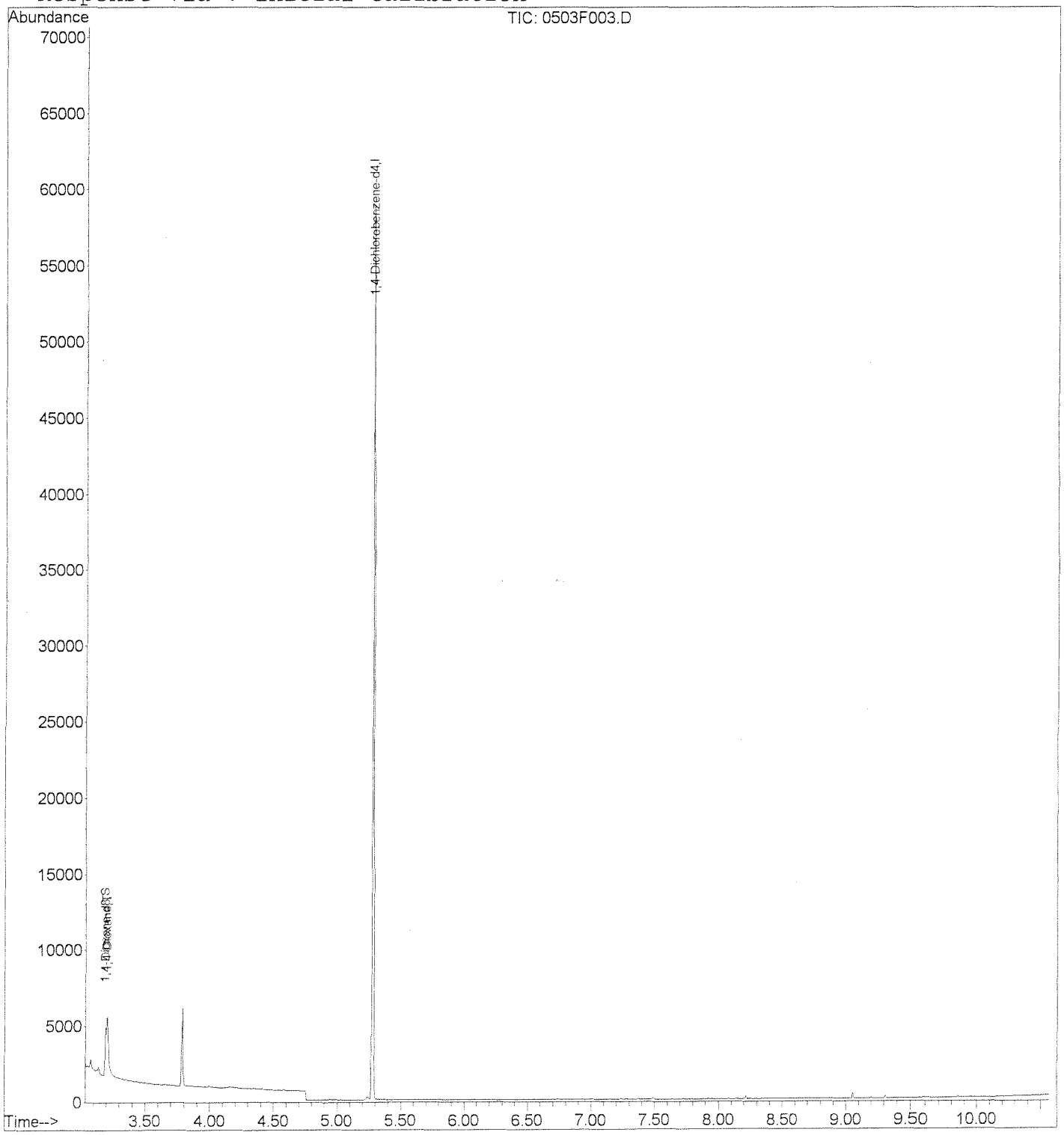
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	14092	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.19	96	1771	16.53	ng/ml	-0.03
Spiked Amount 50.000			Recovery = 33.06%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.21	88	2122m	19.86	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F003.D 041112_DX.M Fri May 04 08:45:51 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:45 2012 Quant Results File: 041112_DX.RE

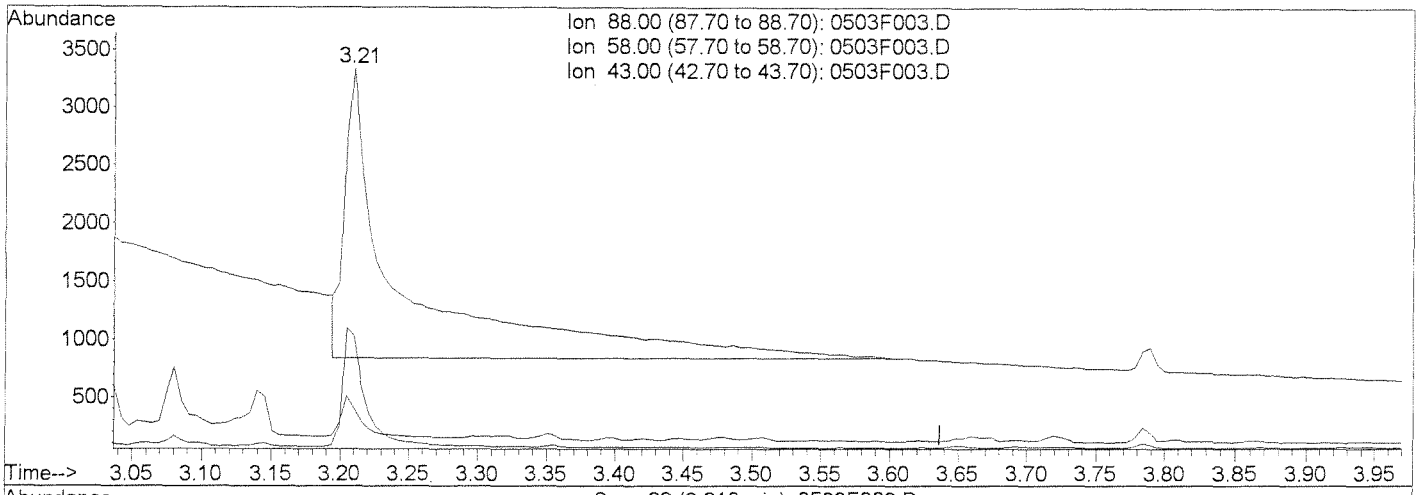
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration

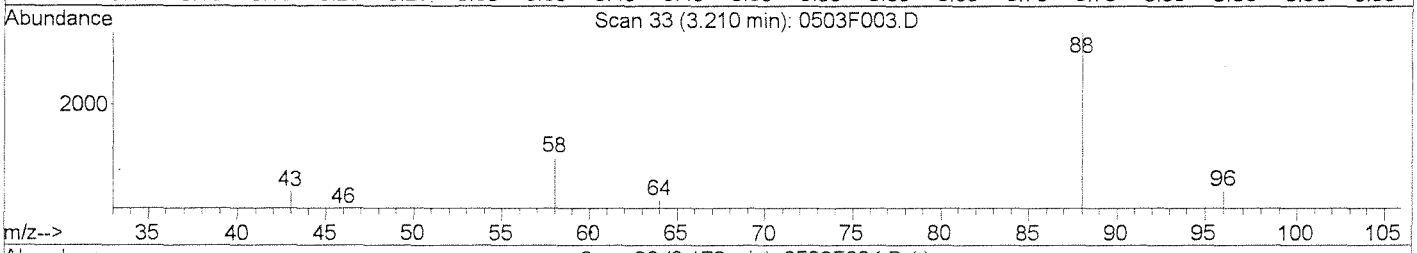


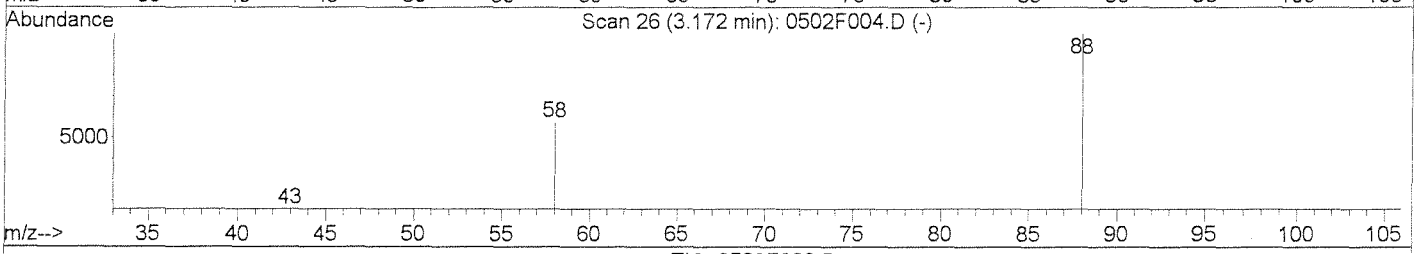
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:45 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0503F003.D

(3) 1,4-Dioxane (T)

3.21min 70.70ng/ml

response 7556

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	38.79#
43.00	15.90	11.57
0.00	0.00	0.00

Manual Integration:

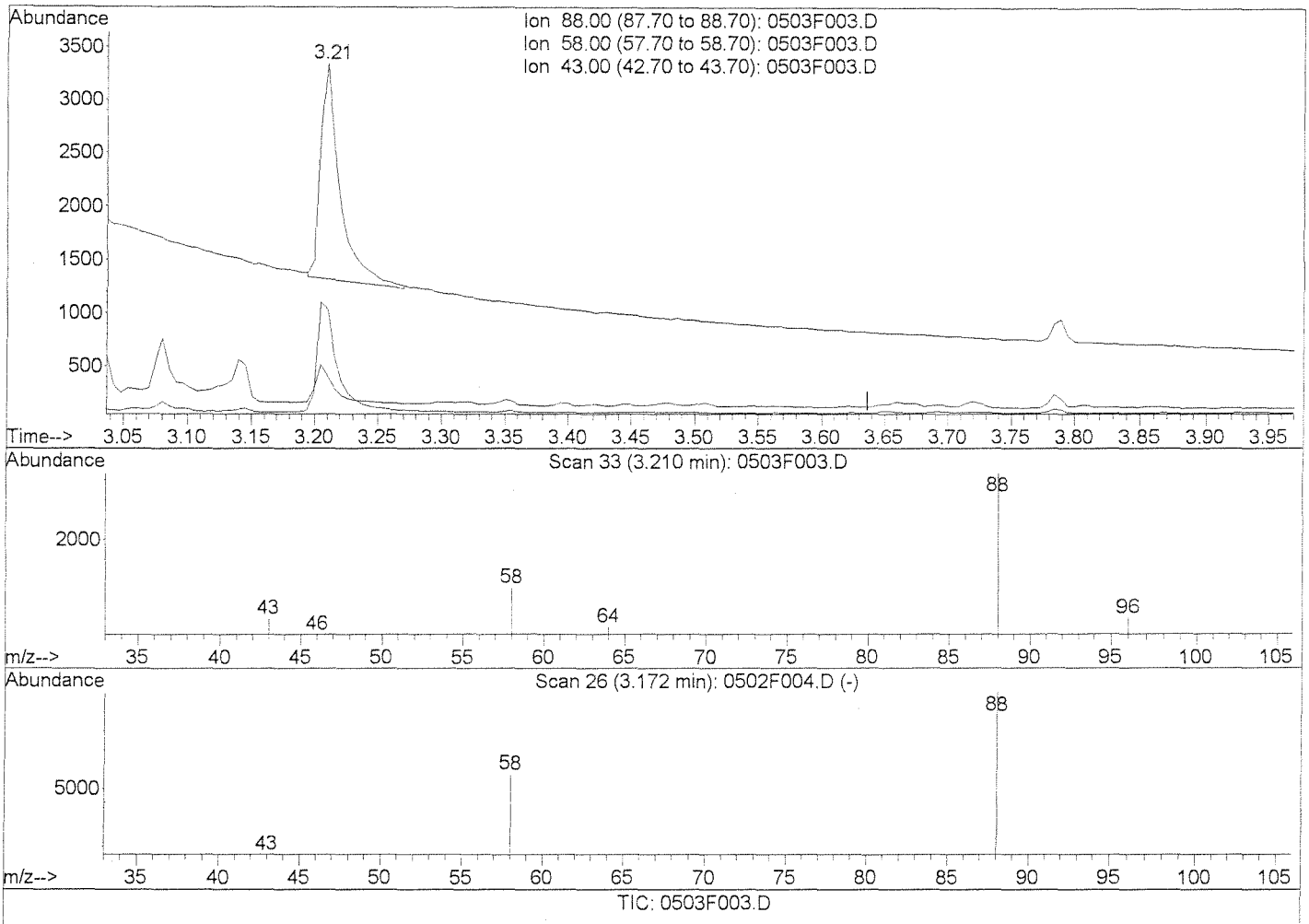
Before

0503F003.D 041112_DX.M Fri May 04 08:45:35 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:45 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration



TIC: 0503F003.D

(3) 1,4-Dioxane (T)

3.21min 19.86ng/ml m

response 2122

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	30.80
43.00	15.90	11.97
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F003.D 041112_DX.M Fri May 04 08:45:44 2012

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Sample Prep and Screen Data

Preparation Information

Group ID:	KWG1204380	**Prep Method:**	EPA 3510C	**Prep Date:**	04/30/12 00:00
Department:	Semivoa GCMS				

Lab Code	Client ID	Product	Matrix	Amt. Ext.	Final Vol.
K1203834-001	MW-1	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-002	MW-2	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-003	MW-3	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-004	EB-2	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-005	DUP-04	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203902-001	L571685-01	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-1	Matrix Spike	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-2	Duplicate Matrix Spike	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-3	Lab Control Sample	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-4	Duplicate Lab Control Sampl	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-5	Method Blank	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201573-002	MW-16	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201573-003	DUPE-8-2Q12	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201588-002	MW-13	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201604-005	MW-24-1	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201630-005	MW-4-1	8270D 1,4-Dioxane	WATER	100ml	50ml

Lab Code	Parent Lab Code	Comments
KWG1204380-1	K1203834-003	
KWG1204380-2	K1203834-003	

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
K1203834-001	1121253	SVM38-29C	50uL			HBailey
K1203834-002	1121254	SVM38-29C	50uL			HBailey
K1203834-003	1121255	SVM38-29C	50uL			HBailey
K1203834-004	1121256	SVM38-29C	50uL			HBailey
K1203834-005	1121257	SVM38-29C	50uL			HBailey
K1203902-001	1121252	SVM38-29C	50uL			HBailey
KWG1204380-1	1121263	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-2	1121264	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-3	1121265	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-4	1121266	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-5	1121267	SVM38-29C	50uL			HBailey
P1201573-002	1121259	SVM38-29C	50uL			HBailey
P1201573-003	1121260	SVM38-29C	50uL			HBailey

Comments:

IS: SVM37-41A

Started By: DHongel Assisted By: ~~_____~~ Training: Yes / No

Completed By: LBerg Assisted By: ~~_____~~ Yes / No

Reviewed By: HBailey Date: 5/3/12 Storage: SVM LAB / MS2C

Chain of Custody

Relinquished By: [signature] Date: 5.2.12

Received By: LB Date: 5/3/12 Extracts Examined: Yes / No

Group ID:	KWG1204380	**Prep Method:**	EPA 3510C	**Prep Date:**	04/30/12 00:00
Department:	Semivoa GCMS				

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
P1201588-002	1121261	SVM38-29C	50uL			HBailey
P1201604-005	1121262	SVM38-29C	50uL			HBailey
P1201630-005	1121258	SVM38-29C	50uL			HBailey

Comments:

IS: SVM37-L1A

Started By: DHongel Assisted By: ——

Completed By: LBerg Assisted By: ——

Training: Yes / No

Reviewed By: HBailey Date: 5/3/12 Storage: SVM LAB/ HSIL

Training: Yes / No

Chain of Custody

Relinquished By: [signature] Date: 5-2-12

Received By: LB Date: 5/3/12

Extracts Examined: Yes / No

Preparation Information

Due: 5/1/12

Group ID: KWG1204380 **Prep Method:** EPA 3510C **Prep Date:** 04/30/12 00:00
Department: Semivoa GCMS

#	Lab Code	Client ID	B#	√	Product	Matrix	Amt. Ext. mL	pH	Int. Vol.	Final Vol. ml	Surr. Added	Spike Added
1	K1203834-001	MW-1	.01	✓	8270D 1,4-Dioxane	WATER	100	-	N/A	50	50µL	N/A
2	K1203834-002	MW-2	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		
3	K1203834-003	MW-3 4-30-12 DH EE	.13	✓	8270D 1,4-Dioxane	WATER	100	-		50		
4	K1203834-004	EB-2	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		
5	K1203834-005	DUP-04	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		
6	K1203902-001	L571685-01	.02	✓	8270D 1,4-Dioxane	WATER	100	-		50		↓
7	KWG1204380-1	Matrix Spike 3834-3MS	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		50µL
8	KWG1204380-2	Duplicate Matrix Spike 3834-3DMS	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		
9	KWG1204380-3	Lab Control Sample			8270D 1,4-Dioxane	WATER	100	-		50		
10	KWG1204380-4	Duplicate Lab Control Sample			8270D 1,4-Dioxane	WATER	100	-		50		↓
11	KWG1204380-5	Method Blank			8270D 1,4-Dioxane	WATER	100	-		50		N/A
12	P1201573-002	MW-16	.04	✓	8270D 1,4-Dioxane	WATER	100	-		50		
13	P1201573-003	DUPE-8-2Q12	.04	✓	8270D 1,4-Dioxane	WATER	100	-		50		
14	P1201588-002	MW-13	.04	✓	8270D 1,4-Dioxane	WATER	100	-		50		
15	P1201604-005	MW-24-1	.04	✓	8270D 1,4-Dioxane	WATER	100	-		50		
16	P1201630-005	MW-4-1	.04	✓	8270D 1,4-Dioxane	WATER	100	-	↓	50	↓	↓

Comments: Prep #156768

Surrogate ID: SVM38-29C, 50µg/mL, Exp: 10/4/12, 50µL (spp)

Spike ID: SVM37-SD 50µg/mL, Exp: 6/21/12, 50µL (spp)

Witness: Bailey 4/30/12

Started By: DHongel Assisted By: LB

Completed By: Assisted By:

Additional Prep Information For 1,4 Dioxane by EPA 3510

RE DH 4.30.12

Service Request K03834, K03902, ~~K4350~~ P01573, P01568, P01604, P01630 **Workgroup** 04380

Pre-Prep Information:

DCM Lot DFS97

Batch Start (Time/Date/Initial): 18:30/4.30.12/DH

Batch Stop (Time/Date/Initial): 21:10/4.30.12/DH

Sulfate Lot # 113858 Salt Lot # G38343 ~~Glass Wool Lot # 19711999~~ 4b1 5/2/10 EE

Extract Storage: As You Wish

Completed (Time/Date/Initial): 2045 5.2.12 gb

Comments/Observations:

Bench Sheet Review Check List	
☐	Hold Times Met (if no, Reason:)
☑	Prep date, dept, method, product code correct in stealth
☑	Spike Information correct
☑	Weights/Volumes and units correct on raw and final bench sheets
☑	Sample IDs have been checked—Bottle numbers appended if required
☑	Names present for: Started by, Completed by, relinquished by, and witnessed by.
☑	Training has been circled
☐	Extract Storage recorded
☑	Additional Prep Sheet completely filled out (NA or line out Blanks)
☐	All clean-ups have been noted on additional prep sheet
☑	Signed service request with Form V, if applicable, has been attached

Injection Log

Directory: J:\MS26\DATA\050312

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0503F001.d	1.	PR		3 May 2012 15:5
2	2	0503F002.d	1.	3.0ug/mL DFTPP | SVM38-66A		3 May 2012 16:1
3	3	0503F003.d	1.	20ng/mL CCV 1,4-Dioxane | SVM38-66B		3 May 2012 16:2
4	4	0503F004.d	1.	KWG1204380-5 | MB		3 May 2012 16:4
5	5	0503F005.d	1.	KWG1204380-3 | LCS		3 May 2012 17:0
6	6	0503F006.d	1.	KWG1204380-4 | DLCS		3 May 2012 17:2
7	7	0503F007.d	1.	KWG1204380-1 | MS K1203834-003MS		3 May 2012 17:4
8	8	0503F008.d	1.	KWG1204380-2 | DMS K1203834-003DMS		3 May 2012 18:0
9	9	0503F009.d	1.	K1203834-003		3 May 2012 18:2
10	10	0503F010.d	1.	K1203834-001		3 May 2012 18:4
11	11	0503F011.d	1.	K1203834-002		3 May 2012 19:0
12	12	0503F012.d	1.	K1203834-004		3 May 2012 19:2
13	13	0503F013.d	1.	K1203834-005		3 May 2012 19:4
14	14	0503F014.d	1.	K1203902-001		3 May 2012 20:0
15	15	0503F015.d	1.	P1201573-002		3 May 2012 20:1
16	16	0503F016.d	1.	P1201573-003		3 May 2012 20:3
17	17	0503F017.d	1.	P1201588-002		3 May 2012 20:5
18	18	0503F018.d	1.	P1201604-005		3 May 2012 21:1
19	19	0503F019.d	1.	P1201630-005		3 May 2012 21:3

Run # 290201

CAL 114A

LB

MAY 04 2012

LABORATORY REPORT

May 9, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon. 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on April 24, 2012. For your reference, these analyses have been assigned our service request number P1201587.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 10:00 am, May 09, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon. 2Q12 / 100006114
Service Request No: P1201587

CASE NARRATIVE

The samples were received intact under chain of custody on April 24, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon. 2Q12 / 100006114
Service Request: P1201587

Date Received: 4/24/2012
Time Received: 14:20

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-22-5	P1201587-001	Water	4/24/2012	08:40	X
MW-22-4	P1201587-002	Water	4/24/2012	09:10	X
MW-22-3	P1201587-003	Water	4/24/2012	09:44	X
MW-22-2	P1201587-004	Water	4/24/2012	10:16	X
MW-22-1	P1201587-005	Water	4/24/2012	10:50	X
DUPE-1-2Q12	P1201587-006	Water	4/24/2012	00:00	X
EB-2-4/24/12	P1201587-007	Water	4/24/2012	10:34	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. 1201587

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLDTOWN AVE., C-205
SAN DIEGO, CA 92110

Project Name: JPL GW MON. 2Q 12

Project Number: 100006114

Project Manager: DAVID CONNER

P.O. # / Billing Information: #285651/BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS, OH 43201

Phone: (619) 726-7311 Fax: (619) 458-6641

Email Address for Result Reporting: Connerd@battelle.org

Sampler (Print & Sign): CHASE BROOKS

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted) TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 Cr VI (7196A)	0 1,4-DIOXANE (8270 SIM)	7 NDMA (521)	Remarks
MW-22-5	1	4/24/12	0840	GW	1						X			
MW-22-4	2		0910		1						X			QC IV
MW-22-3	3		0944		1						X			
MW-22-2	4		1016		1						X			
MW-22-1	5	4/24/12	1050	GW	1						X			
DUPE-1-2212	6	4/24/12	—	GW	1						X			DUPLICATE
EB-2-4/24/12	7	4/24/12	1034	GW	1						X			EQUIP BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 4-24-12	Time: 1535	Received by: (Signature)	Date: 4/24/12	Time: 1335
Relinquished by: (Signature)	Date: 4/24/12	Time: 1520	Received by: (Signature)	Date: 4/24/12	Time: 1420
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 2 °C

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Chain of Custody Report

Client: Battelle **Service Request:** P1201587
Project: JPL GW Mon. 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201587-001.01					
	7196A				
		4/24/12	1429	SMO / MZAMORA	
		4/24/12	1429	P-37 / MZAMORA	
		4/24/12	1448	In Lab / EIBARRA	
		4/24/12	1635	P-37 / EIBARRA	
P1201587-002.01					
	7196A				
		4/24/12	1429	SMO / MZAMORA	
		4/24/12	1429	P-37 / MZAMORA	
		4/24/12	1448	In Lab / EIBARRA	
		4/24/12	1635	P-37 / EIBARRA	
P1201587-003.01					
	7196A				
		4/24/12	1429	SMO / MZAMORA	
		4/24/12	1429	P-37 / MZAMORA	
		4/24/12	1448	In Lab / EIBARRA	
		4/24/12	1635	P-37 / EIBARRA	
P1201587-004.01					
	7196A				
		4/24/12	1429	SMO / MZAMORA	
		4/24/12	1429	P-37 / MZAMORA	
		4/24/12	1448	In Lab / EIBARRA	
		4/24/12	1635	P-37 / EIBARRA	
P1201587-005.01					
	7196A				
		4/24/12	1429	SMO / MZAMORA	
		4/24/12	1429	P-37 / MZAMORA	
		4/24/12	1448	In Lab / EIBARRA	
		4/24/12	1635	P-37 / EIBARRA	
P1201587-006.01					
	7196A				
		4/24/12	1429	SMO / MZAMORA	
		4/24/12	1429	P-37 / MZAMORA	
		4/24/12	1448	In Lab / EIBARRA	
		4/24/12	1634	P-37 / EIBARRA	
P1201587-007.01					
	7196A				
		4/24/12	1429	SMO / MZAMORA	
		4/24/12	1429	P-37 / MZAMORA	
		4/24/12	1448	In Lab / EIBARRA	
		4/24/12	1634	P-37 / EIBARRA	

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Sample Acceptance Check Form

Client: Battelle Work order: P1201587

Project: JPL GW Mon. 2Q12 / 100006114

Sample(s) received on: 4/24/12 Date opened: 4/24/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 2° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201587-001.01	125mL Plastic NP					
P1201587-002.01	125mL Plastic NP					
P1201587-003.01	125mL Plastic NP					
P1201587-004.01	125mL Plastic NP					
P1201587-005.01	125mL Plastic NP					
P1201587-006.01	125mL Plastic NP					
P1201587-007.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon. 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201587
Date Collected : 04/24/12
Date Received : 04/24/12

Chromium, Hexavalent

Units : mg/L (ppm)
Basis : NA

Analysis Method : 7196A
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-22-5	P1201587-001	0.010	0.003	1	NA	04/24/12 16:00	ND	
MW-22-4	P1201587-002	0.010	0.003	1	NA	04/24/12 16:00	ND	
MW-22-3	P1201587-003	0.010	0.003	1	NA	04/24/12 16:00	ND	
MW-22-2	P1201587-004	0.010	0.003	1	NA	04/24/12 16:00	ND	
MW-22-1	P1201587-005	0.010	0.003	1	NA	04/24/12 16:00	ND	
DUPE-1-2Q12	P1201587-006	0.010	0.003	1	NA	04/24/12 16:00	ND	
EB-2-4/24/12	P1201587-007	0.010	0.003	1	NA	04/24/12 16:00	ND	
Method Blank	P1201587-MB	0.010	0.003	1	NA	04/24/12 16:00	ND	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1201587
Project:	JPL GW Mon. 2Q12 / 100006114	**Date Analyzed:**	04/24/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 5/9/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon. 2Q12 / 100006114

Service Request: P1201587
Date Analyzed: 04/24/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0497	99	90-110
CCV1	0.0500	0.0497	99	90-110
CCV2	0.0500	0.0497	99	90-110

Approved By: Karen Ryan Date: 5/9/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201587
Project Name :	JPL GW Mon. 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	04/24/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201587-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0400	100	92-110	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL GW Mon. 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201587
Date Collected : 04/24/12
Date Received : 04/24/12
Date Extracted : NA
Date Analyzed : 04/24/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-22-5
Lab Code : P1201587-001MS P1201587-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0382	0.0400	76	80	69-119	5	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P1201587 ; P1201588

Time: 1310

Sample	VWR lot #	Exp.
pH 2 Buffer	S24-0520110 1	Dec 2012
pH 4 Buffer	S24-1024 1101	2/28/2013
pH 7 Buffer	S24-1021 1101	Jul 2013
pH 10 Buffer	S24-1024 1103	2/28/2013

Slope	Prep.Run #
99.0%	
	Run#

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3	2.010	22.4
pH 4.000		4.000	22.7
pH 7.000		7.002	22.6
pH 10.000		9.999	22.5
Ref#: pH 7.38 Exp 8/2016 S24-1024 1102		7.388 100%	22.8
DI		2.056	22.0
pH 2.000		2.003	22.5
TIME	1455		
pH 2.000		2.011	23.7
P1201587-1.01		2.010	10.6
-2.01		2.135	10.3
-3.01		2.122	10.4
-4.01		2.101	11.7
-5.01		2.348	12.0
-6.01		2.237	11.8
-7.01		2.032	12.5
P1201588-1.01	↓	2.235	12.7

Sample	#	pH	Temp. °C
P1201588-2.03	3	2.190	13.4
↓ 3.01	↓	2.214	14.1
pH 2.000	↓	2.034	23.1
		SPACE NOT USED	

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 49284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 3 4/23/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: EJ Date: 4/24/12

Reviewer: PR Date: 4/26/12

pH

Columbia Analytical Services

Hexavalent Chromium (Liquids)

Method EPA 7196A

46

Service Request#(s): P1201587 ; P1201588

Run#: 289484

Stock#: S24-0223120I TV=10 PPM Exp 8/23/12

Prep Run#:

ICV/CCV#: S24-0327120I TV=100PPM Exp 7/2013

Conc. H_2SO_4 Lot#: EMO 99284 Exp 11/20/14

Coloring Reagent Ref#: S24-0416120B 5/16/12

Working Curve:

Prep Dilution		NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L		0.00	0.01	0.05	0.1	0.999955865
Absorbance @ 540 nm		0	0.012	0.058	0.114	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10mL	-	✓	0.000	0.000	0.000	-0.000397	<0.003
2	ICV 0.05 PPM		-	✓	0.000	0.057	0.057	0.0497	99%
3	MB		-	✓	0.000	0.000	0.000	-0.000397	<0.003
4	LCS 0.04 PPM		-	✓	0.000	0.046	0.046	0.0400	100%
5	P1201587-1.01		-	✓	0.000	0.001	0.001	0.000482	<0.003
6	-1.01 MS 0.05 PPM		-	✓	0.000	0.094	0.044	0.0382	76% RPD
7	-1.01 MSD		-	✓	0.000	0.046	0.046	0.0400	80% 5%
8	-2.01		-	✓	0.000	0.002	0.002	0.00136	<0.003
9	-2.01 VS 0.03 PPM		-	✓	0.000	0.036	0.036	0.0312	104%
10	-3.01		-	✓	0.001	0.003	0.002	0.00136	<0.003
11	-4.01		-	✓	0.001	0.001	0.000	-0.000397	<0.003
12	-5.01		-	✓	0.002	0.002	0.000	-0.000397	<0.003
13	CCV1 0.05 PPM		-	✓	0.000 ~~0.002~~	0.057 ~~0.054~~ EI 4/24/12	0.057	0.0497	99%
14	CCB1		-	✓	0.000	0.000	0.000	-0.000397	<0.003
15	P1201587 -6.01		-	✓	0.002	0.002	0.000	-0.000397	<0.003
16	-7.01		-	✓	0.000	0.000	0.000	-0.000397	<0.003
17	P1201588-1.01		-	✓	0.009	0.010	0.001	0.000482	<0.003

pH Requirement: Method 7196A (2 ± 0.5) * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of S24-0327120I @ 1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-0223120I ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @ 1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: EI Date/Time: 4/24/12 @ 1535

Analyzed By: EI Date/Time: 4/24/12 @ 1600

Reviewed By: KL Date: 4/26/12

Cr6LIQ.xls

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Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

47

Service Request#(s): P1201587 ; P1201588

Run#: 289484

Stock#: S24-0223120 1 TV=10 PPM Exp 8/23/12

Prep Run#:

ICV/CCV#: S24-0327120 1 TV=100PPM Exp 7/2013

Conc. H_2SO_4 Lot#: EMD 49784 Exp 11/2014

Coloring Reagent Ref#: S24-0416203 Exp: 5/16/12

Working Curve:

Prep Dilution		NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L		0.00	0.01	0.05	0.1	0.999955805
Absorbance @ 540 nm		0	0.012	0.058	0.114	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	P1201588 -2 03	10mL	—	✓	0.001	0.011	0.010	0.00839	
2	2.03 MS 0.05 PPM		—	✓	0.001	0.066	0.065	0.0567	96% RPD
3	2.03 MSD		—	✓	0.001	0.066	0.065	0.0567	96% 0%
4	3.01		—	✓	0.000	0.000	0.000	-0.000347	<0.003
5	3.01 US 0.03 PPM		—	✓	0.000	0.035	0.035	0.0303	101%
6	CCV 2 0.05 PPM		—	✓	0.000	0.057	0.057	0.0497	99%
7	CCB 2		—	✓	0.000	0.000	0.000	-0.000347	<0.003
8									
9									
10									
11					SPACE	NOT USED			
12									
13									
14									
15									
16									
17									

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of S24-0327120 1 @ 1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-0223120 1 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @ 1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: EI Date/Time: 4/14/12 @ 1535

Analyzed By: EI Date/Time: 4/14/12 @ 1600

Reviewed By: KB Date: 4/20/12

Cr6LIQ.xls

5/19/11 JR

524-05191103 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JR05641 exp: 6/15/14) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49184 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JR

524-05201101 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT# 110225
EXP: 12/2013

5/20/11 JR

~~524-05201103~~ pH 4.000 BUFFER
Purchased
JT Baker CAT # 5657-01 500mL
LOT# J36503
EXP: 9/30/13

5/20/11 JR

~~524-05201103~~ pH 7.~~00~~ BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT# 1103361
EX: 3/2013

10/17/11 SR

S24-10171102 1000PPM NH3
0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL
10/ S24-10171101 (0.1N H_2SO_4 EXP: 10/17/12)
EXP: 4/17/12

10/17/11 SR

S24-10171103 IC Eluent
100 mL of S24-09201103 (10x Conc Eluent; EXP: 9/20/12
↑ 1L w/ DI. DEGASSED.
EXP: 10/31/11

10/21/11 SR

S24-10211101 pH 7.000 Buffer
Purchased
BDH Cat No: BDH5046-500mL
LOT # 1107491
EXP: 7/2013

10/24/11 SR

S24-10241101 pH 4.000 Buffer
Purchased
JT Baker Cat No: 5657-01 500mL
LOT # K04505
EXP: 2/28/13

10/24/11 SR

S24-10241102 pH 7.38 Buffer
Purchased
BDH Cat No BDH6058-500mL
LOT # 1109034
EXP: 8/2013

10/24/11 SR

524-10241103 pH 10.000 Buffer
Purchased
JT Baker Cat no: 5655-01
LOT # K07507
EXP: 2/28/13

10/25/11 SR

524-10251101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 951211 475mL
LOT # PN1 P/N 207475-A01
EXP: 10/25/12

10/25/11 SR

524-10251102 A,B,C,D,E pH Filling Sol'n
Purchased
Thermo Scientific Orion 810007 5pk/60mL
LOT: PS1
EXP: 10/25/12

11/1/11 SR

524-11011101 IC02 Eluent
100 ml 524-09201103 (10x conc eluent EXP: 9/30/13) 1 L DI H2O DEGASSED
EXP: 11/15/11

11/1/11 SR

524-11011102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JO564) exp: 6/15/15 in 100 mL Methanol (B&J AE932 exp: 10/12/16
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H2SO4 (EMD [illegible] exp: [illegible]). Bring [illegible]

2/9/12 524-0209/202 Nitrite Std
SR 0.2500g N-1-Naphthylethylene diamine Dihydrochloride
(JT Baker; lot IK22587 EXP 10/19/14) ↑ 250mL w/ DI
EXP: 8/9/12

2/9/12 524-0209/203 ICO2 Effluent
SR 100mL 524-0920 1103 (for Cond Effluent, EXP:
9/20/12) ↑ 8/9/12 1 L w/ DI H2O. Degassed.
2/23/12

2/9/12 524-0209/204 ICO2 POR
SR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JC0564) exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 10/10/16) Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4928U exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 2/14/12

2/10/12 524-02/0120 ~~1000~~ 995 ppm Cr6+
SR 8a 2/10/12
Purchased
INORGANIC VENTURES CCCR(6)1-1
LOT: 02-CR03049
EXP: 5/1/13

2/13/12 524-0213/201
SR 5.6mL conc H_2SO_4 (EMD 49184, EXP: 11/20/14) ↑
to 1 L w/ DI H_2O
EXP: 2/13/13

2/14/12 SA — 524-02141203 — pH Buffer 2.000
Purchased
BDH Cat No: BDH5310-500ml
LOT# 111214G
EXP: 11/2013

2/20/12 SA — 524-02201201 — 500PPM NO_2 STOCK
Purchased
RICCA CHEMICAL Co Cat# 5444.5-4 120ml Amber Gl
LOT# 1262292
EXP: 8/12

2/22/12 SA — 524-02221201 — Alkaline DIGESTION Sol
30.0g ~~NaOH~~ $NaNO_3$ (EMD 4632715; EXP: 10/11/12) + 20.0g NaO
(EMD 4702713C; EXP: 10/11/12) ↑ 1L w/ DI
EXP: 3/22/12

2/23/12 SA — 524-02231201 — 10PPM Cr^{6+} Std
1.0ml 524-02101201 (1000PPM Cr^{6+}; EXP: 3/1/13)
↑ 100ml w/ DI H_2O
EXP: 8/23/12

2/27/12 SA — 524-02271201 — 0.1N H_2SO_4
5.6ml Conc H_2SO_4 (EMD 4928-4; EXP: 11/20/1
↑ 2L W/ DI H_2O
EXP: 2/27/13

3/23/12 SA 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 11C9134
EXP: 8/2013

3/27/12 SA 524-0327/201 100 PPM Cr^{6+} ICV
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
LOT # 1201701
EXP: 7/2013

3/28/12 SA 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # 104514 500ml plastic
EXP: 1/31/14

3/28/12 SA 524-0328/202 Methylene Blue 1% AQ Sol.
100ml Purchased
Alfa Aesar Stock # 42771
LOT # H04X026
EXP: 3/28/13

4/16/12 S24-0416/201 IC02 Eluent
100mL S24-0314/201 (10x conc eluent, EXP: 10/11/12) ↑ 1L w/ DI H2O. Degassed
EXP: 4/30/12

4/16/12 S24-0416/202 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker JT5641 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 2/27/17). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4623854 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 4/21/12

4/16/12 S24-0416/203 Cr6+ Coloring Reagent
0.2500g 1,5-Diphenylcarbohydrazide Powder (JT Baker JT5641; EXP: 6/15/15) ↑ 50mL w/ Acetone (EMD Lot 47154; EXP 9/24/12)
EXP: 5/16/12

4/16/12 S24-0416/204 12.5 N NaOH
100g NaOH (EMD 47022713; EXP 10/1/12 + 100mL DI H2O
EXP: 10/11/12

0430 4/30/12

4/30/12 S24-~~0314~~/201 IC02 Eluent
100mL S24-0314/201 (10x concentrated, EXP: 10/11/12) ↑ 1 w/ DI H2O. Degassed.
EXP: 5/14/12

LABORATORY REPORT

May 14, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL-GW-2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on April 24, 2012. One of the samples was sent out for partial analysis to our Kelso facility. Please find their report attached. For your reference, these analyses have been assigned our service request number P1201588.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 1:51 pm, May 14, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL-GW-2Q12 / 100006114

Service Request No: P1201588

CASE NARRATIVE

The samples were received intact under chain of custody on April 24, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL-GW-2Q12 / 100006114
Service Request: P1201588

Date Received: 4/24/2012
Time Received: 14:20

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6	521 - Nitrosamines - KLAB	8270D - 1,4-Dioxane - KLAB
MW-6	P1201588-001	Water	4/24/2012	08:58	X		
MW-13	P1201588-002	Water	4/24/2012	11:00	X	X	X
MW-8	P1201588-003	Water	4/24/2012	12:57	X		

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P1201555

CAS Contact:

Company Name & Address (Reporting Information)
Battelle
505 King Ave
Columbus, OH. 43201

Project Name
JPL-GW-2Q12

Project Number
100006114

Project Manager
David Conner

P.O. # / Billing Information
285651/Battelle
505 King Ave
Columbus, OH. 43201

Phone
614 726-7311

Fax 614 458-6641

Email Address for Result Reporting
connerd@battelle.org

Sampler (Print & Sign)
David Loera

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	Hexane + Cr 7196 (0)	NDMA (521) (0)	1,4 Dioxane (8270c SIM) (0)
MW-6	1	4-24-12	0858	AQ	1P							X		
MW-13	2	4-24-12	1100	AQ	1P 3G							X	X	X
MW-8	3	4-24-12	1257	AQ	1P							X		

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Remarks

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge X
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 4-24-12	Time: 1300	Received by: (Signature)	Date: 4/24/12	Time: 1300
Relinquished by: (Signature)	Date: 4/24/12	Time: 1335	Received by: (Signature)	Date: 4/24/12	Time: 1335
Relinquished by: (Signature)	Date: 4/24/12	Time: 1420	Received by: (Signature)	Date: 4/24/12	Time: 1420

Cooler / Blank / Ice / No Ice: wet ice

Temperature 2 °C

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Chain of Custody Report

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201588

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201588-001.01					
	7196A				
		4/24/12	1439	SMO / MZAMORA	
		4/24/12	1439	P-37 / MZAMORA	
		4/24/12	1448	In Lab / EIBARRA	
		4/24/12	1634	P-37 / EIBARRA	
P1201588-002.01					
		4/24/12	1439	SMO / MZAMORA	
		4/24/12	1440	SUBBED / MZAMORA	
		4/25/12	1434	K-Delilah-13 / SWOLF	
		4/30/12	0907	Custodian / SDAVIS	
		4/30/12	0907	In Lab / RHAYES	
		4/30/12	1626	K-Delilah-13 / DMOORE	
P1201588-002.02					
	521				
		4/24/12	1439	SMO / MZAMORA	
		4/24/12	1440	SUBBED / MZAMORA	
		4/25/12	1434	K-Delilah-13 / SWOLF	
P1201588-002.03					
	7196A				
		4/24/12	1439	SMO / MZAMORA	
		4/24/12	1439	P-37 / MZAMORA	
		4/24/12	1448	In Lab / EIBARRA	
		4/24/12	1634	P-37 / EIBARRA	
P1201588-002.04					
	8270D				
		4/24/12	1439	SMO / MZAMORA	
		4/24/12	1440	SUBBED / MZAMORA	
		4/25/12	1434	K-Delilah-13 / SWOLF	
		4/30/12	1507	Custodian / DMOORE	
		4/30/12	1507	In Lab / DHONGEL	
		4/30/12	1853	K-Delilah-13 / KSMITH	
P1201588-003.01					
	7196A				
		4/24/12	1439	SMO / MZAMORA	
		4/24/12	1439	P-37 / MZAMORA	
		4/24/12	1448	In Lab / EIBARRA	
		4/24/12	1634	P-37 / EIBARRA	

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Sample Acceptance Check Form

Client: Battelle Work order: P1201588

Project: JPL-GW-2Q12 / 100006114

Sample(s) received on: 4/24/12 Date opened: 4/24/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 2° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201588-001.01	125mL Plastic NP					
P1201588-002.01	1000ml AG NP					
P1201588-002.02	1000ml AG NP					
P1201588-002.03	125mL Plastic NP					
P1201588-002.04	500mL AG NP					
P1201588-003.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL-GW-2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201588
Date Collected : 04/24/12
Date Received : 04/24/12

Chromium, Hexavalent

Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-6	P1201588-001	0.010	0.003	1	NA	04/24/12 16:00	ND	
MW-13	P1201588-002	0.010	0.003	1	NA	04/24/12 16:00	0.008	J
MW-8	P1201588-003	0.010	0.003	1	NA	04/24/12 16:00	ND	
Method Blank	P1201588-MB	0.010	0.003	1	NA	04/24/12 16:00	ND	

J Estimated concentration. The result is less than the PQL but greater than the MDL.

Approved By Karen Ryza Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12 / 100006114	**Date Analyzed:**	04/24/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 5/9/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12 / 100006114	**Date Analyzed:**	04/24/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0497	99	90-110
CCV1	0.0500	0.0497	99	90-110
CCV2	0.0500	0.0497	99	90-110

Approved By: Karen Ryan Date: 5/9/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201588
Project Name :	JPL-GW-2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	04/24/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201588-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0400	100	92-110	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL-GW-2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201588
Date Collected : 04/24/12
Date Received : 04/24/12
Date Extracted : NA
Date Analyzed : 04/24/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-13
Lab Code : P1201588-002MS P1201588-002DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	0.0084	0.0567	0.0567	97	97	69-119	<1	J

J Estimated concentration. The result is less than the PQL but greater than the MDL.

Approved By _____ Date : 5/9/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P1201587 ; P1201588

Time: 1310

Sample	VWR lot #	Exp.
pH 2 Buffer	S24-0520110 1	Dec 2012
pH 4 Buffer	S24-1024 1101	2/28/2013
pH 7 Buffer	S24-1021 1101	Jul 2013
pH 10 Buffer	S24-1024 1103	2/28/2013

Slope	Prep.Run #
99.0%	
	Run#

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3	2.010	22.4
pH 4.000		4.000	22.7
pH 7.000		7.002	22.6
pH 10.000		9.999	22.5
Ref#: pH 7.38 Exp 8/2016 S24-1024 1102		7.388 100%	22.8
DI		2.056	22.0
pH 2.000		2.003	22.5
TIME	1455		
pH 2.000		2.011	23.7
P1201587-1.01		2.010	10.6
-2.01		2.135	10.3
-3.01		2.122	10.4
-4.01		2.101	11.7
-5.01		2.348	12.0
-6.01		2.237	11.8
-7.01		2.032	12.5
P1201588-1.01	↓	2.235	12.7

Sample	#	pH	Temp. °C
P1201588-2.03	3	2.190	13.4
↓ 3.01	↓	2.214	14.1
pH 2.000	↓	2.034	23.1
		SPARE NOT USED	

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 49284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 3 4/23/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: EJ Date: 4/24/12

Reviewer: PR Date: 4/26/12

pH

Columbia Analytical Services

Hexavalent Chromium (Liquids)

Method EPA 7196A

46

Service Request#(s): P1201587 ; P1201588

Run#: 289484

Stock#: S24-0223120I TV=10 PPM Exp 8/23/12

Prep Run#:

ICV/CCV#: S24-0327120I TV=100PPM Exp 7/2013

Conc. H_2SO_4 Lot#: EMO 99284 Exp 11/20/14

Coloring Reagent Ref#: S24-0416120B 5/16/12

Working Curve:

Prep Dilution		NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L		0.00	0.01	0.05	0.1	0.999955865
Absorbance @ 540 nm		0	0.012	0.058	0.114	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10mL	-	✓	0.000	0.000	0.000	-0.000397	<0.003
2	ICV 0.05 PPM		-	✓	0.000	0.057	0.057	0.0497	99%
3	MB		-	✓	0.000	0.000	0.000	-0.000397	<0.003
4	LCS 0.04 PPM		-	✓	0.000	0.046	0.046	0.0400	100%
5	P1201587-1.01		-	✓	0.000	0.001	0.001	0.000482	<0.003
6	-1.01 MS 0.05 PPM		-	✓	0.000	0.094	0.044	0.0382	76% RPD
7	-1.01 MSD		-	✓	0.000	0.046	0.046	0.0400	80% 5%
8	-2.01		-	✓	0.000	0.002	0.002	0.00136	<0.003
9	-2.01 VS 0.03 PPM		-	✓	0.000	0.036	0.036	0.0312	104%
10	-3.01		-	✓	0.001	0.003	0.002	0.00136	<0.003
11	-4.01		-	✓	0.001	0.001	0.000	-0.000397	<0.003
12	-5.01		-	✓	0.002	0.002	0.000	-0.000397	<0.003
13	CCV1 0.05 PPM		-	✓	0.000 ~~0.002~~	0.057 ~~0.054~~ EI 4/24/12	0.057	0.0497	99%
14	CCB1		-	✓	0.000	0.000	0.000	-0.000397	<0.003
15	P1201587 -6.01		-	✓	0.002	0.002	0.000	-0.000397	<0.003
16	-7.01		-	✓	0.000	0.000	0.000	-0.000397	<0.003
17	P1201588-1.01		-	✓	0.009	0.010	0.001	0.000482	<0.003

pH Requirement: Method 7196A (2 ± 0.5) * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of S24-0327120I @ 1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-0223120I ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @ 1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: EI Date/Time: 4/24/12 @ 1535

Analyzed By: EI Date/Time: 4/24/12 @ 1600

Reviewed By: KL Date: 4/26/12

Cr6LIQ.xls

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Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

47

Service Request#(s): P1201587 ; P1201588

Stock#: 524-02231201 TV=10 PPM Exp 8/23/12

ICV/CCV#: 524-03271201 TV=100PPM Exp 7/2013

Run#: 289484

Prep Run#:

Conc. H_2SO_4 Lot#: EMD 49784 Exp 11/2014

Coloring Reagent Ref#: 524-04161203 Exp: 5/16/12

Working Curve:

Prep Dilution		NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L		0.00	0.01	0.05	0.1	0.999955805
Absorbance @ 540 nm		0	0.012	0.058	0.114	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	P1201588 -2.03	10mL	–	✓	0.001	0.011	0.010	0.00839	
2	2.03 MS 0.05 PPM	↓	–	✓	0.001	0.066	0.065	0.0567	96% RPD
3	2.03 MSD	↓	–	✓	0.001	0.066	0.065	0.0567	96% 0%
4	3.01	↓	–	✓	0.000	0.000	0.000	-0.000347	<0.003
5	3.01 US 0.03 PPM	↓	–	✓	0.000	0.035	0.035	0.0303	101%
6	CCV 2 0.05 PPM	↓	–	✓	0.000	0.057	0.057	0.0497	99%
7	CCB 2	↓	–	✓	0.000	0.000	0.000	-0.000347	<0.003
8									
9									
10									
11					SPACE	NOT USED			
12									
13									
14									
15									
16									
17									

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of 524-03271201 @1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-02231201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↓ ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of ↓ @1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: EI Date/Time: 4/14/12 @ 1535

Analyzed By: EI Date/Time: 4/14/12 @ 1600

Reviewed By: KB Date: 4/20/12

Cr6LIQ.xls

5/19/11 JR

524-05191103 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JR05641 exp: 6/15/14) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 491841 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JR

524-05201101 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT# 110225
EXP: 12/2013

5/20/11 JR

524-05201103 pH 4.000 BUFFER
Purchased
JT Baker CAT# 3657-01 500mL
LOT# J36503
EXP: 9/30/13

5/20/11 JR

524-05201103 pH 7.00 BUFFER
Purchased
BDH CAT# BDH5058-500mL
LOT# 110336I
EX: 3/2013

10/17/11 SR

S24-10171102 1000PPM NH3
0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL
10/ S24-10171101 (0.1N H_2SO_4 EXP: 10/17/12)
EXP: 4/17/12

10/17/11 SR

S24-10171103 IC Eluent
100 mL of S24-09201103 (10x Conc Eluent; EXP: 9/20/12
↑ 1L w/ DI. DEGASSED.
EXP: 10/31/11

10/21/11 SR

S24-10211101 pH 7.000 Buffer
Purchased
BDH Cat No: BDH5046-500mL
LOT # 1107491
EXP: 7/2013

10/24/11 SR

S24-10241101 pH 4.000 Buffer
Purchased
JT Baker Cat No: 5657-01 500mL
LOT # K04505
EXP: 2/28/13

10/24/11 SR

S24-10241102 pH 7.38 Buffer
Purchased
BDH Cat No BDH6058-500mL
LOT # 1109034
EXP: 8/2013

10/24/11 SR

524-1024/103 pH 10.000 Buffer
Purchased
JT Baker Cat no: 5655-01
Lot # K07507
Exp: 2/28/13

10/25/11 SR

524-1025/101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 95/2/1 475mL
Lot # PN1 P/N 207475-A01
Exp: 10/25/12

10/25/11 SR

524-1025/102 A,B,C,D,E pH Filling Sol'n
Purchased
Thermo Scientific Orion 8/0007 5pk/60mL
Lot: PS1
Exp: 10/25/12

11/1/11 SR

524-1101/101 IC02 Eluent
100 ml 524-0920/103 (10x conc eluent. Exp. 9/20/13) 1 L DI H2O DEGASSED
Exp: 11/15/11

11/1/11 SR

524-1101/102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J0564) exp: 6/15/15 in 100 mL Methanol (B&J AC 322 exp: 10/12/16)
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H2SO4 (EMD [illegible] exp: [illegible]). Bring [illegible]

2/9/12 SR 524-0209/202 Nitrite Soln
0.2500g N-1-Naphthylethylene diamine Dihydrochloride
(JT Baker; lot IK22587 EXP 10/19/14) ↑ 250mL w/ DI
EXP: 8/9/12

2/9/12 SR 524-0209/203 IC02 Eluent
100mL 524-0920 1103 (for Conc Eluent, EXP
9/20/12) ↑ 8/9/12 1 L w/ DI H2O. Degassed.
2/23/12

2/9/12 SR 524-0209/204 IC02 POR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER 30564)
exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 10/16/16)
Add to 1 L volumetric flask containing 500 mL DI water +
5.6 mL conc. H2SO4 (EMD 49282 exp: 11/20/14). Bring
up to volume w/ DI H2O; mix and degas.

EXP: 2/14/12

2/10/12 SR 524-02/0120/1 995 ~~1000~~ 8a 2/10/12 ppm Cr6+
Purchased
INORGANIC VENTURES CCCR(6)1-1
LOT: 02-CR03049
EXP: 5/1/13

2/13/12 SR 524-0213/201
5.6mL conc H_2SO_4 (EMD 49184, EXP: 11/20/14) ↑
to 1L w/ $DI H_2O$
EXP: 2/13/13

2/14/12 SA — 524-02141203 pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 111214G
EXP: 11/2013

2/20/12 SA — 524-02201201 500PPM NO_2 STOCK
Purchased
RICCA CHEMICAL Co Cat# 5444.5-4 120ml
LOT# 1262292
EXP: 8/12

2/22/12 SA — 524-02221201 Alkaline DIGESTION Sol
30.0g ~~NaOH~~ $NaHCO_3$ (EMD 4632715; EXP: 10/11/12) + 20.0g Na_2
(EMD 4702713C; EXP: 10/11/12) ↑ DI
EXP: 3/22/12

2/23/12 SA — 524-02231201 10PPM Cr^{6+} Std
1.0ml 524-02101201 (1000PPM Cr^{6+}; EXP: 3/1/13)
↑ 100ml w/ DI H_2O
EXP: 8/23/12

2/27/12 SA — 524-02271201 0.1N H_2SO_4
5.6ml Conc H_2SO_4 (EMD 4928-4; EXP: 11/20/
↑ 2L W/ DI H_2O
EXP: 2/27/13

3/23/12 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 11C9134
EXP: 8/2013

3/27/12 524-0327/201 100 PPM Cr^{6+} ICV
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
LOT # 1201701
EXP: 7/2013

3/28/12 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # 104514 500ml plastic
EXP: 1/31/14

3/28/12 524-0328/202 Methylene Blue 1% Aq Sol.
100ml Purchased
Alfa Aesar stock # 42771
LOT # H04X026
EXP: 3/28/13

4/16/12 S24-0416/201 IC02 Eluent
100mL S24-0314/201 (10x conc eluent, EXP: 10/11/12) ↑ 1L w/ DI H2O. Degassed
EXP: 4/30/12

4/16/12 S24-0416/202 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker JT5641 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 2/27/17). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4G7384 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 4/21/12

4/16/12 S24-0416/203 Cr6+ Coloring Reagent
0.2500g 1,5-Diphenylcarbohydrazide Powder (JT Baker JT5641; EXP: 6/15/15) ↑ 50mL w/ Acetone (EMD Lot 47154; EXP 9/24/12)
EXP: 5/16/12

4/16/12 S24-0416/204 12.5 N NaOH
100g NaOH (EMD 47022713; EXP 10/1/12 + 100mL DI H2O
EXP: 10/11/12

0430 4/30/12

4/30/12 S24-~~0314~~/201 IC02 Eluent
100mL S24-0314/201 (10x concentrated, EXP: 10/11/12) ↑ 1 w/ DI H2O. Degassed.
EXP: 5/14/12

Columbia Analytical Services, Inc.
1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

May 11, 2012 Analytical Report for Service Request No: P1201588

Sue Anderson
Columbia Analytical Services
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

RE: JPL-GW-2Q12/100006114

Dear Sue:

Enclosed are the results of the samples submitted to our laboratory on April 24, 2012. For your reference, these analyses have been assigned our service request number P1201588.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3364. You may also contact me via Email at Howard.Holmes@alsglobal.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Howard Holmes
Project Chemist

HH/ln

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc. - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Louisiana DHH	Not available	LA110003
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
New Mexico ED	http://www.nmenv.state.nm.us/dwb/Index.htm	-
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.caslab.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	ALS/CAS Simi Valley, CA	**Service Request No.:**	P1201588
Project:	Battelle/JPL-GW-2Q12	**Date Received:**	4/24/12
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water sample was received for analysis at Columbia Analytical Services on 4/24/12. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Nitrosamines by EPA 521

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for NDMA in the replicate matrix spike analyses of sample MW-16 was outside control criteria. In general, the RPD was relatively high for all spiked compounds, which indicates a low bias in the Matrix Spike (MS)/Matrix Spike Duplicate (MSD). All spike recoveries in the MS, DMS, and associated Laboratory Control Sample (LCS) were within acceptance limits, indicating the analytical batch was in control. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

1,4-Dioxane by EPA Method 8270 SIM

No anomalies associated with the analysis of these samples were observed.

Approved by Howard Holmes **Date** 5-11-12

Chain of Custody

Intra-Network Chain of Custody

2655 Park Center Drive, Suite A • Simi Valley, CA 93065 • 805-526-7161 • FAX 805-526-7270

CAS Contact: Sue Anderson

Project Name: JPL-GW-2Q12
Project Number: 100006114
Project Manager: David Conner
Company: Battelle

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	14_DIOXANE 8270C SIM	Nitrosamines 521
P1201588-002	MW-13	3	Water	4/24/12	1100	4/24/12	KELSO	IV	IV

Test Comments

Nitrosamines - 521	P1201588-002	NDMA

8

Special Instructions/Comments	Turnaround Requirements	Report Requirements	Invoice Information
	____ **RUSH** (Surcharges Apply) **PLEASE CIRCLE WORK DAYS** 1 2 3 4 5 ____ **STANDARD** Requested FAX Date: _____ Requested Report Date: 05/11/12	____ I. Results Only ____ II. Results + QC Summaries ____ III. Results + QC and Calibration Summaries ____ IV. Data Validation Report with Raw Data PQL/MDL/J Y EDD Y	PO# P1201588 Bill to

Relinquished By: [signature] 4/24/12 1520 Received By: [signature] ARS 4/25/12 Airbill Number: _____

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC H'K

Client / Project: ALS - Simi Valley Service Request K12 P1688

Received: 4/25/12 Opened: 4/25/12 By: BT Unloaded: 4/25/12 By: BT

1. Samples were received via? *Mail* *Fed Ex* (*UPS*) *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other*_____ *NA*
3. Were custody seals on coolers? NA (N) N If yes, how many and where? 1-Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID (NA)	Tracking Number	NA	Filed
0.4	n/a	282		1Z78905X0140412867		

7. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) (*Gel Packs*) ~~*Wet Ice*~~ *Dry Ice* *Sleeves* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
15. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Nitrosamines

Organic Analysis:
Nitrosamines by EPA 521

Summary Package

Sample and QC Results

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588

Cover Page - Organic Analysis Data Package
Nitrosamines by EPA 521

Sample Name	Lab Code	Date Collected	Date Received
MW-13	P1201588-002	04/24/2012	04/24/2012

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Christina Cotnam

Date: 5/10/12 Title: Scientist

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201588
Date Collected: 04/24/2012
Date Received: 04/24/2012

Nitrosamines by EPA 521

Sample Name: MW-13
Lab Code: P1201588-002

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	77	70-130	05/01/12	Acceptable

Comments:

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1204391-4	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	102	70-130	05/02/12	Acceptable

Comments:

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201588

Surrogate Recovery Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	P1201573-002	98
MW-13	P1201588-002	77
Method Blank	KWG1204391-4	102
Batch QCMS	KWG1204391-1	93
Batch QCDMS	KWG1204391-2	96
Lab Control Sample	KWG1204391-3	87

Surrogate Recovery Control Limits (%)

Sur1 = N-Nitrosodimethylamine-d6 70-130

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/01/2012
Time Analyzed: 17:04

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-2
Analysis Lot: KWG1204793

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	32,908	20.53
	Upper Limit ==>	42,780	20.93
	Lower Limit ==>	23,036	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	28,060	20.52
Batch QCDMS	KWG1204391-2	26,255	20.53
MW-13	P1201588-002	33,161	20.52

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/02/2012
Time Analyzed: 01:33

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501013.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-3
Analysis Lot: KWG1204793

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	32,882	20.53
Upper Limit ==>	42,747	20.93
Lower Limit ==>	23,017	20.13
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/02/2012
Time Analyzed: 17:19

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050212-521\0502001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204794-2
Analysis Lot: KWG1204794

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	30,450	20.53
	Upper Limit ==>	39,585	20.93
	Lower Limit ==>	21,315	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Method Blank	KWG1204391-4	24,438	20.55
Batch QC	P1201573-002	29,832	20.55
Batch QCMS	KWG1204391-1	25,407	20.55

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/02/2012
Time Analyzed: 22:16

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050212-521\0502008.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204794-3
Analysis Lot: KWG1204794

	-Nitrosodi-n-propylamine-d:	
	Area	**RT**
Results ==>	27,043	20.55
Upper Limit ==>	35,156	20.95
Lower Limit ==>	18,930	20.15
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/08/2012
Time Analyzed: 21:22

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050812-521\0508013.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204795-2
Analysis Lot: KWG1204795

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	28,678	20.51
	Upper Limit ==>	37,281	20.91
	Lower Limit ==>	20,075	20.11
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	32,827	20.50
Batch QCDMS	KWG1204391-2	31,082	20.51

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/09/2012
Time Analyzed: 08:53

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050812-521\0508024.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204795-3
Analysis Lot: KWG1204795

	-Nitrosodi-n-propylamine-d:	
	Area	**RT**
Results ==>	27,403	20.51
Upper Limit ==>	35,624	20.91
Lower Limit ==>	19,182	20.11
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012 - 05/02/2012

Matrix Spike/Duplicate Matrix Spike Summary
Nitrosamines by EPA 521

Sample Name:	Batch QC	**Units:**	ng/L
Lab Code:	P1201573-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

Analyte Name	Sample Result	Batch QCMS KWG1204391-1 Matrix Spike			Batch QCDMS KWG1204391-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
N-Nitrosodimethylamine	0.96	24.2	20.0	116	17.5	20.0	83	70-130	32 *	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012

Lab Control Spike Summary
Nitrosamines by EPA 521

Extraction Method:	METHOD	**Units:**	ng/L
Analysis Method:	521	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1204391

	Lab Control Sample KWG1204391-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
N-Nitrosodimethylamine	15.6	20.0	78	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/02/2012
		Time Analyzed:	18:02

Method Blank Summary
Nitrosamines by EPA 521

Sample Name:	Method Blank	**Instrument ID:**	MS16
Lab Code:	KWG1204391-4	**File ID:**	J:\MS16\DATA\050212-521\0502002.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050112-521\0501004.D	05/01/12	19:12
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-13	P1201588-002	J:\MS16\DATA\050112-521\0501009.D	05/01/12	22:44
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050812-521\0508016.D	05/08/12	23:29
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201588
Date Extracted: 04/30/2012
Date Analyzed: 05/01/2012
Time Analyzed: 19:12

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name: Lab Control Sample
Lab Code: KWG1204391-3

Extraction Method: METHOD
Analysis Method: 521

Instrument ID: MS16
File ID: J:\MS16\DATA\050112-521\0501004.D

Level: Low
Extraction Lot: KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-13	P1201588-002	J:\MS16\DATA\050112-521\0501009.D	05/01/12	22:44
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/08/2012
		Time Analyzed:	23:29

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050812-521\0508016.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-13	P1201588-002	J:\MS16\DATA\050112-521\0501009.D	05/01/12	22:44
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Level ID	File ID
A	J:\MS16\DATA\031112-521\0311005.D
B	J:\MS16\DATA\031112-521\0311006.D
C	J:\MS16\DATA\031112-521\0311007.D
D	J:\MS16\DATA\031112-521\0311008.D
E	J:\MS16\DATA\031112-521\0311009.D
F	J:\MS16\DATA\031112-521\0311010.D
G	J:\MS16\DATA\031112-521\0311011.D
H	J:\MS16\DATA\031112-521\0311012.D
I	J:\MS16\DATA\031112-521\0311013.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
N-Nitrosodimethylamine-d6							C	1.0	1.28	D	2.0	2.08	E	5.0	2.86
	F	7.0	3.66	G	10	4.73	H	15	4.42	I	20	5.18			
N-Nitrosodimethylamine				B	0.50	1.18	C	1.0	1.63	D	2.0	2.42	E	5.0	2.51
	F	7.0	3.11	G	10	3.75	H	15	3.50	I	20	3.88			

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
N-Nitrosodimethylamine-d6	SURR	Quadratic	COD	0.992		≥0.99	3.46		
N-Nitrosodimethylamine	MS	Quadratic	COD	0.994		≥0.99	2.75		

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Calibration Date: 03/11/2012
Date Analyzed: 03/12/2012

Second Source Calibration Verification
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration ID: CAL11326
Units: ug/L

File ID: J:\MS16\DATA\031112-521\0311014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine	10	7.7	2.75	2.42	NA	-23	± 30 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/01/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	0.98		3.46	0.816	NA	-2	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	0.89		2.75	1.53	NA	-11	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	4.3		3.46	2.75	NA	-15	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	5.4		2.75	3.21	NA	8	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.3		3.46	1.80	NA	25	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.3		2.75	2.78	NA	30	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502008.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.1		3.46	3.43	NA	1	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.3		2.75	3.88	NA	27	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/08/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.2		3.46	1.72	NA	23	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.2		2.75	2.36	NA	16	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/09/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508024.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.5		3.46	3.84	NA	10	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.6		2.75	4.04	NA	31	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201588

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1204793
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
521\0501.D	GC/MS Tuning - Decafluorotriphenylp	KWG1204793-1	5/1/2012	16:22		5/1/2012	16:48
\0501001.D	Continuing Calibration Verification	KWG1204793-2	5/1/2012	17:04		5/1/2012	17:30
\0501004.D	Lab Control Sample	KWG1204391-3	5/1/2012	19:12		5/1/2012	19:38
\0501007.D	Batch QCDMS	KWG1204391-2	5/1/2012	21:19		5/1/2012	21:45
\0501008.D	ZZZZZZ	ZZZZZZ	5/1/2012	22:01		5/1/2012	22:27
\0501009.D	MW-13	P1201588-002	5/1/2012	22:44		5/1/2012	23:10
\0501010.D	ZZZZZZ	ZZZZZZ	5/1/2012	23:26		5/1/2012	23:52
\0501011.D	ZZZZZZ	ZZZZZZ	5/2/2012	00:09		5/2/2012	00:35
\0501013.D	Continuing Calibration Verification	KWG1204793-3	5/2/2012	01:33		5/2/2012	01:59

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201588

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1204794
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
521\0502.D	GC/MS Tuning - Decafluorotriphenylp	KWG1204794-1	5/2/2012	16:37		5/2/2012	17:03
\0502001.D	Continuing Calibration Verification	KWG1204794-2	5/2/2012	17:19		5/2/2012	17:45
\0502002.D	Method Blank	KWG1204391-4	5/2/2012	18:02		5/2/2012	18:28
\0502004.D	Batch QC	P1201573-002	5/2/2012	19:26		5/2/2012	19:52
\0502005.D	Batch QCMS	KWG1204391-1	5/2/2012	20:09		5/2/2012	20:35
\0502008.D	Continuing Calibration Verification	KWG1204794-3	5/2/2012	22:16		5/2/2012	22:42

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201588

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1204795
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
\0508012.D	GC/MS Tuning - Decafluorotriphenylp	KWG1204795-1	5/8/2012	20:39		5/8/2012	21:05
\0508013.D	Continuing Calibration Verification	KWG1204795-2	5/8/2012	21:22		5/8/2012	21:48
\0508016.D	Lab Control Sample	KWG1204391-3	5/8/2012	23:29		5/8/2012	23:55
\0508019.D	Batch QCDMS	KWG1204391-2	5/9/2012	01:36		5/9/2012	02:02
\0508024.D	Continuing Calibration Verification	KWG1204795-3	5/9/2012	08:53		5/9/2012	09:19

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201588
Date Extracted: 04/30/2012

Extraction Prep Log
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Extraction Lot: KWG1204391
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MW-13	P1201588-002	04/24/12	04/24/12	500ml	1ml	NA	
Method Blank	KWG1204391-4	NA	NA	500ml	1ml	NA	
Batch QCMS	KWG1204391-1	NA	NA	500ml	1ml	NA	
Batch QCDMS	KWG1204391-2	NA	NA	500ml	1ml	NA	
Batch QC	P1201573-002	NA	NA	500ml	1ml	NA	
Lab Control Sample	KWG1204391-3	NA	NA	500ml	1ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

QC Reports

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201588

Surrogate Recovery Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	P1201573-002	98
MW-13	P1201588-002	77
Method Blank	KWG1204391-4	102
Batch QCMS	KWG1204391-1	93
Batch QCDMS	KWG1204391-2	96
Lab Control Sample	KWG1204391-3	87

Surrogate Recovery Control Limits (%)

Sur1 = N-Nitrosodimethylamine-d6 70-130

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/01/2012
Time Analyzed: 17:04

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-2
Analysis Lot: KWG1204793

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	32,908	20.53
	Upper Limit ==>	42,780	20.93
	Lower Limit ==>	23,036	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	28,060	20.52
Batch QCDMS	KWG1204391-2	26,255	20.53
MW-13	P1201588-002	33,161	20.52

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/02/2012
Time Analyzed: 01:33

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501013.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-3
Analysis Lot: KWG1204793

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	32,882	20.53
Upper Limit ==>	42,747	20.93
Lower Limit ==>	23,017	20.13
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/02/2012
Time Analyzed: 17:19

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050212-521\0502001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204794-2
Analysis Lot: KWG1204794

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	30,450	20.53
	Upper Limit ==>	39,585	20.93
	Lower Limit ==>	21,315	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Method Blank	KWG1204391-4	24,438	20.55
Batch QC	P1201573-002	29,832	20.55
Batch QCMS	KWG1204391-1	25,407	20.55

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Analyzed:**	05/02/2012
		Time Analyzed:	22:16

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID:	J:\MS16\DATA\050212-521\0502008.D	**Lab Code:**	KWG1204794-3
Instrument ID:	MS16	**Analysis Lot:**	KWG1204794
Analysis Method:	521		

	-Nitrosodi-n-propylamine-d:	
	Area	**RT**
Results ==>	27,043	20.55
Upper Limit ==>	35,156	20.95
Lower Limit ==>	18,930	20.15
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/08/2012
Time Analyzed: 21:22

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050812-521\0508013.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204795-2
Analysis Lot: KWG1204795

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	28,678	20.51
	Upper Limit ==>	37,281	20.91
	Lower Limit ==>	20,075	20.11
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	32,827	20.50
Batch QCDMS	KWG1204391-2	31,082	20.51

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/09/2012
Time Analyzed: 08:53

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050812-521\0508024.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204795-3
Analysis Lot: KWG1204795

	-Nitrosodi-n-propylamine-d
	Area	RT
Results ==>	27,403	20.51
Upper Limit ==>	35,624	20.91
Lower Limit ==>	19,182	20.11
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012 - 05/02/2012

Matrix Spike/Duplicate Matrix Spike Summary
Nitrosamines by EPA 521

Sample Name:	Batch QC	**Units:**	ng/L
Lab Code:	P1201573-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

Analyte Name	Sample Result	Batch QCMS KWG1204391-1 Matrix Spike Result	Matrix Spike Expected	Matrix Spike %Rec	Batch QCDMS KWG1204391-2 Duplicate Matrix Spike Result	Duplicate Matrix Spike Expected	Duplicate Matrix Spike %Rec	%Rec Limits	RPD	RPD Limit
N-Nitrosodimethylamine	0.96	24.2	20.0	116	17.5	20.0	83	70-130	32 *	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012

Lab Control Spike Summary
Nitrosamines by EPA 521

Extraction Method:	METHOD	**Units:**	ng/L
Analysis Method:	521	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1204391

	Lab Control Sample KWG1204391-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
N-Nitrosodimethylamine	15.6	20.0	78	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/02/2012
		Time Analyzed:	18:02

Method Blank Summary
Nitrosamines by EPA 521

Sample Name:	Method Blank	**Instrument ID:**	MS16
Lab Code:	KWG1204391-4	**File ID:**	J:\MS16\DATA\050212-521\0502002.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050112-521\0501004.D	05/01/12	19:12
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-13	P1201588-002	J:\MS16\DATA\050112-521\0501009.D	05/01/12	22:44
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050812-521\0508016.D	05/08/12	23:29
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012
		Time Analyzed:	19:12

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050112-521\0501004.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-13	P1201588-002	J:\MS16\DATA\050112-521\0501009.D	05/01/12	22:44
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/08/2012
		Time Analyzed:	23:29

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050812-521\0508016.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-13	P1201588-002	J:\MS16\DATA\050112-521\0501009.D	05/01/12	22:44
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Raw Data

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	04/24/2012
Sample Matrix:	Water	**Date Received:**	04/24/2012

Nitrosamines by EPA 521

Sample Name:	MW-13	**Units:**	ng/L
Lab Code:	P1201588-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	77	70-130	05/01/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050112-521\0501009.D
Lab ID: P1201588-002
RunType: SMPL
Matrix: WATER

Date Acquired: 05/01/2012 22:44
Date Quantitated: 05/09/2012 11:53
Batch ID: KWG1204793
Analysis Method: 521
ListJoinID: LJ11419

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501009.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 22:44	**Quant Date:**	05/09/2012 11:53	**Vial:**	10
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201588-002			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**	04/24/2012	**Receive Date:**	04/24/2012

Analysis Lot:	KWG1204793	**Prep Lot:**	KWG1204391	**Report Group:**	P1201588
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121340	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:	Nitrosamines by EPA 521	**Report List ID:**	LJ11419
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.52	-0.01	97	33161	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.81	-0.04	0.00	50	19348	7.66	77	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine				47	0d		0.32	U	

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501009.D Vial: 10
Acq On : 01 May 12 22:44 Operator: SVO-DW
Sample : P1201588-002 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:16:59 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.52	97	33161	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.81	50	19348	7.66	ug/L	-0.14
Target Compounds						Qvalue
8) NPYR	23.08	55	380	0.69	ug/L	94

(#) = qualifier out of range (m) = manual integration
0501009.D 031112_D14.M Wed May 09 11:58:48 2012 Page 1

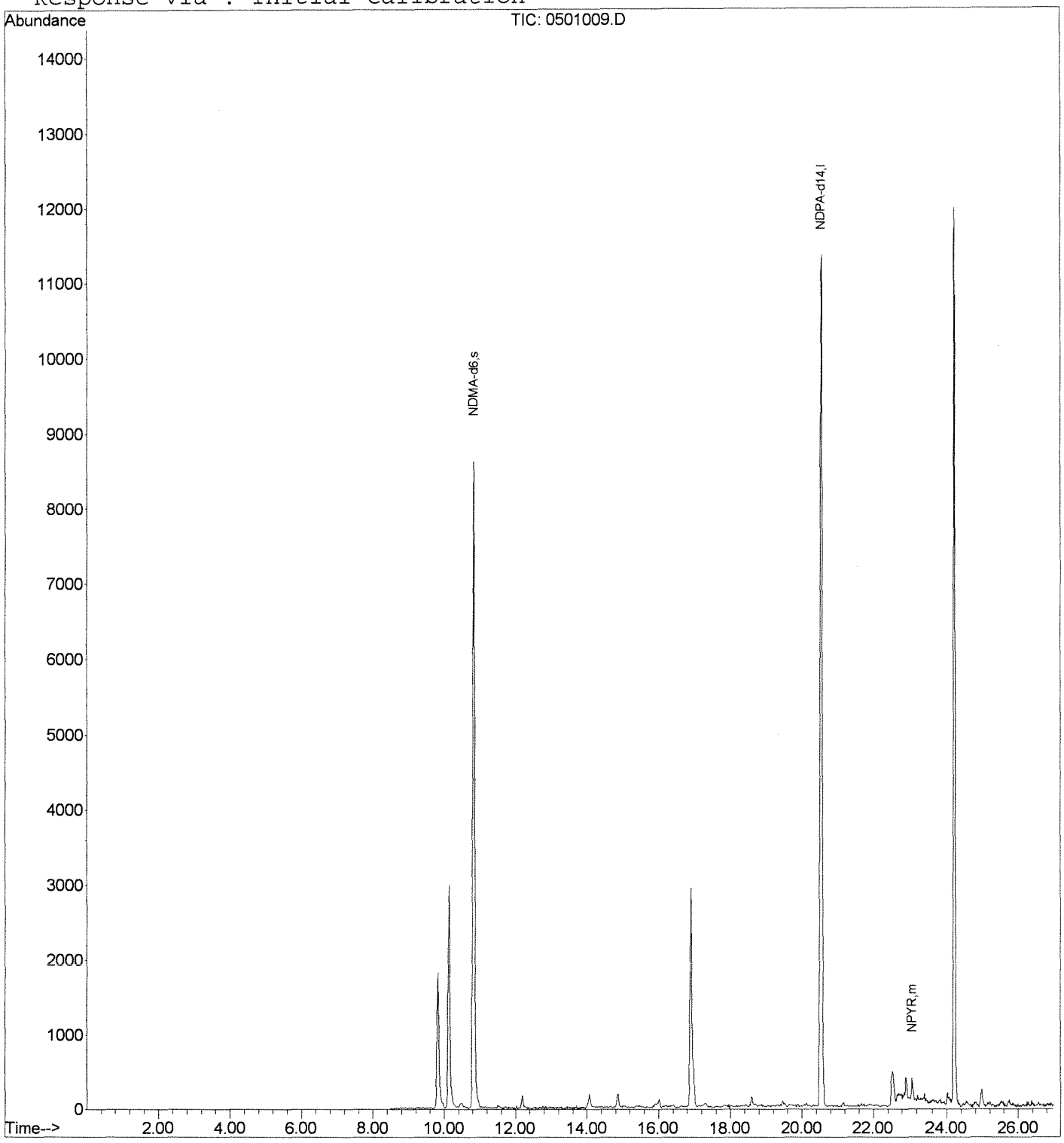
Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501009.D
Acq On : 01 May 12 22:44
Sample : P1201588-002
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 9 11:53 2012

Vial: 10
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00

Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1204391-4	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	102	70-130	05/02/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050212-521\0502002.D
Lab ID: KWG1204391-4
RunType: MB
Matrix: WATER

Date Acquired: 05/02/2012 18:02
Date Quantitated: 05/09/2012 12:02
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502002.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 18:02	**Quant Date:**	05/09/2012 12:02	**Vial:**	4
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1204391-4			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204794	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121345	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050212-521\0502.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	0.02	97	24438	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.85	0.02	0.00	50	20604	10.20	102	70-130	OK

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine				47	0d		0.32	U	
1	N-Nitrosomethylethylamine				61	0		0.50	U	
1	N-Nitrosodiethylamine				75	0		0.76	U	
1	N-Nitrosodi-n-propylamine				89	0		0.76	U	
1	N-Nitrosopyrrolidine	23.09	-0.13	-0.01	55	225	0.6700	1.34	J	
1	N-Nitrosopiperidine				69	0		0.55	U	
1	N-Nitrosodi-n-butylamine				57	0		0.77	U	

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502002.D Vial: 4
Acq On : 02 May 12 18:02 Operator: SVO-DW
Sample : 043012-MB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:49:03 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

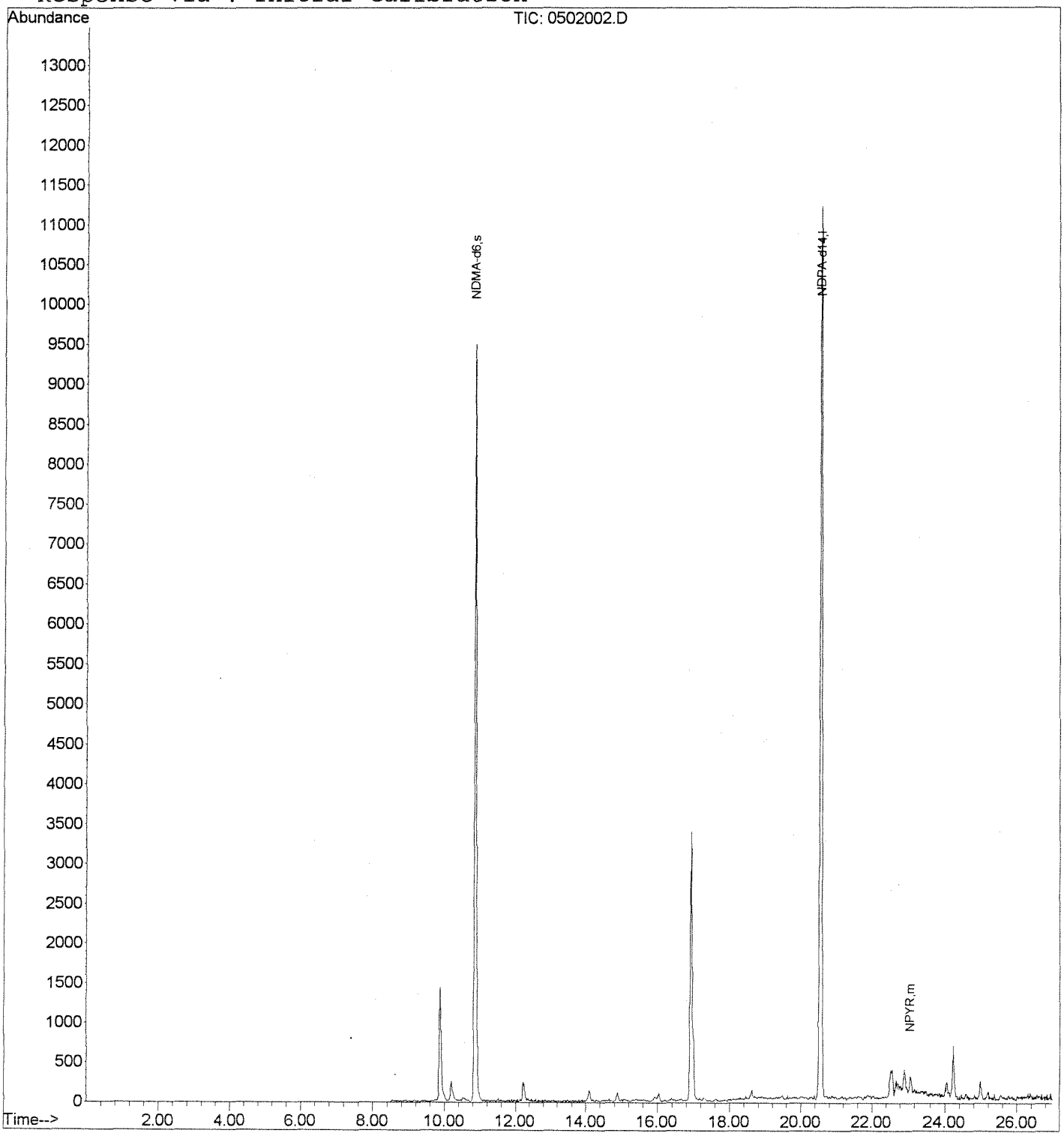
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	24438	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.85	50	20604	10.20	ug/L	-0.10
Target Compounds						Qvalue
8) NPYR	23.09	55	225	0.67	ug/L	94

(#) = qualifier out of range (m) = manual integration
0502002.D 031112_D14.M Wed May 09 12:11:55 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502002.D Vial: 4
Acq On : 02 May 12 18:02 Operator: SVO-DW
Sample : 043012-MB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:02 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



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Analytical Results

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Batch QCMS	**Units:**	ng/L
Lab Code:	KWG1204391-1	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**24.2**		2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	93	70-130	05/02/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050212-521\0502005.D
Lab ID: KWG1204391-1 -- P1201573-002MS
RunType: MS
Matrix: WATER

Date Acquired: 05/02/2012 20:09
Date Quantitated: 05/03/2012 13:49
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosopiperidine	52.8	NA	50	NR
	N-Nitrosodi-n-butylamine	54.8	NA	50	b

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502005.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 20:09	**Quant Date:**	05/03/2012 13:49	**Vial:**	7
Run Type:	MS			**Dilution:**	1.0
Lab ID:	KWG1204391-1 -- P1201573-002MS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204794	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121342	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	0.02	97	25407	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.86	0.03	0.00	50	19029	9.31	93	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.98	0.01	0.00	47	21217	12.12	24.2		
1	N-Nitrosomethylethylamine	13.56	-0.01	0.00	61	21018	8.25	16.5		
1	N-Nitrosodiethylamine	15.67	0.02	0.00	75	3521	9.92	19.8		
1	N-Nitrosodi-n-propylamine	20.85	-0.02	0.00	89	2335	7.85	15.7		
1	N-Nitrosopyrrolidine	23.23	0.01	0.00	55	39637	10.76	21.5		
1	N-Nitrosopiperidine	24.15	0.01	0.00	69	91334	13.57	27.1		
1	N-Nitrosodi-n-butylamine	26.40	0.02	0.00	57	25373	11.61	23.2		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502005.D Vial: 7
Acq On : 02 May 12 20:09 Operator: SVO-DW
Sample : P1201573-002 MS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:49:43 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

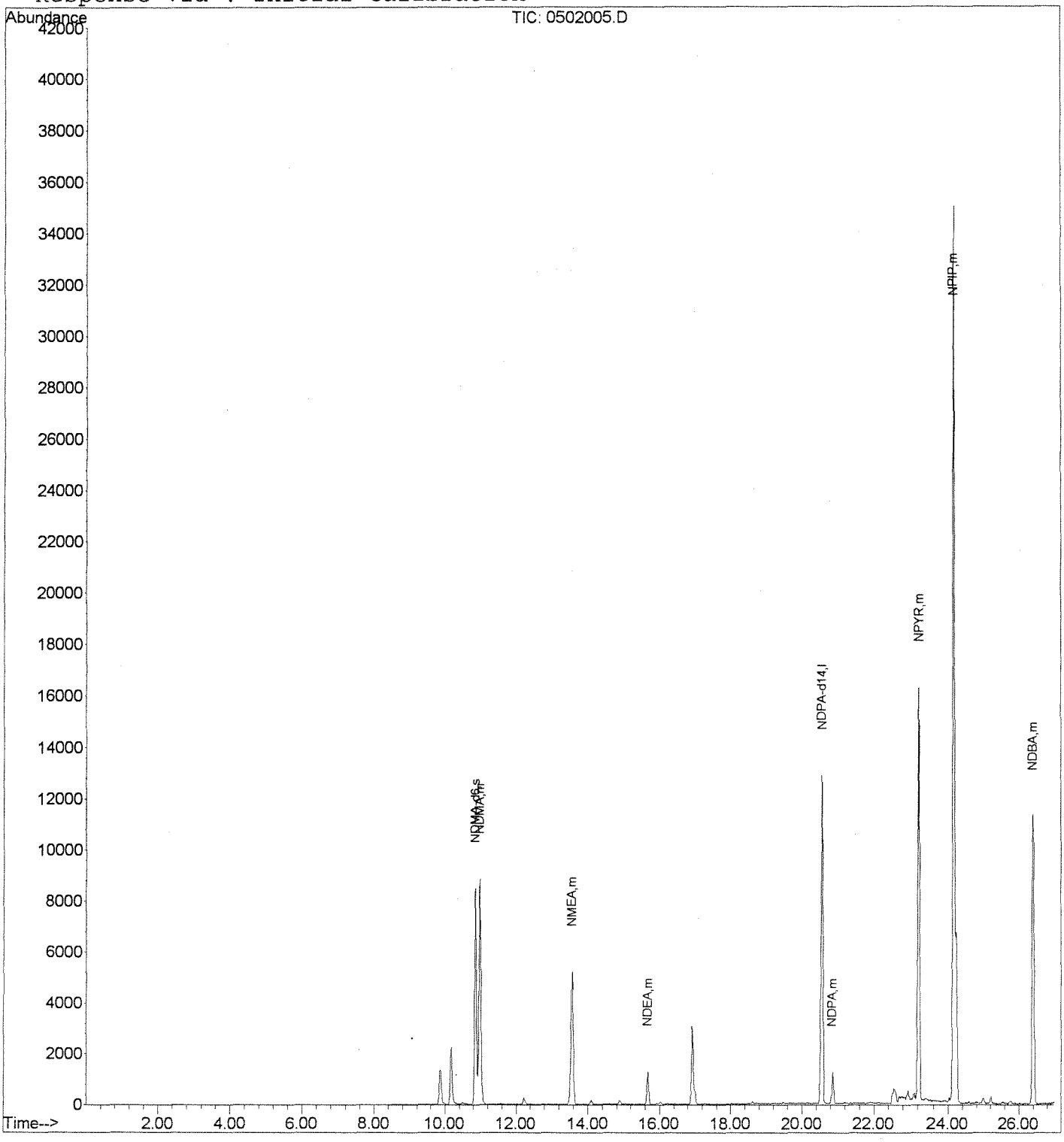
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	25407	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.86	50	19029	9.31	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.98	47	21217	12.12	ug/L	95
5) NMEA	13.56	61	21018	8.25	ug/L	100
6) NDEA	15.67	75	3521	9.92	ug/L	100
7) NDPA	20.85	89	2335	7.85	ug/L	100
8) NPYR	23.23	55	39637	10.76	ug/L	95
9) NPIP	24.15	69	91334	13.57	ug/L	100
10) NDBA	26.40	57	25373	11.61	ug/L	100

(#) = qualifier out of range (m) = manual integration
0502005.D 031112_D14.M Wed May 09 12:11:56 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502005.D Vial: 7
Acq On : 02 May 12 20:09 Operator: SVO-DW
Sample : P1201573-002 MS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:49 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201588
Date Collected: NA
Date Received: NA

Nitrosamines by EPA 521

Sample Name: Batch QCDMS
Lab Code: KWG1204391-2

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**17.5**		2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	96	70-130	05/09/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050112-521\0501007.D
Lab ID: KWG1204391-2 -- P1201573-002DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/01/2012 21:19
Date Quantitated: 05/02/2012 16:16
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA		x
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosodi-n-butylamine	50.6	NA	50	NR
Surrogates	N-Nitrosodimethylamine-d6	67	70	130	b

Primary Review: 5/9/12

Secondary Review: 5/9/12

Printed: 05/09/2012 12:36:49
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501007.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 21:19	**Quant Date:**	05/02/2012 16:16	**Vial:**	8
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1204391-2 -- P1201573-002DMS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204793	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121343	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	0.00	97	26255	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.85	0.00	0.00	50	12818	6.66	67	70-130	*	NR

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97		0.00	47	14833	8.74	17.5		
1	N-Nitrosomethylethylamine	13.55	0.02	0.00	61	14416	6.05	12.1		
1	N-Nitrosodiethylamine	15.65	0.01	0.00	75	2466	7.38	14.8		
1	N-Nitrosodi-n-propylamine	20.83		0.00	89	3075	9.48	19.0		
1	N-Nitrosopyrrolidine	23.20	-0.01	0.00	55	39232	10.37	20.7		
1	N-Nitrosopiperidine	24.12	-0.01	0.00	69	75431	11.25	22.5		
1	N-Nitrosodi-n-butylamine	26.36	-0.02	0.00	57	21808	10.21	20.4		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501007.D Vial: 8
Acq On : 01 May 12 21:19 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:16:58 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

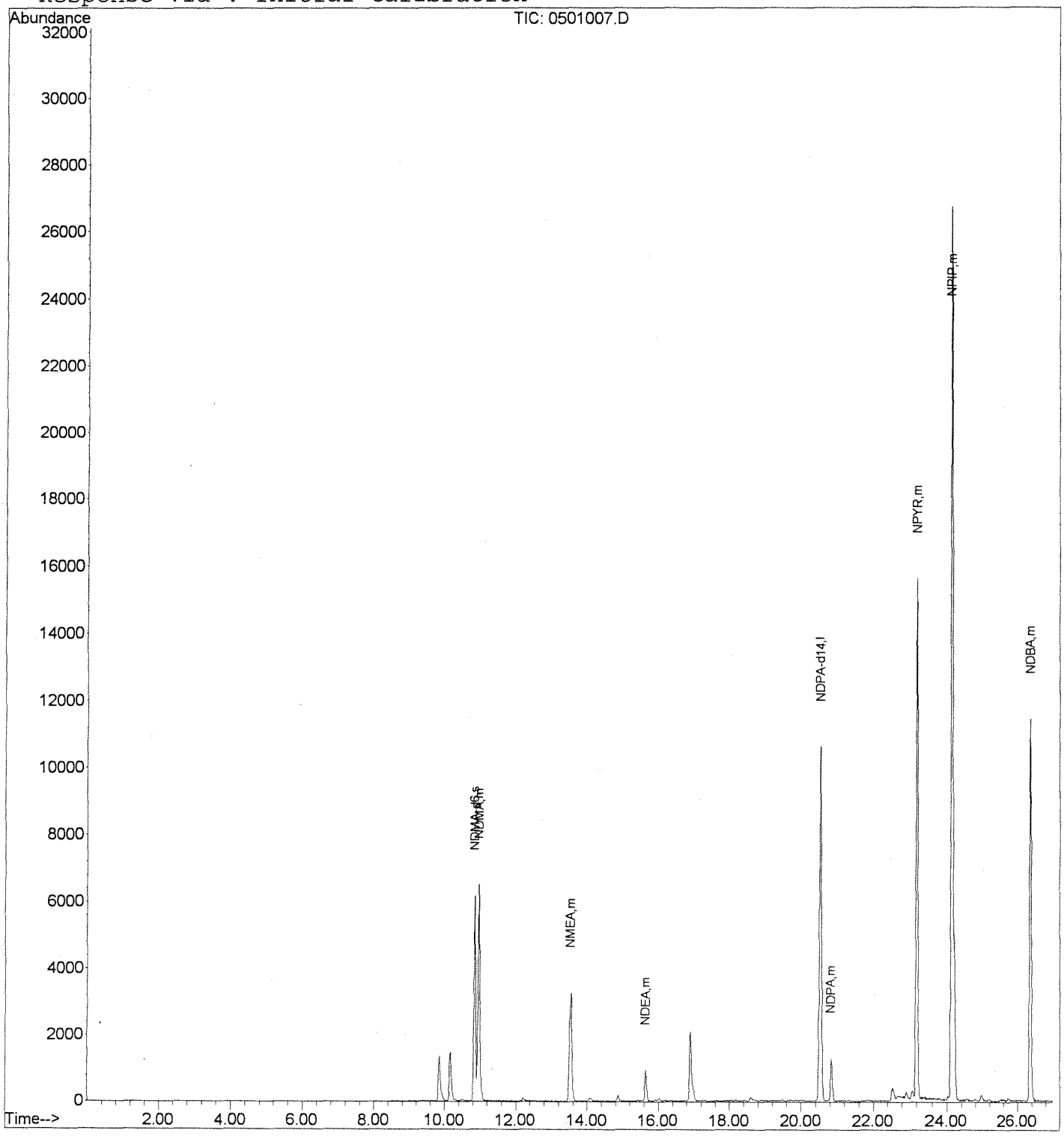
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	26255	50.00	ug/L	-0.04
System Monitoring Compounds						
3) NDMA-d6	10.85	50	12818	6.66	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.97	47	14833	8.74	ug/L	96
5) NMEA	13.55	61	14416	6.05	ug/L	100
6) NDEA	15.65	75	2466	7.38	ug/L	100
7) NDPA	20.83	89	3075	9.48	ug/L	100
8) NPYR	23.20	55	39232	10.37	ug/L	94
9) NPIP	24.12	69	75431	11.25	ug/L	100
10) NDBA	26.36	57	21808	10.21	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501007.D 031112_D14.M Wed May 09 12:06:37 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501007.D Vial: 8
Acq On : 01 May 12 21:19 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 2 16:16 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Exception Report

Data File: J:\MS16\DATA\050812-521\0508019.D
Lab ID: KWG1204391-2 -- P1201573-002DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/09/2012 01:36
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosopiperidine	53.6	NA	50	NR
	N-Nitrosodi-n-butylamine	69.4	NA	50	↓

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508019.D			**Instrument:**	MS16
Acqu Date:	05/09/2012 01:36	**Quant Date:**	05/09/2012 12:13	**Vial:**	16
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1204391-2 -- P1201573-002DMS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204795	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121343	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.51	0.00	97	31082	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.86	-0.02	0.00	50	24170	9.58	96	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97	-0.02	0.00	47	25741	12.04	24.1		NR
1	N-Nitrosomethylethylamine	13.53	-0.04	0.00	61	24709	8.01	16.0		
1	N-Nitrosodiethylamine	15.65	0.01	0.00	75	4409	10.10	20.2		
1	N-Nitrosodi-n-propylamine	20.81	-0.02	0.00	89	4250	10.69	21.4		
1	N-Nitrosopyrrolidine	23.19		0.00	55	50529	11.14	22.3		
1	N-Nitrosopiperidine	24.11		0.00	69	97644	12.12	24.2		
1	N-Nitrosodi-n-butylamine	26.34		0.00	57	27954	10.79	21.6		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508019.D Vial: 16
Acq On : 09 May 2012 01:36 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:32 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

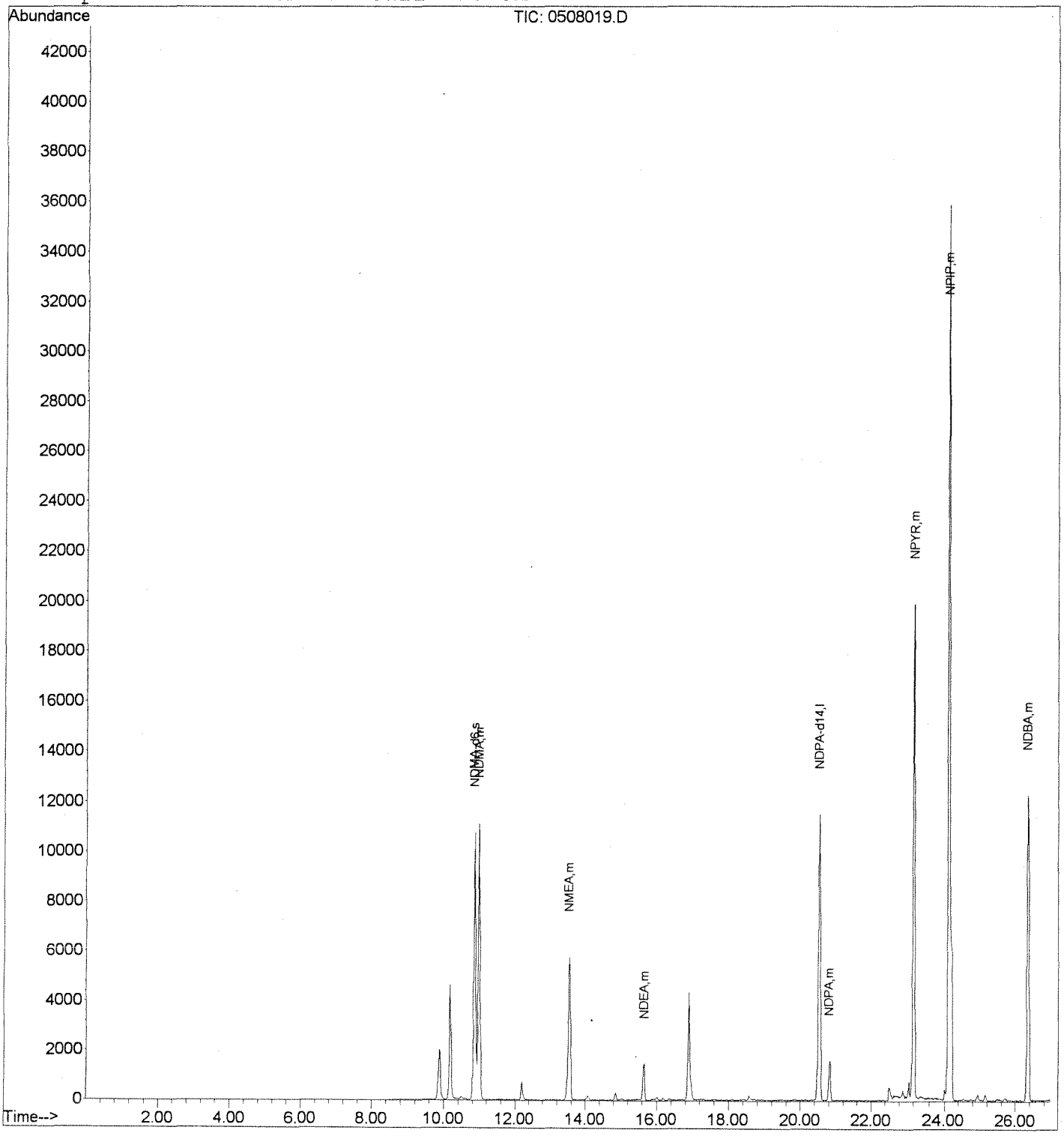
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.51	97	31082	50.00	ug/L	-0.06
System Monitoring Compounds						
3) NDMA-d6	10.86	50	24170	9.58	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.97	47	25741	12.04	ug/L	97
5) NMEA	13.53	61	24709	8.01	ug/L	100
6) NDEA	15.65	75	4409	10.10	ug/L	100
7) NDPA	20.81	89	4250	10.69	ug/L	100
8) NPYR	23.19	55	50529	11.14	ug/L	94
9) NPIP	24.11	69	97644	12.12	ug/L	100
10) NDBA	26.34	57	27954	10.79	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508019.D 031112_D14.M Wed May 09 12:16:21 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508019.D Vial: 16
Acq On : 09 May 2012 01:36 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Batch QC	**Units:**	ng/L
Lab Code:	P1201573-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**0.96**	J	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	98	70-130	05/02/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050212-521\0502004.D
Lab ID: P1201573-002
RunType: SMPL
Matrix: WATER

Date Acquired: 05/02/2012 19:26
Date Quantitated: 05/03/2012 13:49
Batch ID: KWG1204794
Analysis Method: 521
ListJoinID: LJ11419

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502004.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 19:26	**Quant Date:**	05/03/2012 13:49	**Vial:**	6
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201573-002			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**	04/23/2012	**Receive Date:**	04/23/2012

Analysis Lot:	KWG1204794	**Prep Lot:**	KWG1204391	**Report Group:**	P1201573
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121338	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:	Nitrosamines by EPA 521	**Report List ID:**	LJ11419
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	0.02	97	29832	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.84	0.01	0.00	50	23994	9.84	98	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.98	0.01	0.00	47	192	0.4800	0.96	J	

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502004.D Vial: 6
Acq On : 02 May 12 19:26 Operator: SVO-DW
Sample : P1201573-002 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:49:34 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

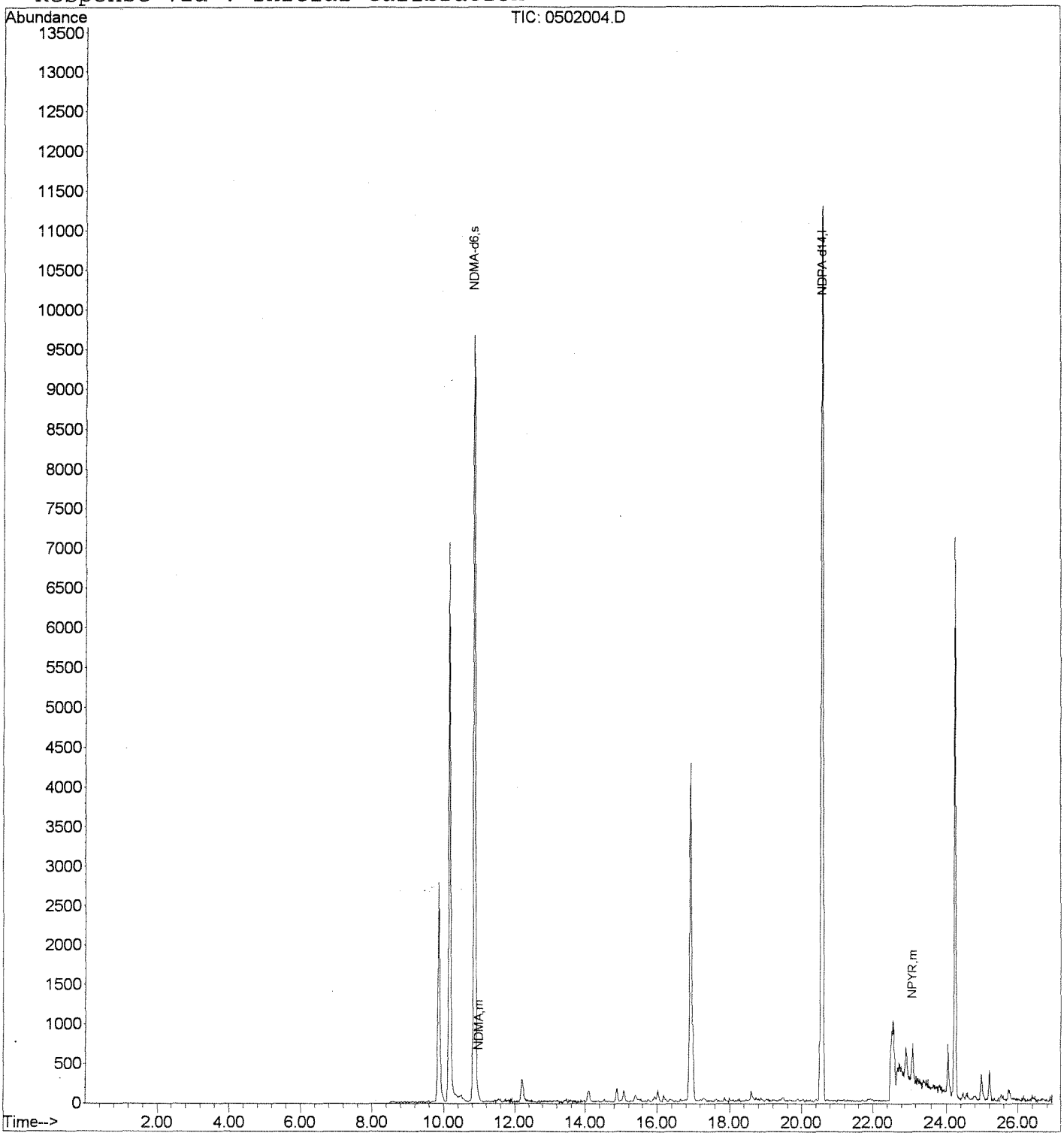
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	29832	50.00	ug/L	-0.03
System Monitoring Compounds						
3) NDMA-d6	10.84	50	23994	9.84	ug/L	-0.11
Target Compounds						Qvalue
4) NDMA	10.98	47	192	0.48	ug/L	72
8) NPYR	23.11	55	575	0.74	ug/L	94

(#) = qualifier out of range (m) = manual integration
0502004.D 031112_D14.M Wed May 09 12:11:56 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502004.D Vial: 6
Acq On : 02 May 12 19:26 Operator: SVO-DW
Sample : P1201573-002 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:49 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



COLUMBIA ANALYTICAL SERVICES, INC.
Now part of the ALS Group
Analytical Results

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Units:**	ng/L
Lab Code:	KWG1204391-3	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**15.6**		2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	87	70-130	05/08/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050112-521\0501004.D
Lab ID: KWG1204391-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/01/2012 19:12
Date Quantitated: 05/02/2012 16:16
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA		x
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosodi-n-butylamine	50.6	NA	50	NR
Surrogates	N-Nitrosodimethylamine-d6	63	70	130	b

Primary Review: 5/9/12

Secondary Review:

Printed: 05/09/2012 12:36:46
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501004.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 19:12	**Quant Date:**	05/02/2012 16:16	**Vial:**	5
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1204391-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204793	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121344	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.52	-0.01	97	28060	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.86	0.01	0.00	50	12644	6.25	63	70-130	*	NR

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.98	0.01	0.00	47	13900	7.82	15.6		
1	N-Nitrosomethylethylamine	13.56	0.03	0.00	61	13998	5.63	11.3		
1	N-Nitrosodiethylamine	15.65	0.01	0.00	75	2927	8.00	16.0		
1	N-Nitrosodi-n-propylamine	20.84	0.01	0.00	89	3561	10.09	20.2		
1	N-Nitrosopyrrolidine	23.21		0.00	55	41753	10.33	20.7		
1	N-Nitrosopiperidine	24.12	-0.01	0.00	69	81430	11.34	22.7		
1	N-Nitrosodi-n-butylamine	26.37	-0.01	0.00	57	22662	10.01	20.0		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501004.D Vial: 5
Acq On : 01 May 12 19:12 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:16:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

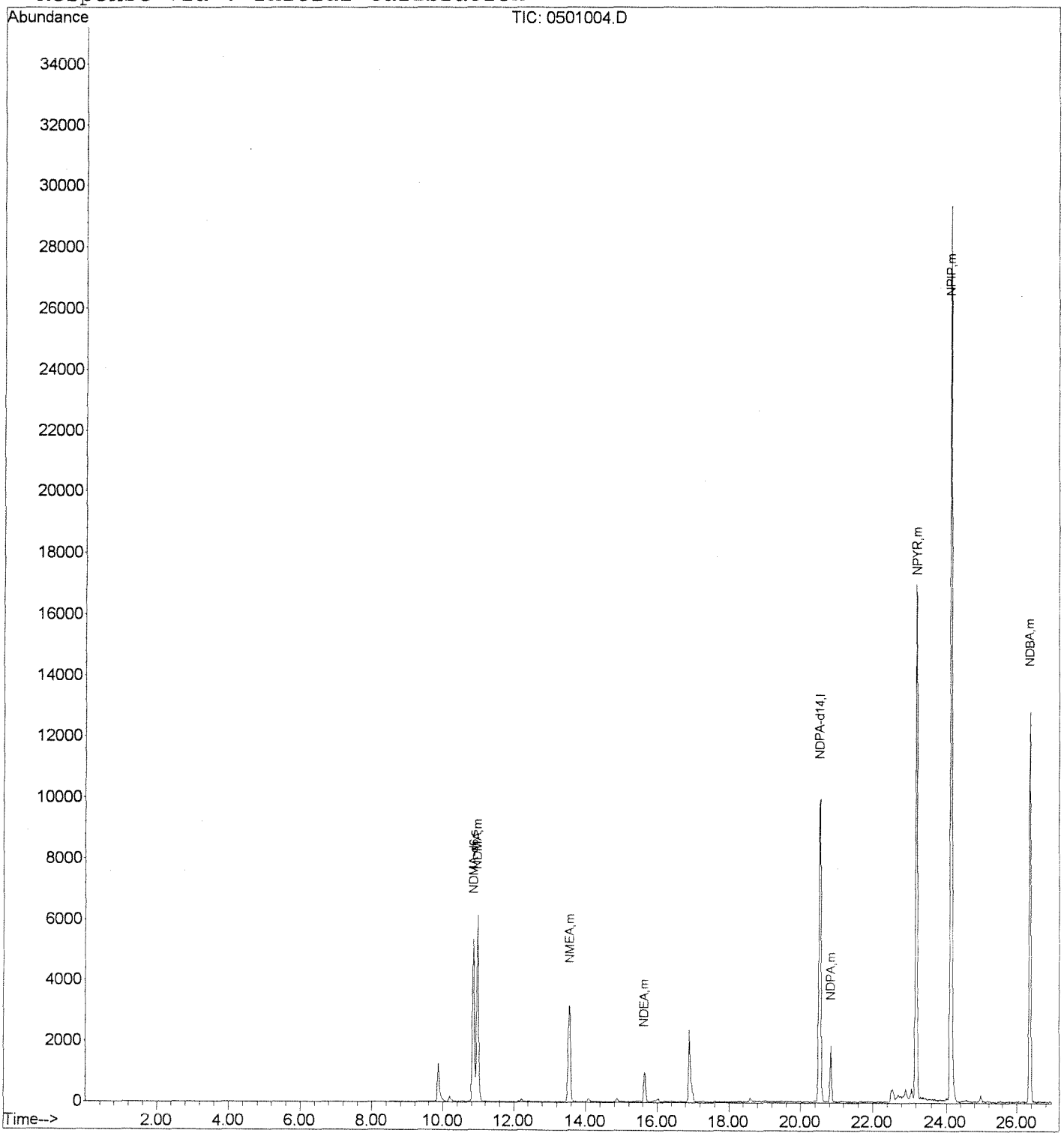
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.52	97	28060	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.86	50	12644	6.25	ug/L	-0.09
Target Compounds						Qvalue
4) NDMA	10.98	47	13900	7.82	ug/L	99
5) NMEA	13.56	61	13998	5.63	ug/L	100
6) NDEA	15.65	75	2927	8.00	ug/L	100
7) NDPA	20.84	89	3561	10.09	ug/L	100
8) NPYR	23.21	55	41753	10.33	ug/L	96
9) NPIP	24.12	69	81430	11.34	ug/L	100
10) NDBA	26.37	57	22662	10.01	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501004.D 031112_D14.M Wed May 09 12:06:36 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501004.D Vial: 5
Acq On : 01 May 12 19:12 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 2 16:16 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Exception Report

Data File: J:\MS16\DATA\050812-521\0508016.D
Lab ID: KWG1204391-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/08/2012 23:29
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosopiperidine	53.6	NA	50	NC
	N-Nitrosodi-n-butylamine	69.4	NA	50	b

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508016.D			**Instrument:**	MS16
Acqu Date:	05/08/2012 23:29	**Quant Date:**	05/09/2012 12:13	**Vial:**	13
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1204391-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204795	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121344	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D			**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D			**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.50	-0.01	97	32827	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.83	-0.05	0.00	50	22524	8.69	87	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.95	-0.04	0.00	47	23011	10.48	21.0		NR
1	N-Nitrosomethylethylamine	13.52	-0.05	0.00	61	22498	7.16	14.3		
1	N-Nitrosodiethylamine	15.62	-0.02	0.00	75	4158	9.27	18.5		
1	N-Nitrosodi-n-propylamine	20.82	-0.01	0.00	89	3631	9.07	18.1		
1	N-Nitrosopyrrolidine	23.19		0.00	55	44044	9.46	18.9		
1	N-Nitrosopiperidine	24.11		0.00	69	91432	10.96	21.9		
1	N-Nitrosodi-n-butylamine	26.33	-0.01	0.00	57	26513	10.01	20.0		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508016.D Vial: 13
Acq On : 08 May 12 23:29 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:31 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

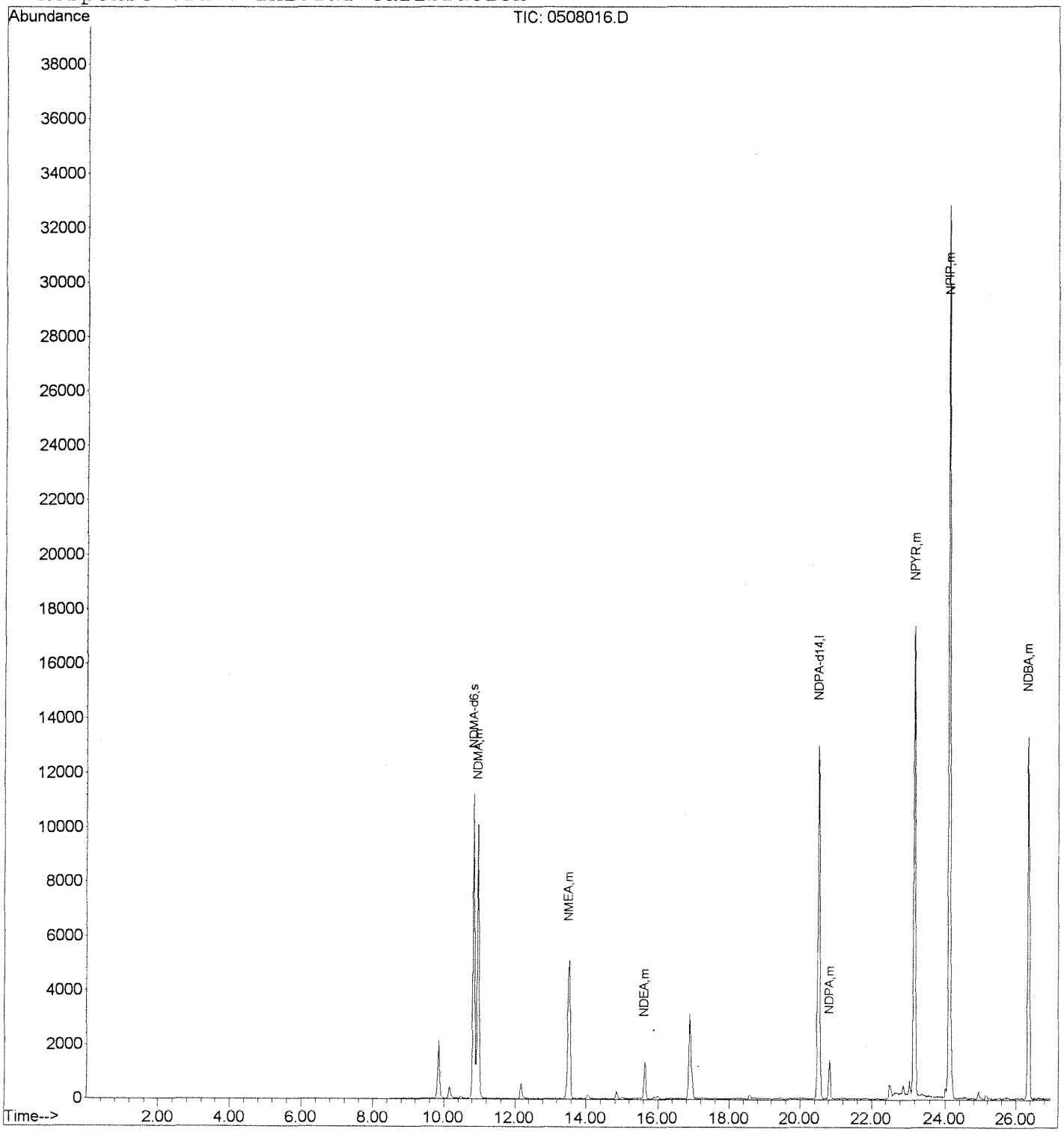
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.50	97	32827	50.00	ug/L	-0.07
System Monitoring Compounds						
3) NDMA-d6	10.83	50	22524	8.69	ug/L	-0.12
Target Compounds						Qvalue
4) NDMA	10.95	47	23011	10.48	ug/L	98
5) NMEA	13.52	61	22498	7.16	ug/L	100
6) NDEA	15.62	75	4158	9.27	ug/L	100
7) NDPA	20.82	89	3631	9.07	ug/L	100
8) NPYR	23.19	55	44044	9.46	ug/L	94
9) NPIP	24.11	69	91432	10.96	ug/L	100
10) NDBA	26.33	57	26513	10.01	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508016.D 031112_D14.M Wed May 09 12:16:20 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508016.D Vial: 13
Acq On : 08 May 12 23:29 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



0508016.D 031112_D14.M Wed May 09 12:16:20 2012 Page 2

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Standards Data

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Level ID	File ID
A	J:\MS16\DATA\031112-521\0311005.D
B	J:\MS16\DATA\031112-521\0311006.D
C	J:\MS16\DATA\031112-521\0311007.D
D	J:\MS16\DATA\031112-521\0311008.D
E	J:\MS16\DATA\031112-521\0311009.D
F	J:\MS16\DATA\031112-521\0311010.D
G	J:\MS16\DATA\031112-521\0311011.D
H	J:\MS16\DATA\031112-521\0311012.D
I	J:\MS16\DATA\031112-521\0311013.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
N-Nitrosodimethylamine-d6							C	1.0	1.28	D	2.0	2.08	E	5.0	2.86
	F	7.0	3.66	G	10	4.73	H	15	4.42	I	20	5.18			
N-Nitrosodimethylamine				B	0.50	1.18	C	1.0	1.63	D	2.0	2.42	E	5.0	2.51
	F	7.0	3.11	G	10	3.75	H	15	3.50	I	20	3.88			

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
N-Nitrosodimethylamine-d6	SURR	Quadratic	COD	0.992		≥ 0.99	3.46		
N-Nitrosodimethylamine	MS	Quadratic	COD	0.994		≥ 0.99	2.75		

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Calibration Date: 03/11/2012
Date Analyzed: 03/12/2012

Second Source Calibration Verification
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration ID: CAL11326
Units: ug/L

File ID: J:\MS16\DATA\031112-521\0311014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine	10	7.7	2.75	2.42	NA	-23	± 30 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Injection Log

ICAL 11326

Directory: J:\MS16\DATA\031112-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0311.D	1.	DCM		11 Mar 2012 29:0
2	1	0311001.D	1.	DWSTD5-49H 0.25 PPB		11 Mar 2012 29:4
3	2	0311002.D	1.	DWSTD5-49I 0.5 PPB		11 Mar 2012 30:2
4	13	0311003.D	1.	K1201175-002 MS		11 Mar 2012 31:1
5		0311004.D	1.	DCM		11 Mar 2012 31:5
6	1	0311005.D	1.	DWSTD5-42H 0.25 PPB		11 Mar 2012 32:3
7	2	0311006.D	1.	DWSTD5-51J 0.5 PPB		11 Mar 2012 33:2
8	3	0311007.D	1.	DWSTD5-50A 1 PPB		11 Mar 2012 34:0
9	4	0311008.D	1.	DWSTD5-42J 2 PPB		11 Mar 2012 34:4
10	5	0311009.D	1.	DWSTD5-48P 5 PPB		11 Mar 2012 35:2
11	6	0311010.D	1.	DWSTD5-43P 7 PPB		12 Mar 2012 12:1
12	7	0311011.D	1.	DWSTD5-42G 10 PPB		12 Mar 2012 12:5
13	8	0311012.D	1.	DWSTD5-42L 15 PPB		12 Mar 2012 13:3
14	9	0311013.D	1.	DWSTD5-42M 20 PPB		12 Mar 2012 14:1
15	10	0311014.D	1.	DWSTD5-50B ICV 10		12 Mar 2012 15:0
16		0311015.D	1.	DCM		12 Mar 2012 15:4
17	3	0311016.D	1.	DWSTD5-49J 1 PPB		12 Mar 2012 16:2
18	11	0311017.D	1.	K1201175-001		12 Mar 2012 17:0
19	12	0311018.D	1.	K1201175-002		12 Mar 2012 17:5
20	13	0311019.D	1.	K1201175-002 MS		12 Mar 2012 18:3
21	14	0311020.D	1.	K1201175-002 DMS		12 Mar 2012 19:1

3/12/14

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311005.D Vial: 1
Acq On : 11 Mar 12 20:38 Operator: SVO-DW
Sample : DWSTD5-42H 0.25 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:54 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

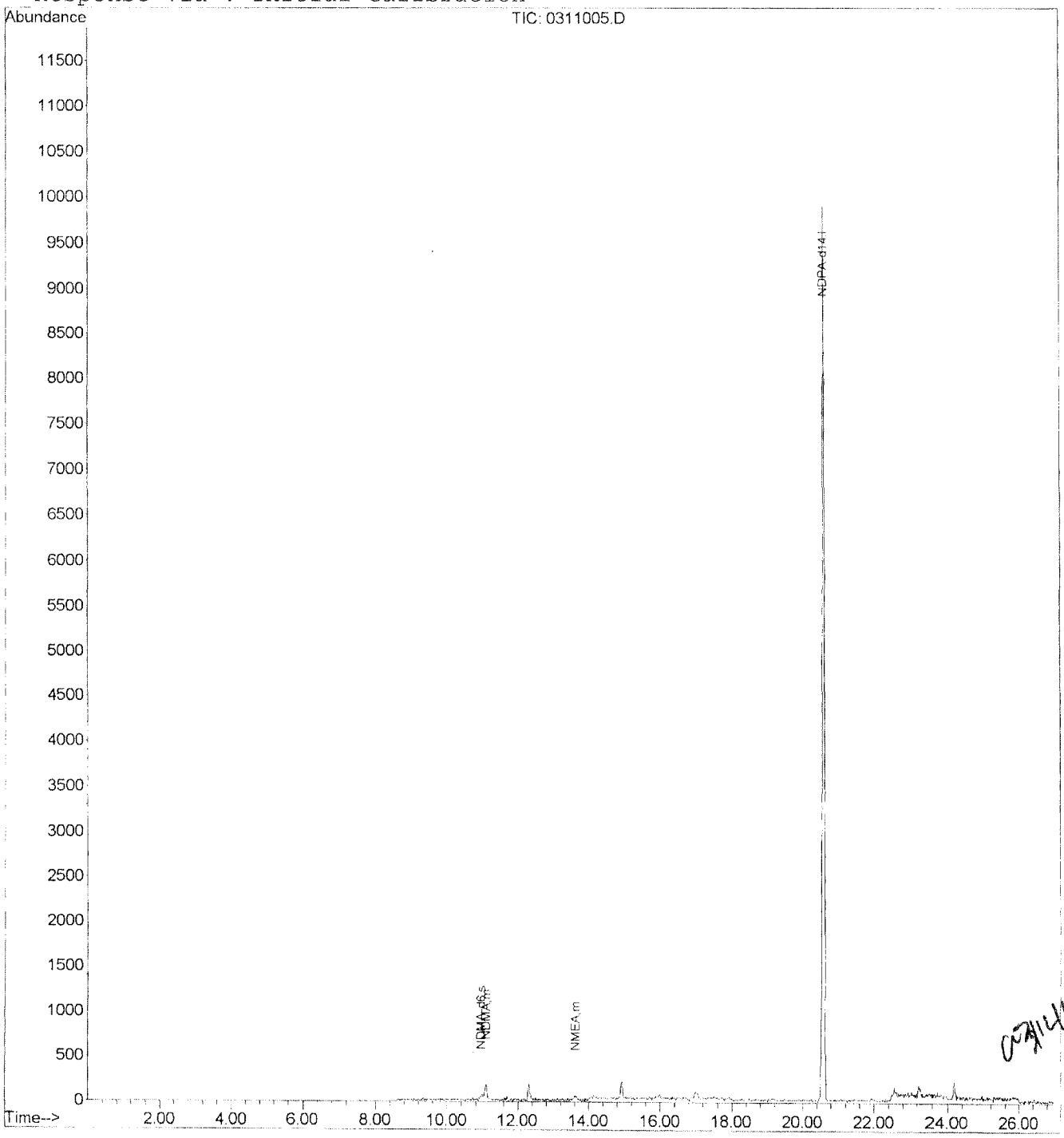
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	27591	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	162	0.43	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.11	47	496	0.34	ug/L	100
5) NMEA	13.63	61	240	0.38	ug/L	98

(#) = qualifier out of range (m) = manual integration
0311005.D 031112_D14.M Mon Mar 12 08:23:18 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311005.D Vial: 1
Acq On : 11 Mar 12 20:38 Operator: SVO-DW
Sample : DWSTD5-42H 0.25 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:18 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311005.D 031112_D14.M Mon Mar 12 08:23:19 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311006.D Vial: 2
Acq On : 11 Mar 12 21:21 Operator: SVO-DW
Sample : DWSTD5-51J 0.5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:54 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	28801	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	288	0.51	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	340	0.24	ug/L	99
5) NMEA	13.64	61	513	0.55	ug/L	98
8) NPYR	23.26	55	613	0.34	ug/L	100
9) NPIP	24.18	69	993	0.37	ug/L	99

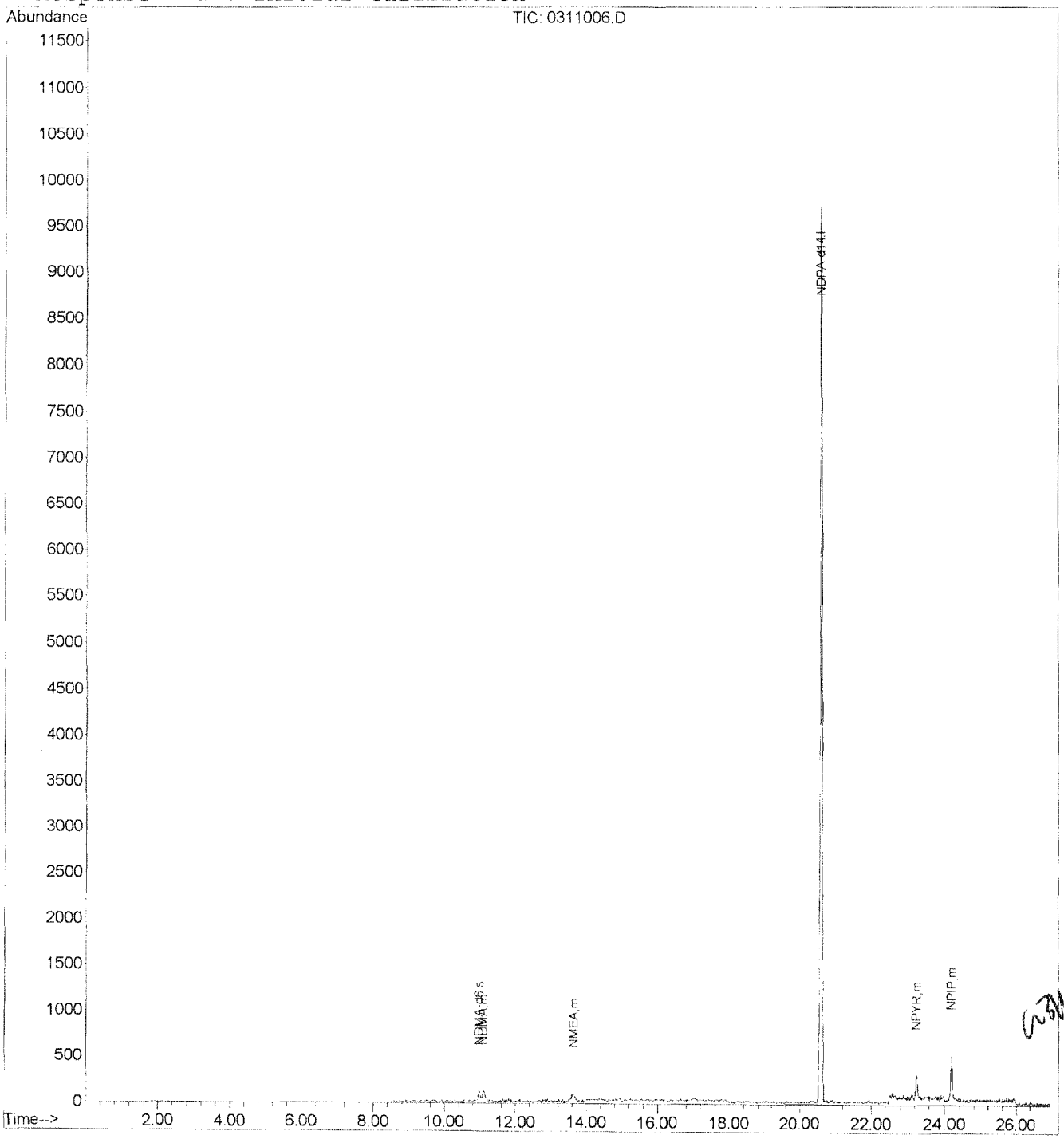
3/12/12

(#) = qualifier out of range (m) = manual integration
0311006.D 031112_D14.M Mon Mar 12 08:23:20 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311006.D Vial: 2
Acq On : 11 Mar 12 21:21 Operator: SVO-DW
Sample : DWSTD5-51J 0.5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311006.D 031112_D14.M Mon Mar 12 08:23:21 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311007.D Vial: 3
Acq On : 11 Mar 12 22:04 Operator: SVO-DW
Sample : DWSTD5-50A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

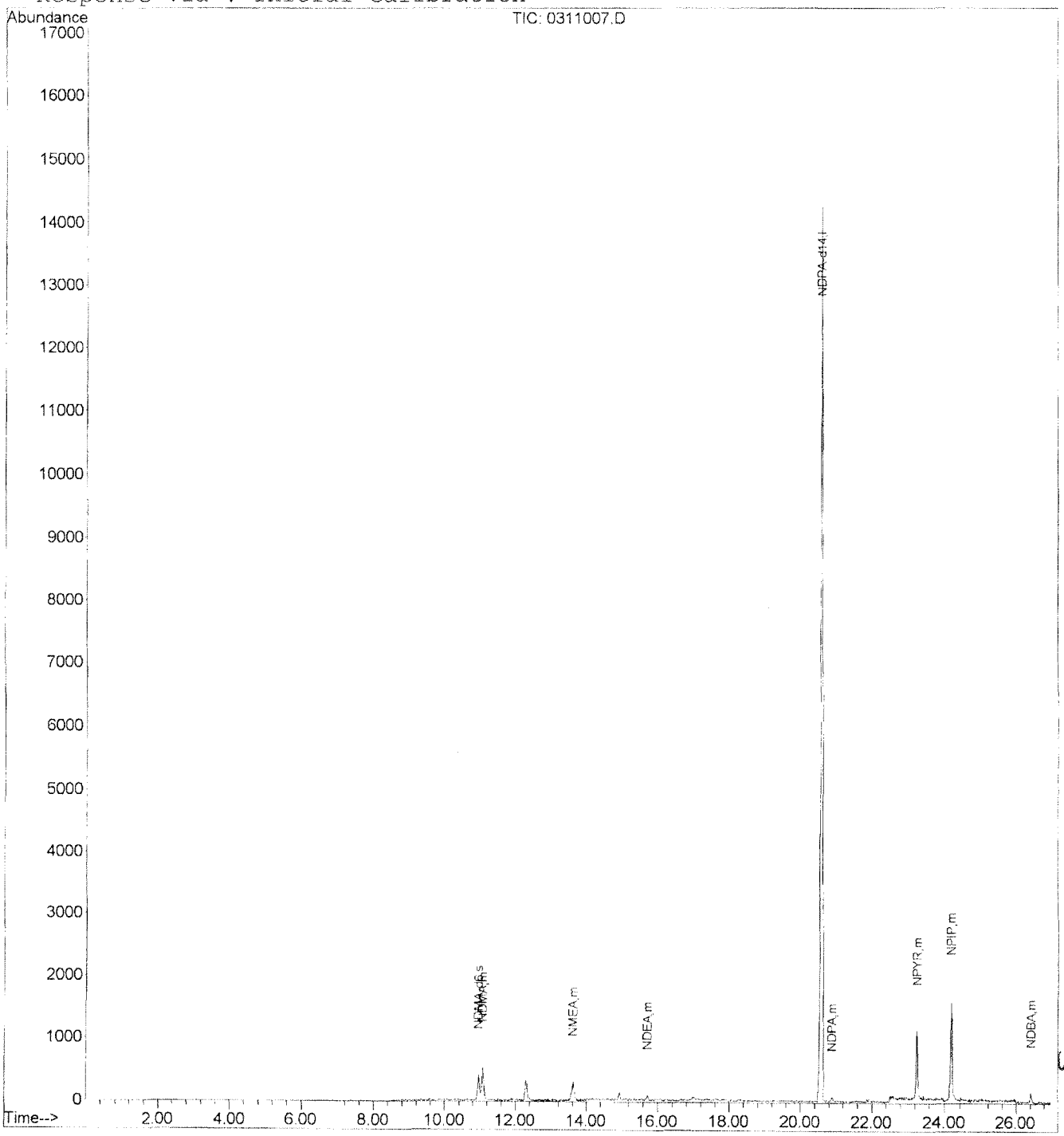
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	38374	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.97	50	981	0.83	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	1254	0.57	ug/L	98
5) NMEA	13.63	61	1290	0.84	ug/L	99
6) NDEA	15.73	75	176	1.02	ug/L	100
7) NDPA	20.89	89	119	0.47	ug/L	100
8) NPYR	23.25	55	2466	0.76	ug/L	100
9) NPIP	24.17	69	3591	0.68	ug/L	99
10) NDBA	26.43	57	181	0.76	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311007.D 031112_D14.M Mon Mar 12 08:23:22 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311007.D Vial: 3
Acq On : 11 Mar 12 22:04 Operator: SVO-DW
Sample : DWSTD5-50A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311007.D 031112_D14.M Mon Mar 12 08:23:22 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311008.D Vial: 4
Acq On : 11 Mar 12 22:46 Operator: SVO-DW
Sample : DWSTD5-42J 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.58	97	29381	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	2445	1.96	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	2840	1.57	ug/L	98
5) NMEA	13.63	61	2984	1.97	ug/L	99
6) NDEA	15.73	75	437	1.98	ug/L	100
7) NDPA	20.90	89	343	1.41	ug/L	100
8) NPYR	23.26	55	5523	1.89	ug/L	100
9) NPIP	24.18	69	8481	1.66	ug/L	99
10) NDBA	26.43	57	1130	1.19	ug/L	100

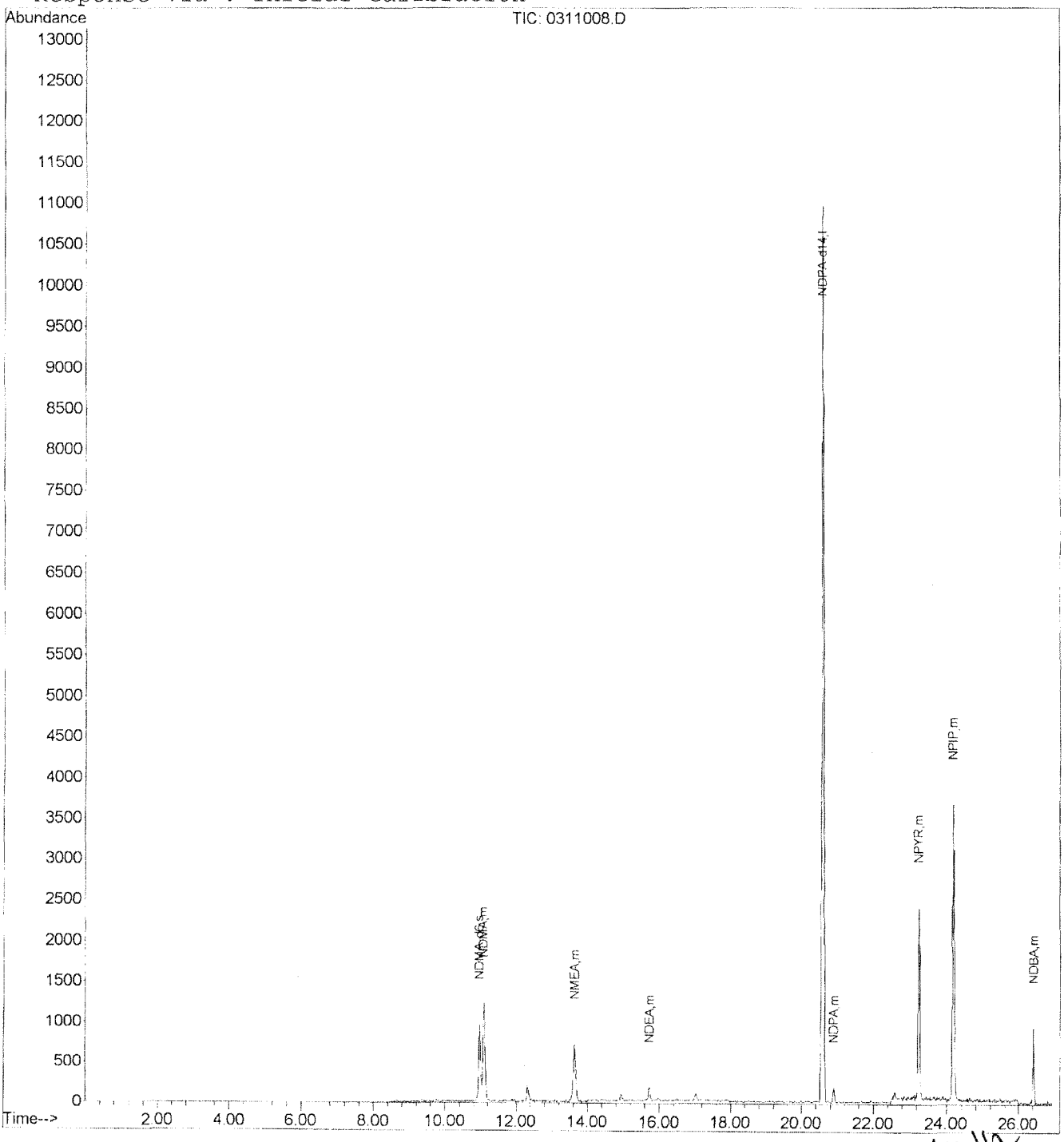
3/14/12

(#) = qualifier out of range (m) = manual integration
0311008.D 031112_D14.M Mon Mar 12 08:23:24 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311008.D Vial: 4
Acq On : 11 Mar 12 22:46 Operator: SVO-DW
Sample : DWSTD5-42J 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311008.D 031112_D14.M Mon Mar 12 08:23:24 2012 Page 2

03/12/12

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311009.D Vial: 5
Acq On : 11 Mar 12 23:28 Operator: SVO-DW
Sample : DWSTD5-48P 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	30053	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.95	50	8605	5.32	ug/L	0.06
Target Compounds						Qvalue
4) NDMA	11.07	47	7538	3.83	ug/L	98
5) NMEA	13.63	61	11231	5.57	ug/L	99
6) NDEA	15.73	75	1840	5.66	ug/L	100
7) NDPA	20.90	89	1496	4.59	ug/L	100
8) NPYR	23.26	55	17249	4.88	ug/L	99
9) NPIP	24.18	69	31523	4.94	ug/L	99
10) NDBA	26.43	57	8214	3.74	ug/L	100

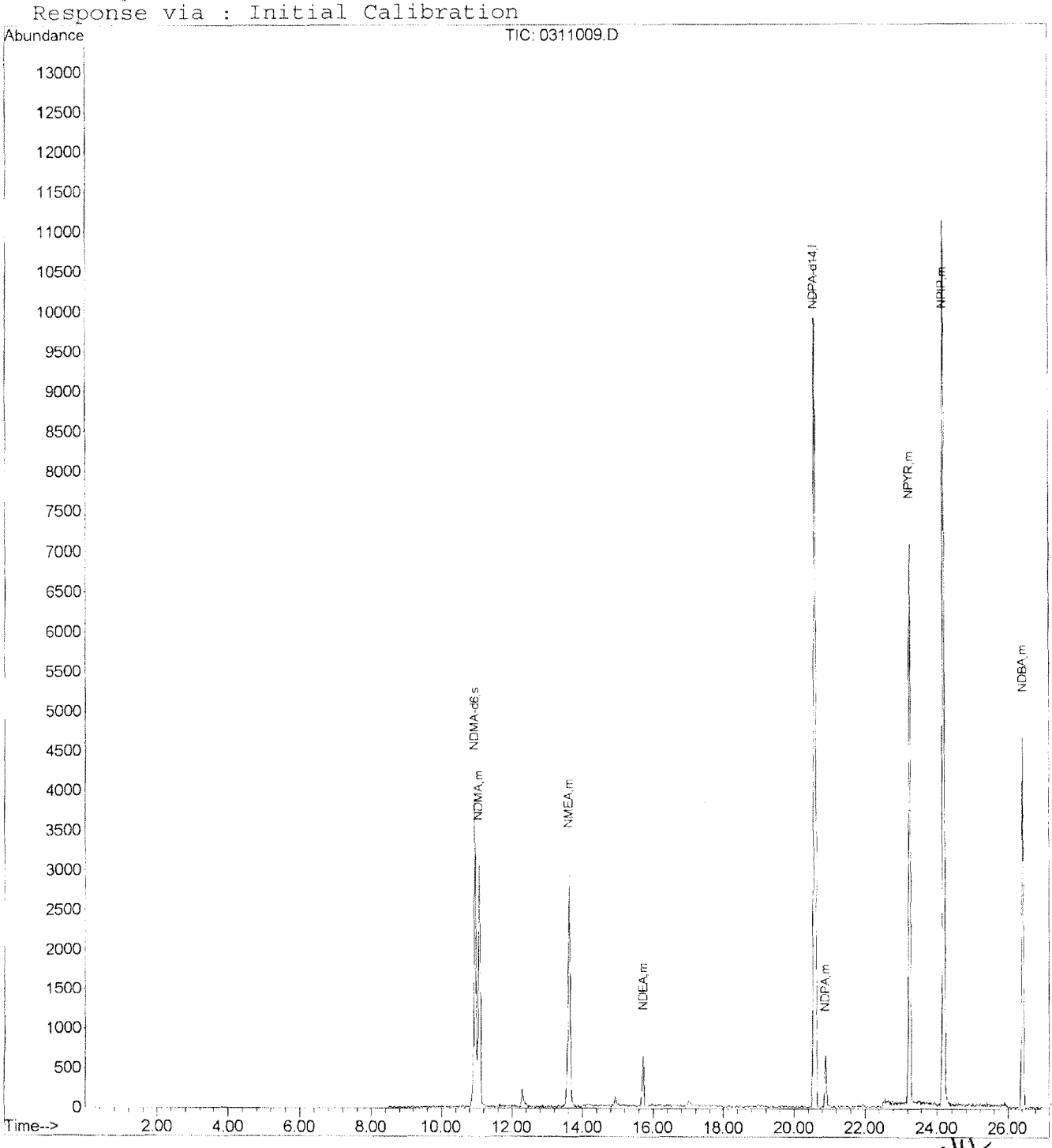
3/12/12

(#) = qualifier out of range (m) = manual integration
0311009.D 031112_D14.M Mon Mar 12 08:23:25 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311009.D Vial: 5
Acq On : 11 Mar 12 23:28 Operator: SVO-DW
Sample : DWSTD5-48P 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311009.D 031112_D14.M Mon Mar 12 08:23:26 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311010.D Vial: 6
Acq On : 12 Mar 2012 00:11 Operator: SVO-DW
Sample : DWSTD5-43P 7 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:56 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

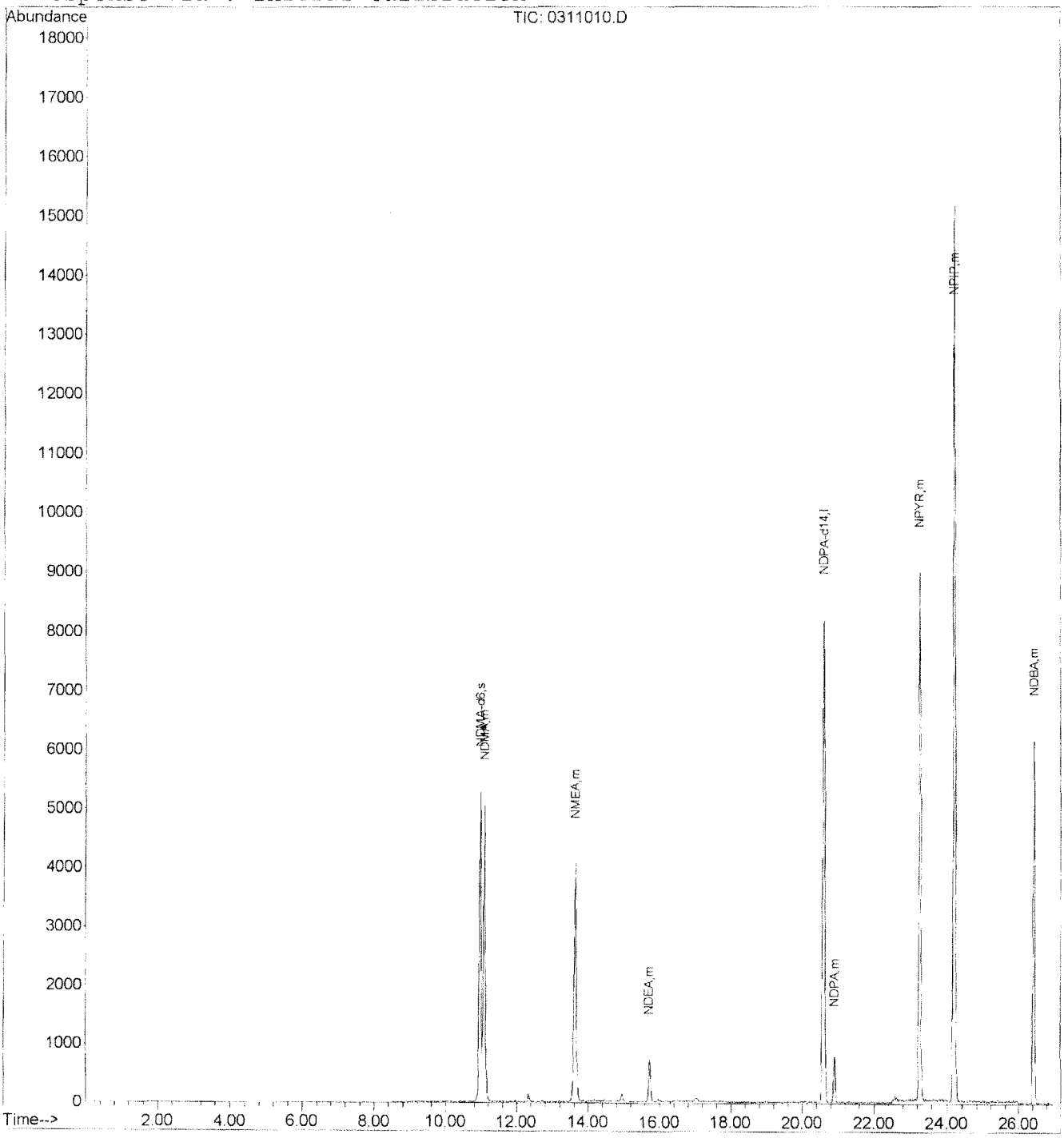
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	24830	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.97	50	12740	8.40	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	10802	6.36	ug/L	100
5) NMEA	13.64	61	17148	8.81	ug/L	99
6) NDEA	15.71	75	2090	7.20	ug/L	100
7) NDPA	20.90	89	1908	6.34	ug/L	100
8) NPYR	23.26	55	22562	7.05	ug/L	100
9) NPIP	24.19	69	40716	7.10	ug/L	99
10) NDBA	26.43	57	12687	5.81	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311010.D 031112_D14.M Mon Mar 12 08:23:27 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311010.D Vial: 6
Acq On : 12 Mar 2012 00:11 Operator: SVO-DW
Sample : DWSTD5-43P 7 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



03/14/12

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311011.D Vial: 7
Acq On : 12 Mar 2012 00:53 Operator: SVO-DW
Sample : DWSTD5-42G 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:56 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

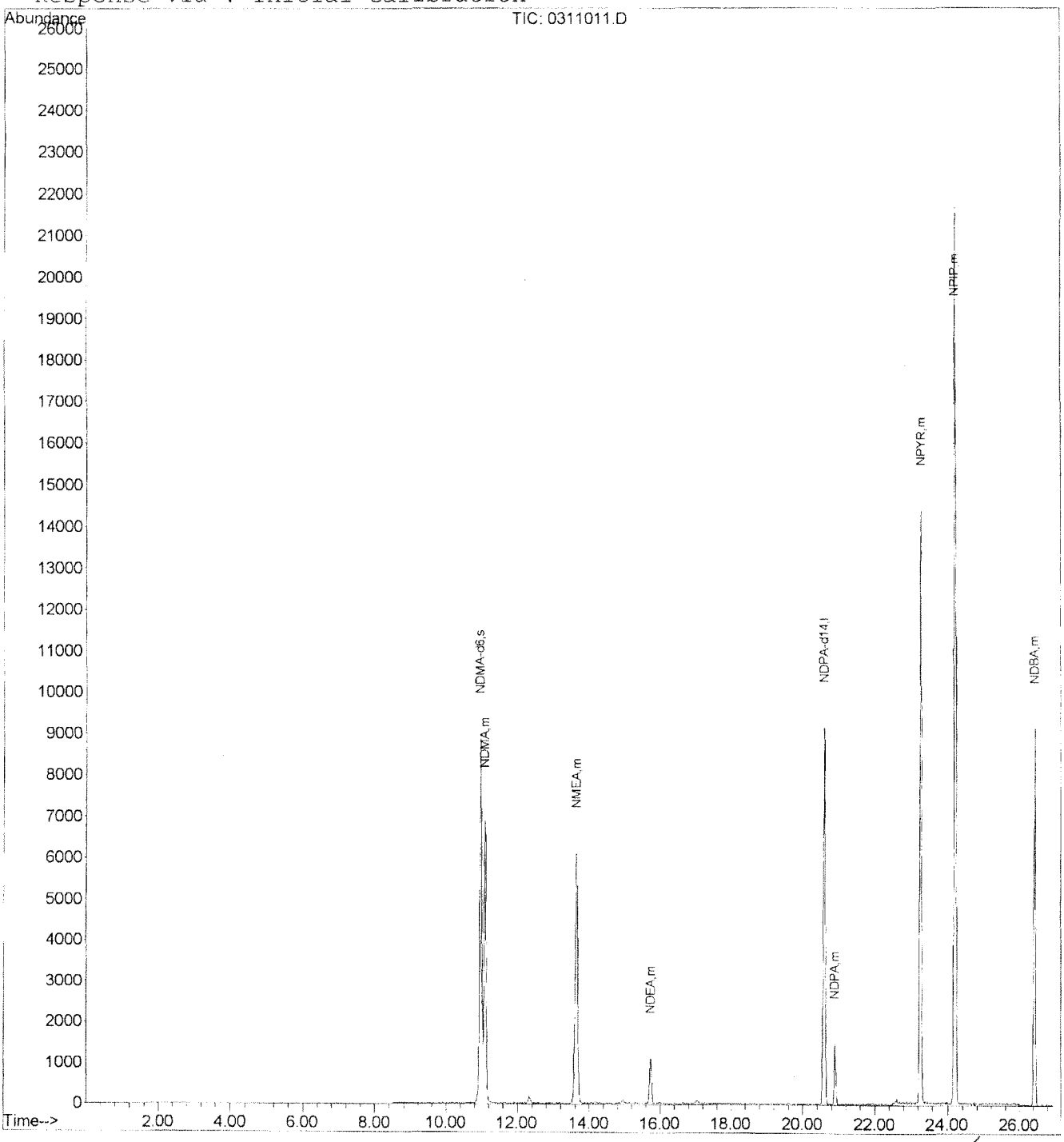
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	23331	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.96	50	22064	13.23	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	17491	10.29	ug/L	97
5) NMEA	13.63	61	27747	12.90	ug/L	99
6) NDEA	15.74	75	3394	10.82	ug/L	100
7) NDPA	20.89	89	3130	9.38	ug/L	100
8) NPYR	23.27	55	36060	10.55	ug/L	100
9) NPIP	24.18	69	61376	10.26	ug/L	99
10) NDBA	26.44	57	19158	8.10	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311011.D 031112_D14.M Mon Mar 12 08:23:29 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311011.D Vial: 7
Acq On : 12 Mar 2012 00:53 Operator: SVO-DW
Sample : DWSTD5-42G 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311011.D 031112_D14.M Mon Mar 12 08:23:29 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311012.D Vial: 8
Acq On : 12 Mar 2012 01:36 Operator: SVO-DW
Sample : DWSTD5-42L 15 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

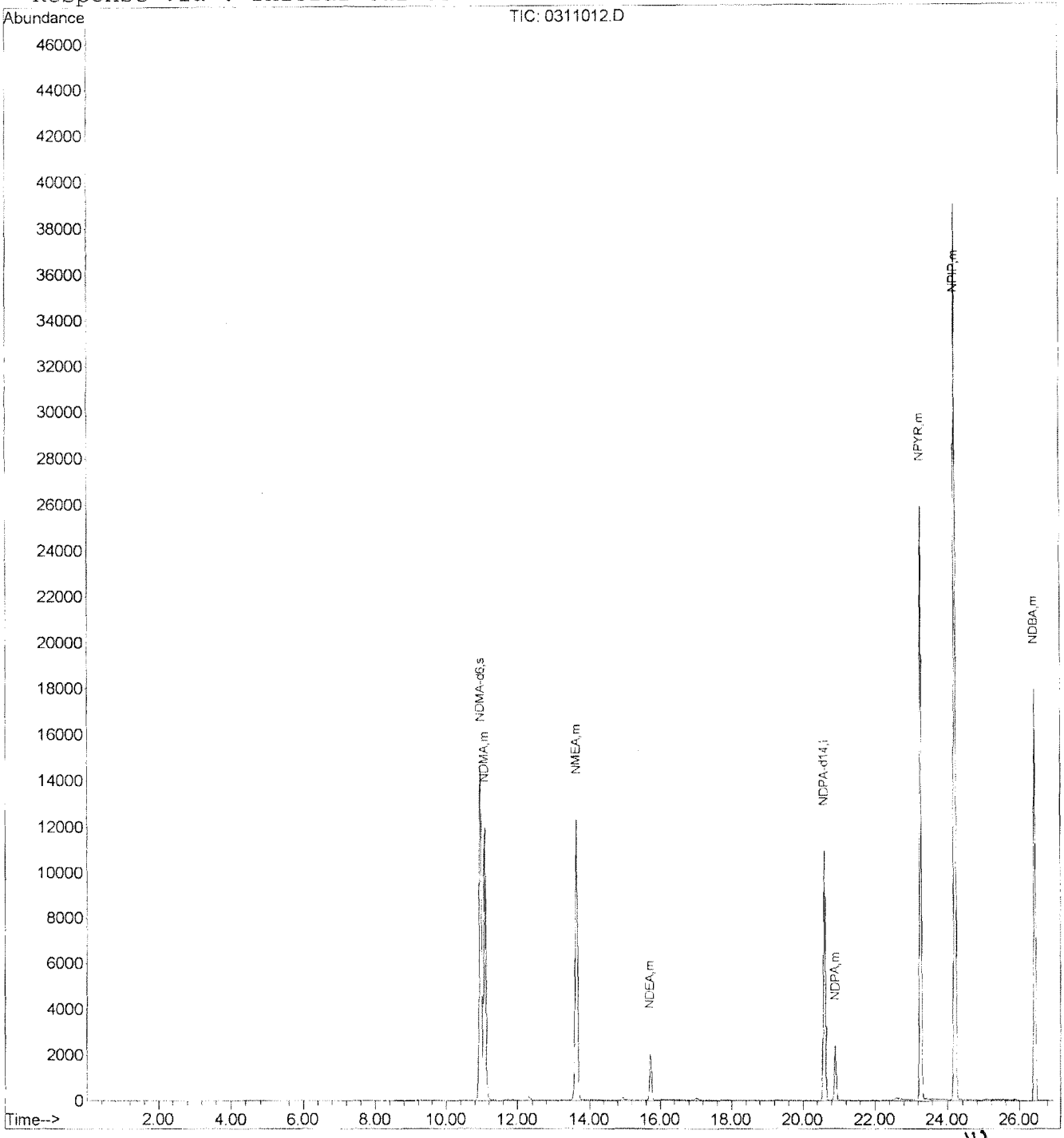
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.60	97	28601	50.00	ug/L	0.03
System Monitoring Compounds						
3) NDMA-d6	10.97	50	37928	16.79	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	29994	13.71	ug/L	100
5) NMEA	13.63	61	50017	16.69	ug/L	100
6) NDEA	15.71	75	6644	15.10	ug/L	100
7) NDPA	20.90	89	6020	12.66	ug/L	100
8) NPYR	23.26	55	67126	14.25	ug/L	100
9) NPIP	24.19	69	113622	13.93	ug/L	99
10) NDBA	26.43	57	42125	12.04	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311012.D 031112_D14.M Mon Mar 12 08:23:30 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311012.D Vial: 8
Acq On : 12 Mar 2012 01:36 Operator: SVO-DW
Sample : DWSTD5-42L 15 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



3/12/12

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311013.D Vial: 9
Acq On : 12 Mar 2012 02:18 Operator: SVO-DW
Sample : DWSTD5-42M 20 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

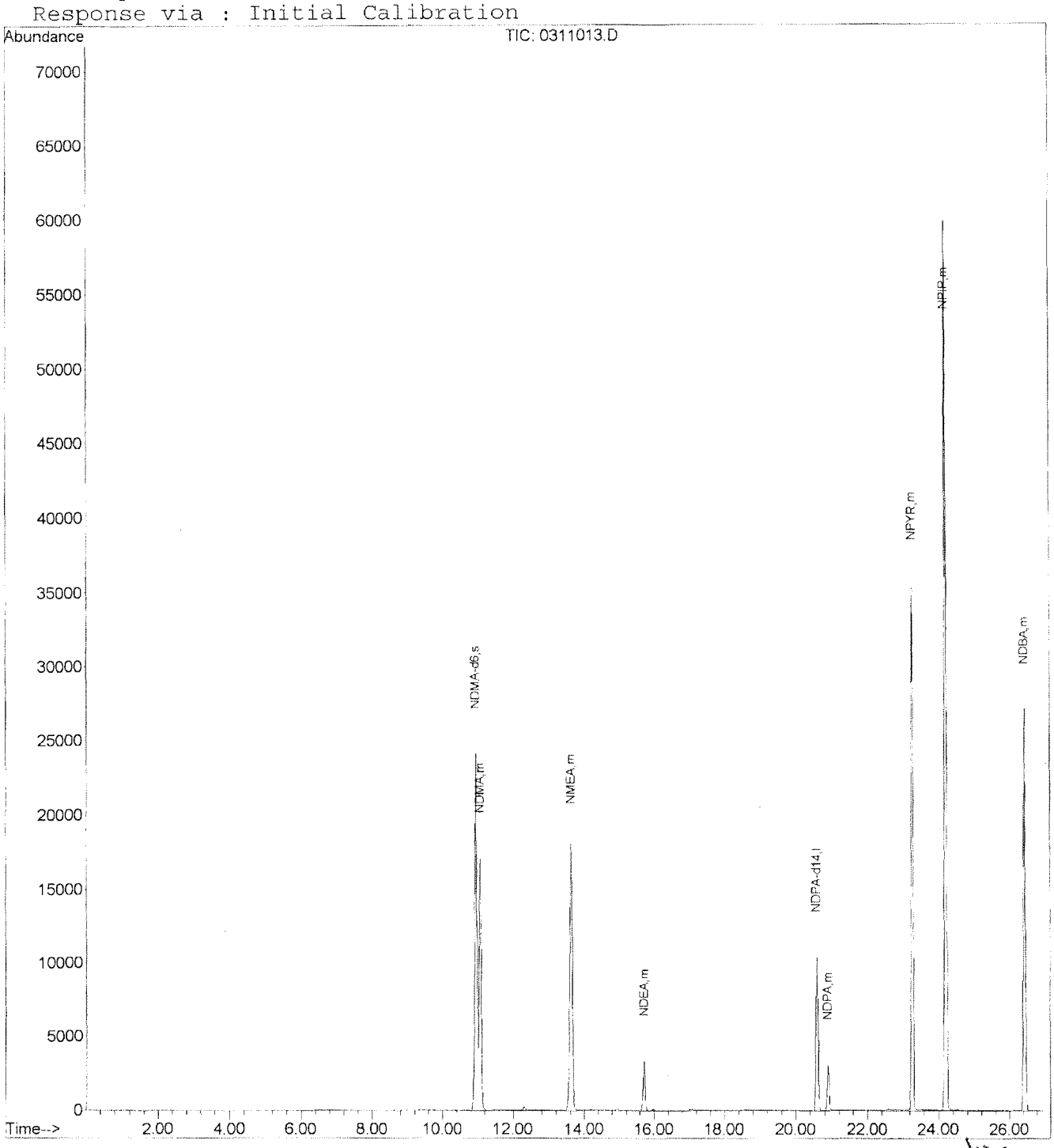
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.60	97	29929	50.00	ug/L	0.03
System Monitoring Compounds						
3) NDMA-d6	10.96	50	62054	22.72	ug/L	0.07
Target Compounds						Qvalue
4) NDMA	11.08	47	46487	18.92	ug/L	99
5) NMEA	13.64	61	86114	22.95	ug/L	99
6) NDEA	15.73	75	11096	20.76	ug/L	100
7) NDPA	20.90	89	9412	16.35	ug/L	100
8) NPYR	23.28	55	96259	17.71	ug/L	100
9) NPIP	24.19	69	172721	18.16	ug/L	100
10) NDBA	26.45	57	66211	15.71	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311013.D 031112_D14.M Mon Mar 12 08:23:32 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311013.D Vial: 9
Acq On : 12 Mar 2012 02:18 Operator: SVO-DW
Sample : DWSTD5-42M 20 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311013.D 031112_D14.M Mon Mar 12 08:23:32 2012 Page 2

Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\031112-521\0311014.D Vial: 10
Acq On : 12 Mar 2012 03:01 Operator: SVO-DW
Sample : DWSTD5-50B ICV 10 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:40:42 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

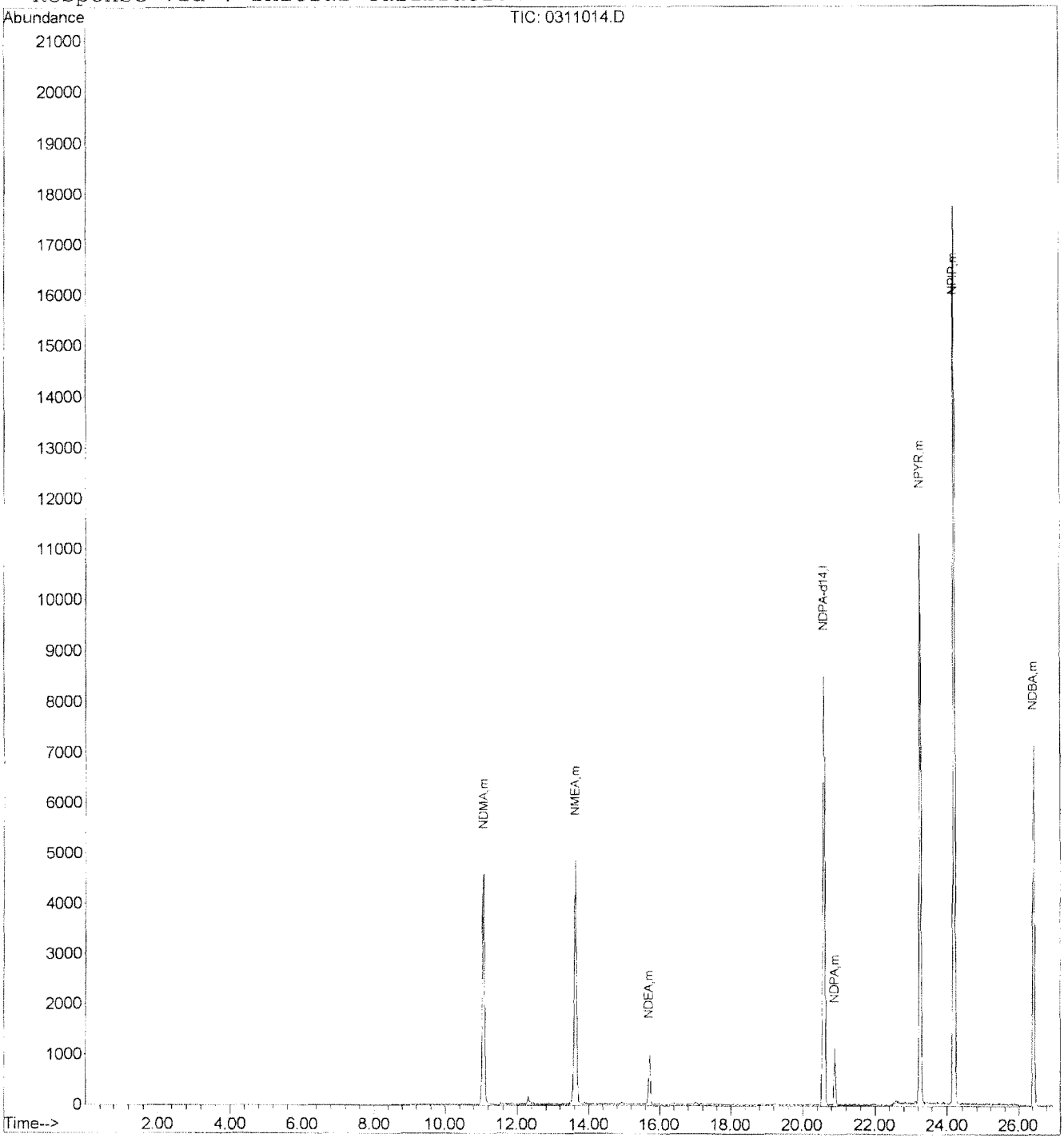
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	25007	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	0.00	50	0	0.00	ug/L	
Target Compounds						Qvalue
4) NDMA	11.08	47	12119	7.67	ug/L	97
5) NMEA	13.62	61	20016	8.05	ug/L	100
6) NDEA	15.71	75	2597	7.97	ug/L	100
7) NDPA	20.89	89	2542	8.49	ug/L	100
8) NPYR	23.26	55	28231	8.16	ug/L	94
9) NPIP	24.19	69	49441	8.21	ug/L	100
10) NDBA	26.43	57	15154	8.18	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311014.D 031112_D14.M Mon Mar 12 08:40:42 2012 Page 1

Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\031112-521\0311014.D Vial: 10
Acq On : 12 Mar 2012 03:01 Operator: SVO-DW
Sample : DWSTD5-50B ICV 10 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:40 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



0311014.D 031112_D14.M Mon Mar 12 08:40:42 2012 Page 2

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/01/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	0.98		3.46	0.816	NA	-2	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	0.89		2.75	1.53	NA	-11	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050112-521\0501001.D
Lab ID: KWG1204793-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/01/2012 17:04
Date Quantitated: 05/01/2012 17:33
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501001.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 17:04	**Quant Date:**	05/01/2012 17:33	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204793-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204793	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050112-521\0501.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	-0.06	97	32908	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.85			50	537	0.9800		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97			47	1005	0.8900			
1	N-Nitrosomethylethylamine	13.53			61	987	1.06			
1	N-Nitrosodiethylamine	15.64			75	157	1.04			
1	N-Nitrosodi-n-propylamine	20.83			89	153	1.23			
1	N-Nitrosopyrrolidine	23.21			55	2655	1.19			
1	N-Nitrosopiperidine	24.13			69	5111	1.32			
1	N-Nitrosodi-n-butylamine	26.38			57	612	1.38			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808

DataFile: J:\MS16\DATA\050112-521\0501001.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	0.816		0.9800	1.000	-2.0
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	1.527		0.8900	1.000	-11.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	1.500		1.060	1.000	6.0
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.239		1.040	1.000	4.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.232		1.230	1.000	23.0
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	4.034		1.190	1.000	19.0
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	7.766		1.320	1.000	32.0
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	0.930		1.380	1.000	38.0

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501001.D Vial: 1
Acq On : 01 May 12 17:04 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 01 17:33:02 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

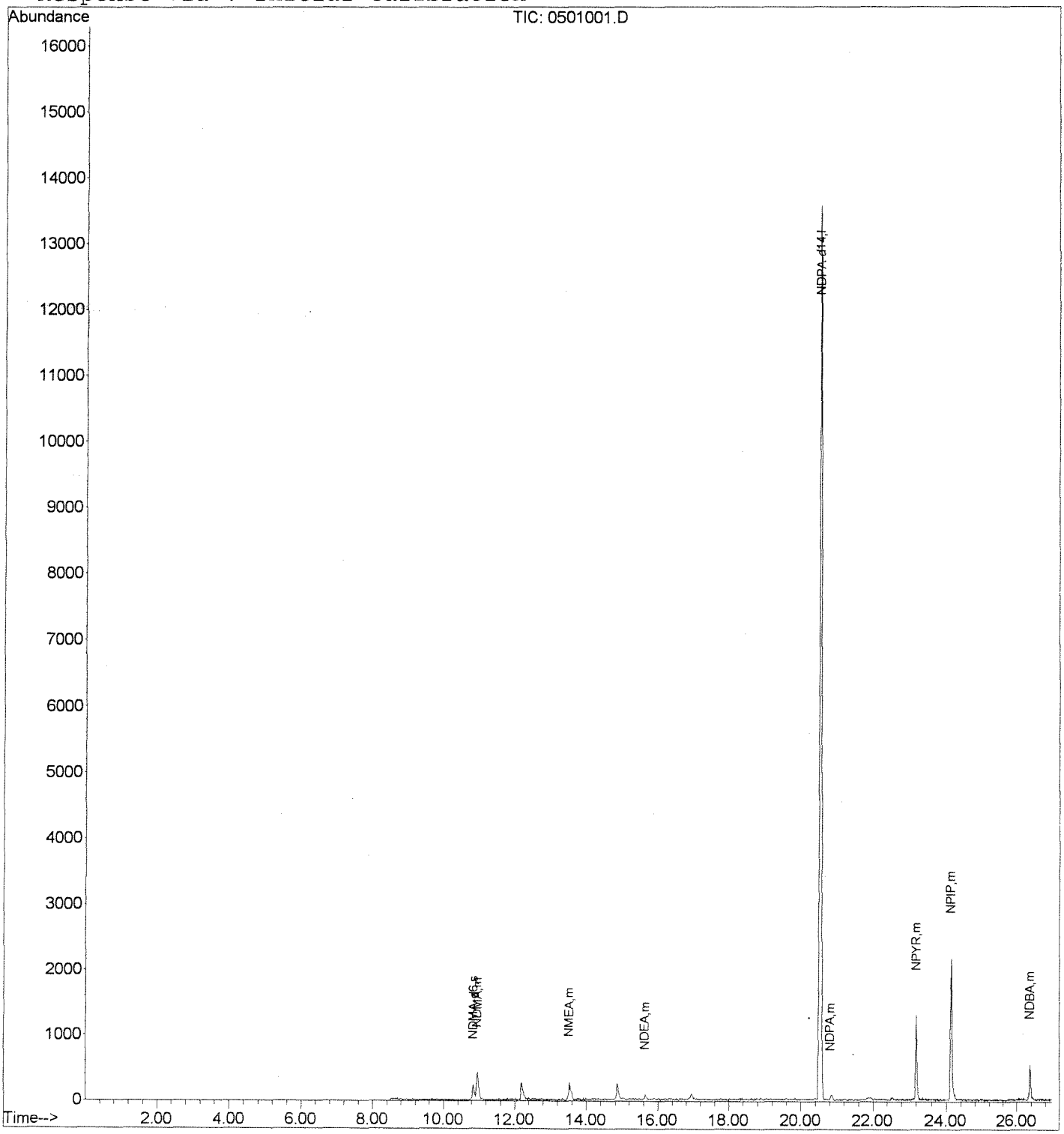
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	32908	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.85	50	537	0.98	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.97	47	1005	0.89	ug/L	98
5) NMEA	13.53	61	987	1.06	ug/L	99
6) NDEA	15.64	75	157	1.04	ug/L	100
7) NDPA	20.83	89	153	1.23	ug/L	99
8) NPYR	23.21	55	2655	1.19	ug/L	94
9) NPIP	24.13	69	5111	1.32	ug/L	100
10) NDBA	26.38	57	612	1.38	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501001.D 031112_D14.M Wed May 09 11:58:38 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501001.D Vial: 1
Acq On : 01 May 12 17:04 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 1 17:33 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	4.3		3.46	2.75	NA	-15	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	5.4		2.75	3.21	NA	8	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050112-521\0501013.D
Lab ID: KWG1204793-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/02/2012 01:33
Date Quantitated: 05/02/2012 16:17
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501013.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 01:33	**Quant Date:**	05/02/2012 16:17	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204793-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204793	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	-0.04	97	32882	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.81			50	9051	4.27		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.93			47	10566	5.40			
1	N-Nitrosomethylethylamine	13.53			61	10533	4.04			
1	N-Nitrosodiethylamine	15.64			75	2140	5.55			
1	N-Nitrosodi-n-propylamine	20.83			89	1908	5.49			
1	N-Nitrosopyrrolidine	23.21			55	26354	6.09			
1	N-Nitrosopiperidine	24.13			69	51712	6.77			
1	N-Nitrosodi-n-butylamine	26.37			57	17691	7.53			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808
DataFile: J:\MS16\DATA\050112-521\0501013.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	2.753		4.270	5.000	-14.6
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	3.213		5.400	5.000	8.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	3.203		4.040	5.000	-19.2
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.651		5.550	5.000	11.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.580		5.490	5.000	9.8
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	8.015		6.090	5.000	21.8
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	1.6E+1		6.770	5.000	35.4
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	5.380		7.530	5.000	50.6 *

1 Compounds Failed CCV Criteria (12.50 Percent)

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501013.D Vial: 2
Acq On : 02 May 2012 01:33 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:17:00 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

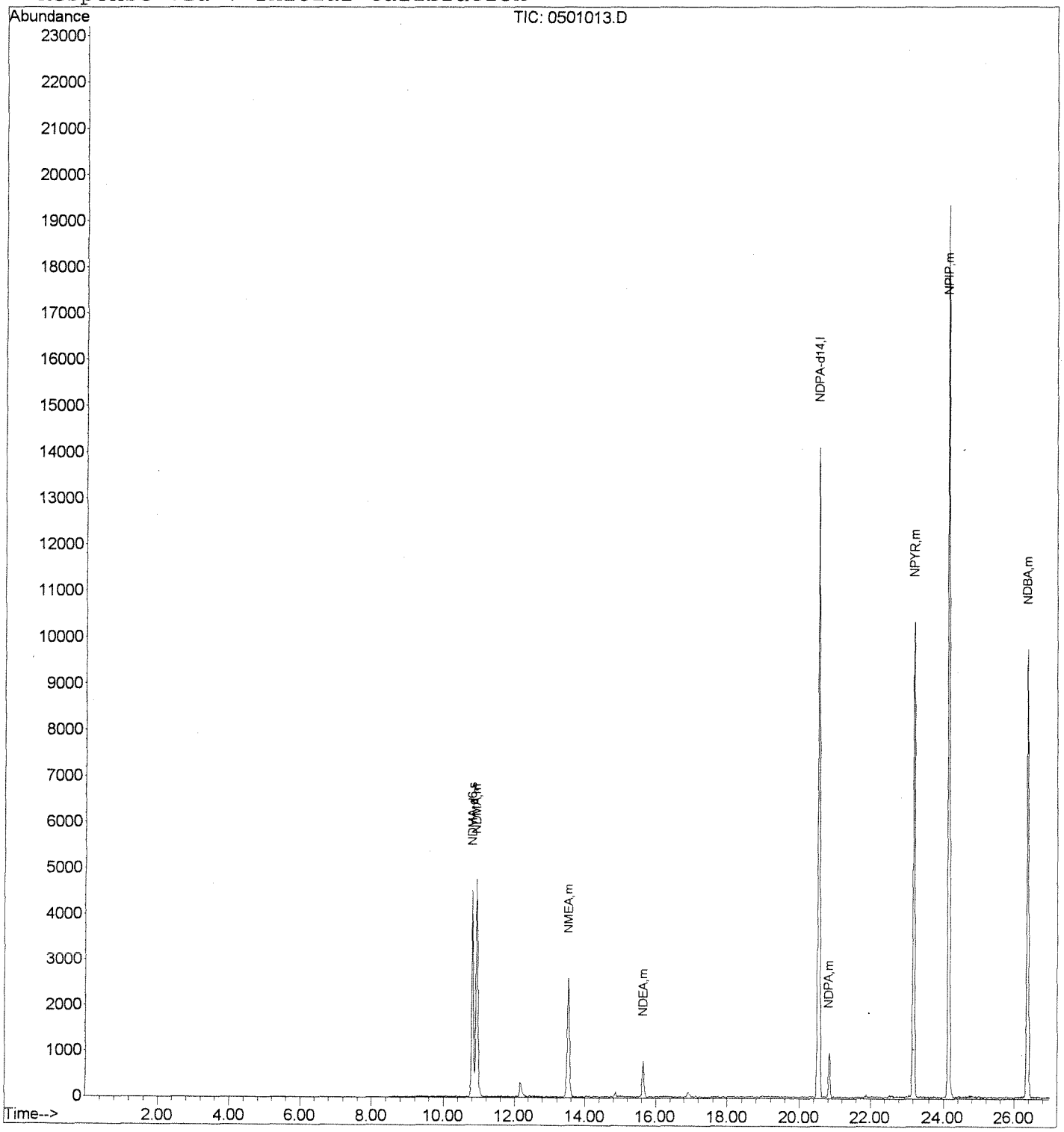
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	32882	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.81	50	9051	4.27	ug/L	-0.14
Target Compounds						Qvalue
4) NDMA	10.93	47	10566	5.40	ug/L	95
5) NMEA	13.53	61	10533	4.04	ug/L	100
6) NDEA	15.64	75	2140	5.55	ug/L	100
7) NDPA	20.83	89	1908	5.49	ug/L	100
8) NPYR	23.21	55	26354	6.09	ug/L	94
9) NPIP	24.13	69	51712	6.77	ug/L	100
10) NDBA	26.37	57	17691	7.53	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501013.D 031112_D14.M Wed May 09 11:58:50 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501013.D Vial: 2
Acq On : 02 May 2012 01:33 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 2 16:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.3		3.46	1.80	NA	25	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.3		2.75	2.78	NA	30	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050212-521\0502001.D
Lab ID: KWG1204794-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/02/2012 17:19
Date Quantitated: 05/03/2012 13:45
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502001.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 17:19	**Quant Date:**	05/03/2012 13:45	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204794-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204794	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	-0.06	97	30450	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.83			50	1094	1.25		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97			47	1694	1.30			
1	N-Nitrosomethylethylamine	13.57			61	1266	1.19			
1	N-Nitrosodiethylamine	15.65			75	178	1.13			
1	N-Nitrosodi-n-propylamine	20.87			89	197	1.39			
1	N-Nitrosopyrrolidine	23.22			55	3470	1.43			
1	N-Nitrosopiperidine	24.14			69	5823	1.47			
1	N-Nitrosodi-n-butylamine	26.38			57	524	1.36			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808

DataFile: J:\MS16\DATA\050212-521\0502001.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	1.796		1.250	1.000	25.0
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	2.782		1.300	1.000	30.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	2.079		1.190	1.000	19.0
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.292		1.130	1.000	13.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.323		1.390	1.000	39.0
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	5.698		1.430	1.000	43.0
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	9.562		1.470	1.000	47.0
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	0.860		1.360	1.000	36.0

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502001.D Vial: 1
Acq On : 02 May 12 17:19 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:45:01 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

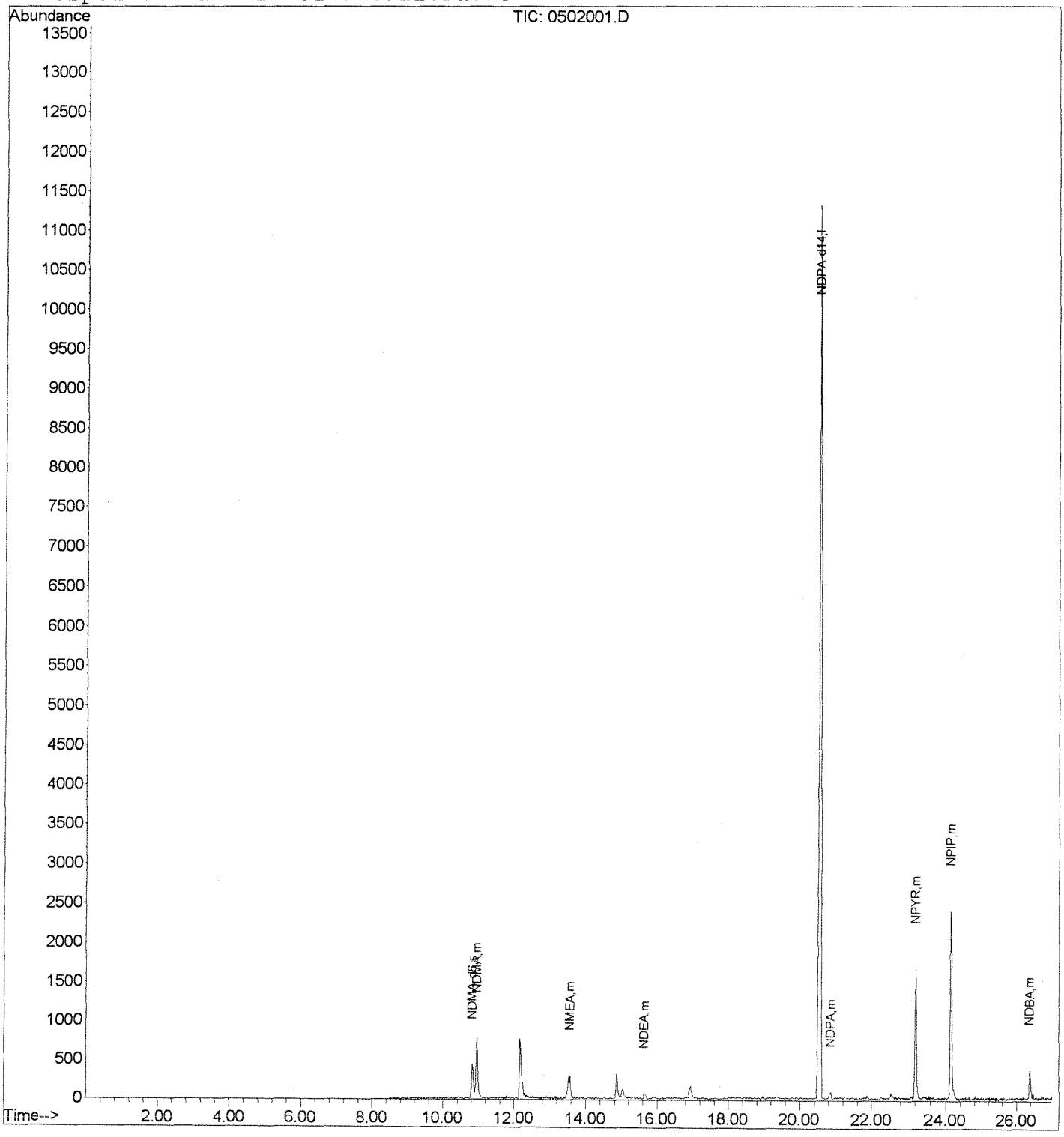
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	30450	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.83	50	1094	1.25	ug/L	-0.12
Target Compounds						Qvalue
4) NDMA	10.97	47	1694	1.30	ug/L	98
5) NMEA	13.57	61	1266	1.19	ug/L	100
6) NDEA	15.65	75	178	1.13	ug/L	100
7) NDPA	20.87	89	197	1.39	ug/L	100
8) NPYR	23.22	55	3470	1.43	ug/L	97
9) NPIP	24.14	69	5823	1.47	ug/L	100
10) NDBA	26.38	57	524	1.36	ug/L	100

(#) = qualifier out of range (m) = manual integration
0502001.D 031112_D14.M Wed May 09 12:11:50 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502001.D Vial: 1
Acq On : 02 May 12 17:19 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:45 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502008.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.1		3.46	3.43	NA	1	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.3		2.75	3.88	NA	27	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050212-521\0502008.D
Lab ID: KWG1204794-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/02/2012 22:16
Date Quantitated: 05/03/2012 13:46
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502008.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 22:16	**Quant Date:**	05/03/2012 13:46	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204794-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204794	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	-0.02	97	27043	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.84			50	9283	5.06		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.96			47	10492	6.34			
1	N-Nitrosomethylethylamine	13.55			61	9530	4.33			
1	N-Nitrosodiethylamine	15.67			75	1764	5.56			
1	N-Nitrosodi-n-propylamine	20.85			89	1569	5.49			
1	N-Nitrosopyrrolidine	23.23			55	24098	6.66			
1	N-Nitrosopiperidine	24.15			69	49139	7.64			
1	N-Nitrosodi-n-butylamine	26.40			57	15150	7.74			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808
DataFile: J:\MS16\DATA\050212-521\0502008.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	3.433		5.060	5.000	1.2
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	3.880		6.340	5.000	26.8
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	3.524		4.330	5.000	-13.4
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.652		5.560	5.000	11.2
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.580		5.490	5.000	9.8
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	8.911		6.660	5.000	33.2
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	1.8E+1		7.640	5.000	52.8 *
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	5.602		7.740	5.000	54.8 *

2 Compounds Failed CCV Criteria (25.00 Percent)

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502008.D Vial: 2
Acq On : 02 May 12 22:16 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:46:21 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

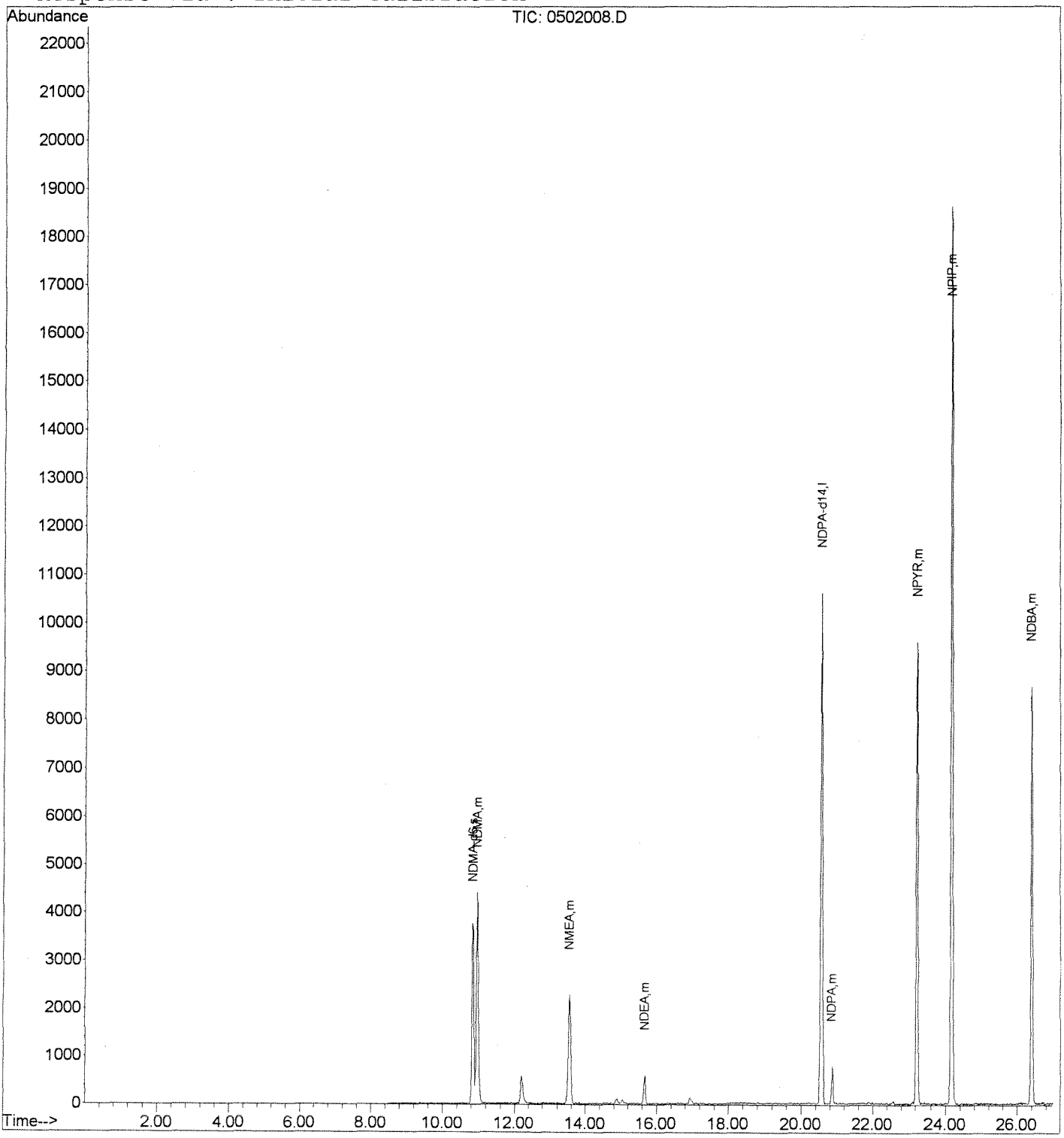
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	27043	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.84	50	9283	5.06	ug/L	-0.11
Target Compounds						Qvalue
4) NDMA	10.96	47	10492	6.34	ug/L	95
5) NMEA	13.55	61	9530	4.33	ug/L	100
6) NDEA	15.67	75	1764	5.56	ug/L	100
7) NDPA	20.85	89	1569	5.49	ug/L	100
8) NPYR	23.23	55	24098	6.66	ug/L	94
9) NPIP	24.15	69	49139	7.64	ug/L	100
10) NDBA	26.40	57	15150	7.74	ug/L	100

(#) = qualifier out of range (m) = manual integration
0502008.D 031112_D14.M Wed May 09 12:11:57 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502008.D Vial: 2
Acq On : 02 May 12 22:16 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:46 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/08/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.2		3.46	1.72	NA	23	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.2		2.75	2.36	NA	16	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050812-521\0508013.D
Lab ID: KWG1204795-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/08/2012 21:22
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508013.D			**Instrument:**	MS16
Acqu Date:	05/08/2012 21:22	**Quant Date:**	05/09/2012 12:13	**Vial:**	3
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204795-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204795	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.51	-0.08	97	28678	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.88			50	988	1.23		70-130	NA	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.99			47	1353	1.16			
1	N-Nitrosomethylethylamine	13.57			61	1110	1.16			
1	N-Nitrosodiethylamine	15.64			75	174	1.15			
1	N-Nitrosodi-n-propylamine	20.83			89	159	1.30			
1	N-Nitrosopyrrolidine	23.19			55	2383	1.21			
1	N-Nitrosopiperidine	24.11			69	4536	1.34			
1	N-Nitrosodi-n-butylamine	26.34			57	350	1.28			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808

DataFile: J:\MS16\DATA\050812-521\0508013.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	1.723		1.230	1.000	23.0
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	2.359		1.160	1.000	16.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	1.935		1.160	1.000	16.0
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.303		1.150	1.000	15.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.277		1.300	1.000	30.0
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	4.155		1.210	1.000	21.0
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	7.909		1.340	1.000	34.0
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	0.610		1.280	1.000	28.0

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508013.D Vial: 3
Acq On : 08 May 12 21:22 Operator: SVO-DW
Sample : DWSTD5-55J 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:30 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

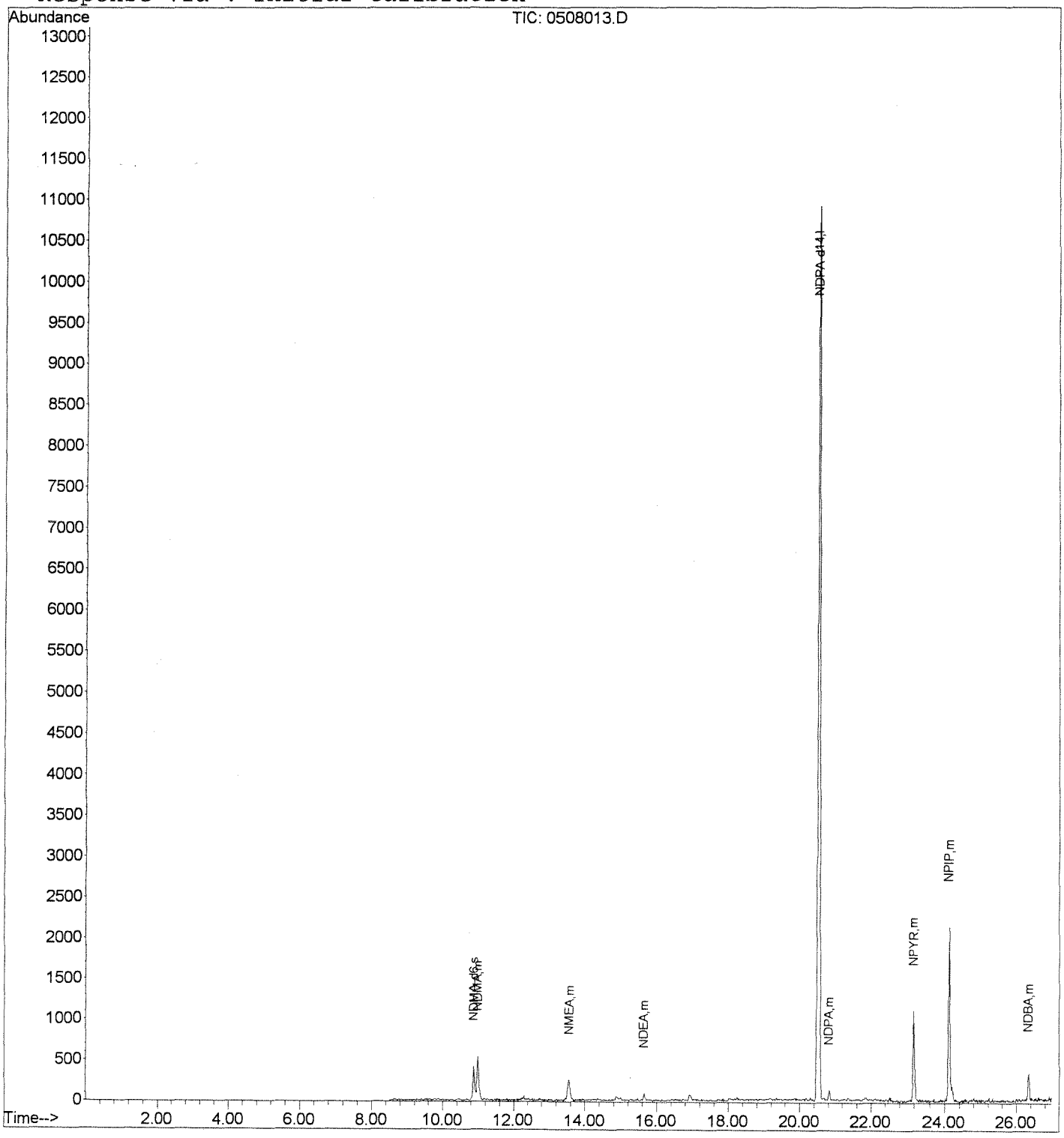
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.51	97	28678	50.00	ug/L	-0.07
System Monitoring Compounds						
3) NDMA-d6	10.88	50	988	1.23	ug/L	-0.08
Target Compounds						Qvalue
4) NDMA	10.99	47	1353	1.16	ug/L	95
5) NMEA	13.57	61	1110	1.16	ug/L	99
6) NDEA	15.64	75	174	1.15	ug/L	100
7) NDPA	20.83	89	159	1.30	ug/L	100
8) NPYR	23.19	55	2383	1.21	ug/L	94
9) NPIP	24.11	69	4536	1.34	ug/L	100
10) NDBA	26.34	57	350	1.28	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508013.D 031112_D14.M Wed May 09 12:16:16 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508013.D Vial: 3
Acq On : 08 May 12 21:22 Operator: SVO-DW
Sample : DWSTD5-55J 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/09/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508024.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.5		3.46	3.84	NA	10	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.6		2.75	4.04	NA	31	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050812-521\0508024.D
Lab ID: KWG1204795-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/09/2012 08:53
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508024.D			**Instrument:**	MS16
Acqu Date:	05/09/2012 08:53	**Quant Date:**	05/09/2012 12:13	**Vial:**	5
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204795-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204795	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.51	-0.06	97	27403	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.87			50	10510	5.51		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97			47	11071	6.57			
1	N-Nitrosomethylethylamine	13.54			61	11895	5.07			
1	N-Nitrosodiethylamine	15.62			75	2070	6.23			
1	N-Nitrosodi-n-propylamine	20.81			89	1950	6.43			
1	N-Nitrosopyrrolidine	23.19			55	26653	7.18			
1	N-Nitrosopiperidine	24.10			69	50086	7.68			
1	N-Nitrosodi-n-butylamine	26.33			57	17435	8.47			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808

DataFile: J:\MS16\DATA\050812-521\0508024.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	3.835		5.510	5.000	10.2
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	4.040		6.570	5.000	31.4
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	4.341		5.070	5.000	1.4
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.755		6.230	5.000	24.6
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.712		6.430	5.000	28.6
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	9.726		7.180	5.000	43.6
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	1.8E+1		7.680	5.000	53.6 *
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	6.362		8.470	5.000	69.4 *

2 Compounds Failed CCV Criteria (25.00 Percent)

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508024.D Vial: 5
Acq On : 09 May 2012 08:53 Operator: SVO-DW
Sample : DWSTD5-55L 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:33 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

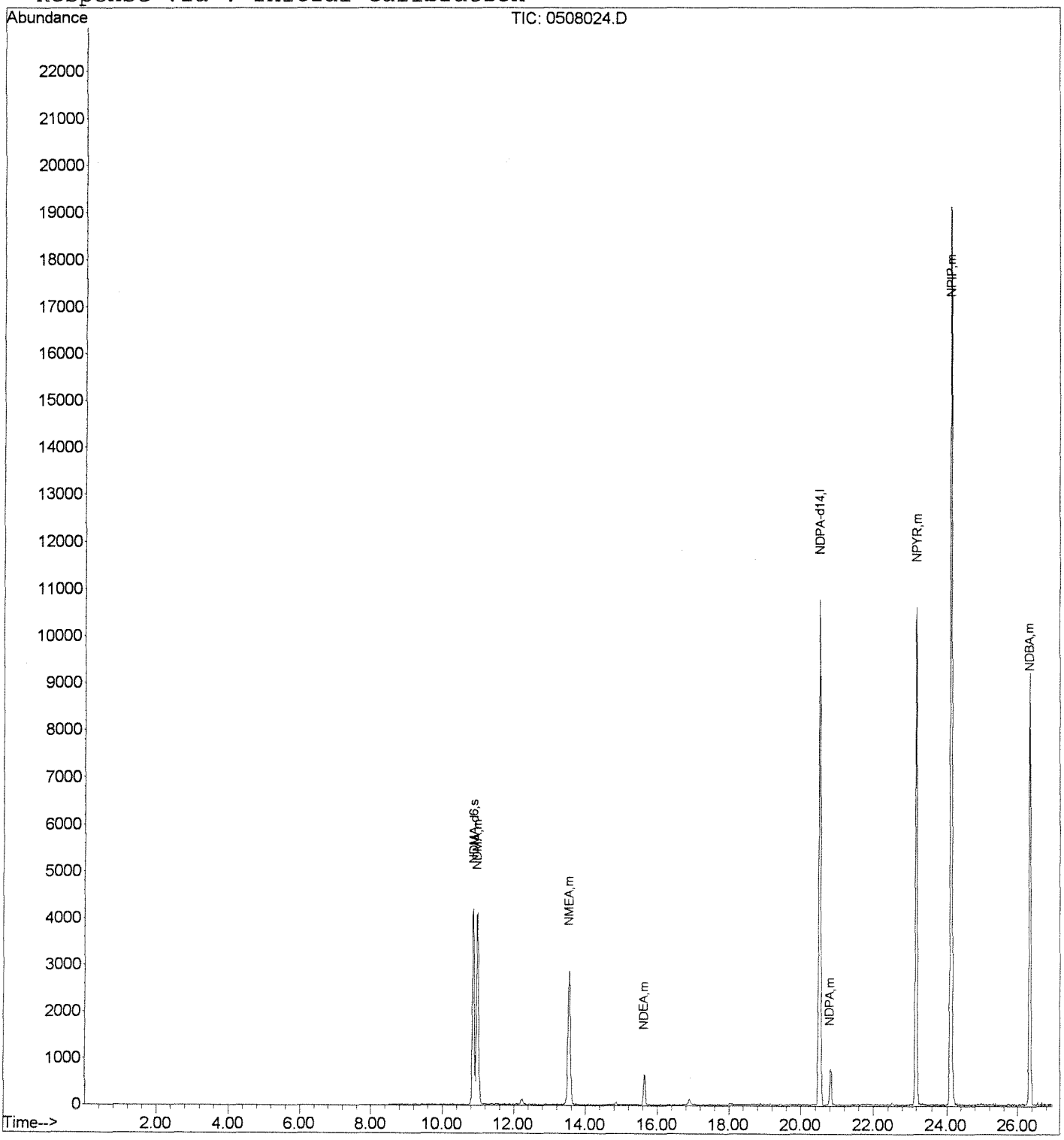
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.51	97	27403	50.00	ug/L	-0.07
System Monitoring Compounds						
3) NDMA-d6	10.87	50	10510	5.51	ug/L	-0.08
Target Compounds						Qvalue
4) NDMA	10.97	47	11071	6.57	ug/L	97
5) NMEA	13.54	61	11895	5.07	ug/L	100
6) NDEA	15.62	75	2070	6.23	ug/L	100
7) NDPA	20.81	89	1950	6.43	ug/L	100
8) NPYR	23.19	55	26653	7.18	ug/L	97
9) NPIP	24.10	69	50086	7.68	ug/L	100
10) NDBA	26.33	57	17435	8.47	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508024.D 031112_D14.M Wed May 09 12:16:22 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508024.D Vial: 5
Acq On : 09 May 2012 08:53 Operator: SVO-DW
Sample : DWSTD5-55L 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Sample Prep and Screen Data

Preparation Information

Group ID:	KWG1204391	**Prep Method:**	METHOD	**Prep Date:**	04/30/12 08:00
Department:	Semivoa GC				

Lab Code	Client ID	Product	Matrix	Amt. Ext.	Final Vol.
KWG1204391-1	Matrix Spike	521 Nitrosamines	WATER	500ml	1ml
KWG1204391-2	Duplicate Matrix Spike	521 Nitrosamines	WATER	500ml	1ml
KWG1204391-3	Lab Control Sample	521 Nitrosamines	WATER	500ml	1ml
KWG1204391-4	Method Blank	521 Nitrosamines	WATER	500ml	1ml
P1201573-002	MW-16	521 Nitrosamines	WATER	500ml	1ml
P1201573-003	DUPE-8-2Q12	521 Nitrosamines	WATER	500ml	1ml
P1201588-002	MW-13	521 Nitrosamines	WATER	500ml	1ml
P1201604-005	MW-24-1	521 Nitrosamines	WATER	500ml	1ml
P1201630-005	MW-4-1	521 Nitrosamines	WATER	500ml	1ml

Lab Code	Parent Lab Code	Comments
KWG1204391-1	P1201573-002	
KWG1204391-2	P1201573-002	

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
KWG1204391-1	1121342	DWSTD05-35 I	10uL	DWSTD05-55 B	100uL	
KWG1204391-2	1121343	DWSTD05-35 I	10uL	DWSTD05-55 B	100uL	
KWG1204391-3	1121344	DWSTD05-35 I	10uL	DWSTD05-55 B	100uL	
KWG1204391-4	1121345	DWSTD05-35 I	10uL			
P1201573-002	1121338	DWSTD05-35 I	10uL			
P1201573-003	1121339	DWSTD05-35 I	10uL			
P1201588-002	1121340	DWSTD05-35 I	10uL			
P1201604-005	1121341	DWSTD05-35 I	10uL			
P1201630-005	1121337	DWSTD05-35 I	10uL			

Comments:

Started By: RHayes Assisted By: Training Yes No

Completed By: RHayes Assisted By: Yes No

Reviewed By: Date: 5/9/12 Storage: 215A - F 06

Chain of Custody

Relinquished By: Date: 4/30/12

Received By: Date: 5/1/12 Extracts Examined Yes No

COLUMBIA ANALYTICAL SERVICES, INC.

Service Request No.: As listed **Date Extracted:** 4-30-12

Analyst: Rob Hayes **Method:** EPA 521

StarLims Run :

Nitrosoamines in Water

Lab ID	Client ID ISTD:	Sample Volume (mL)	Surr (mL)	MS	Residual Chlorine	Final Volume mL
P1201573-002	10 mL	500	10		<0.1	1
F -003		500	10		<0.1	1
P1201588-002		500	10		<0.1	1
P1201604-005		500	10		<0.1	1
P1201630-005		500	10		<0.1	1
MB		500	10		<0.1	1
LCS		500	10	100	<0.1	1
P1201573-002	MS	500	10	100	<0.1	1
P1201573-002	DMS	500	10	100	<0.1	1
MRL		500	10	10	<0.1	1

Comments:

DCM Lot # DF597 **MeOH Lot #** DE997 **Sulfate Lot #** 2/14/12-J49603

SPE Cartridge Lot # 94627-EL

Surrogate ID: DuSTD05-35 I 1ppm XP 5/15/12

Spike ID : DuSTD05-55B 100ppb XP 10/30/12 ISTD: DuSTD5-496 5ppm X1 7/9/12

Vial: Amber **Extract Storage:** 21SA-F-06 **Extracts Received:** 4/30/12

Reviewed By:	**Date:** 5/9/12

Preparation Information Benchsheet

Prep Run#: 156720 **Prep WorkFlow:** OrgExtDW(14/28) **Status:** Draft
Team: Semivoa GC **Prep Method:** Method **Prep Date/Time:** 4/30/12 09:18 AM
Number of Copies to make: 4

#	Lab Code	Client ID	B#	√	Test	Matrix	Amt Ext.	pH	Int Vol	Final Vol	Surr Added	Spike Added
1	P1201573-002	MW-16	.02		521/Nitrosamines	Water						
2	P1201573-003	DUPE-8-2Q12	.01		521/Nitrosamines	Water						
3	P1201588-002	MW-13	.02		521/Nitrosamines	Water						
4	P1201604-005	MW-24-1	.01		521/Nitrosamines	Water						
5	P1201630-005	MW-4-1	.01		521/Nitrosamines	Water						

Comments: used for ID only

Surrogate ID: _____ Spike ID: _____

Witnessed By: _____

Analyst: _____ Assisted By: _____

Exception Report

Batch Exceptions

Batch ID: KWG1204793

Data Path: J:\MS16\DATA\050112-521\

File ID	Laboratory ID	Client ID	Btl ID	Type	Matrix	Date Acquired	Pass	Fail	ReAnalyze?
0501001.D	KWG1204793-2	Continuing Calibration Verific		CCV	Not appli	05-01-2012 17:04	x		
0501004.D	KWG1204391-3	Lab Control Sample		LCS	Water	05-01-2012 19:12		x	
0501007.D	KWG1204391-2	Duplicate Matrix Spike		DMS	Water	05-01-2012 21:19		x	
0501008.D	P1201573-003	DUPE-8-2Q12		SMPL	Water	05-01-2012 22:01	x		
0501009.D	P1201588-002	MW-13		SMPL	Water	05-01-2012 22:44	x		
0501010.D	P1201604-005	MW-24-1		SMPL	Water	05-01-2012 23:26	x		
0501011.D	P1201630-005	MW-4-1		SMPL	Water	05-02-2012 00:09	x		
0501013.D	KWG1204793-3	Continuing Calibration Verific		CCV	Not appli	05-02-2012 01:33	x		

Reviews

Level 1: _____ Date: May 9, 2012

Level 2: _____ Date: 5/9/12

Injection Log

Directory: J:\MS16\DATA\050112-521

Run # 290877

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0501.D	1.	DCM		01 May 2012 28:2
2	1	0501001.D	1.	DWSTD5-53A 1 PPB		01 May 2012 29:0
3	3	0501002.D	1.	043012-MRL		01 May 2012 29:4
4	4	0501003.D	1.	043012-MB – rerun Surr low		01 May 2012 30:2
5	5	0501004.D	1.	043012-LCS – rerun Surr low		01 May 2012 31:1
6	6	0501005.D	1.	P1201573-002 – rerun Surr low		01 May 2012 31:5
7	7	0501006.D	1.	P1201573-002 MS		01 May 2012 32:3
8	8	0501007.D	1.	P1201573-002 DMS		01 May 2012 33:1
9	9	0501008.D	1.	P1201573-003		01 May 2012 34:0
10	10	0501009.D	1.	P1201588-002		01 May 2012 34:4
11	11	0501010.D	1.	P1201604-005		01 May 2012 35:2
12	12	0501011.D	1.	P1201630-005		02 May 2012 12:0
13		0501012.D	1.	CARRYOVER BLANK		02 May 2012 12:5
14	2	0501013.D	1.	DWSTD5-53C 5 PPB		02 May 2012 13:3

Exception Report

Batch Exceptions

Batch ID: KWG1204794

Data Path: J:\MS16\DATA\050212-521\

File ID	Laboratory ID	Client ID	Btl ID	Type	Matrix	Date Acquired	Pass	Fail	ReAnalyze?
0502001.D	KWG1204794-2	Continuing Calibration Verific		CCV	Not appl	05-02-2012 17:19	x		
0502002.D	KWG1204391-4	Method Blank		MB	Water	05-02-2012 18:02	x		
0502004.D	P1201573-002	MW-16		SMPL	Water	05-02-2012 19:26	x		
0502005.D	KWG1204391-1	Matrix Spike		MS	Water	05-02-2012 20:09		x	
0502008.D	KWG1204794-3	Continuing Calibration Verific		CCV	Not appl	05-02-2012 22:16	x		

Reviews

Level 1: _____ Date: May 9, 2012

Level 2: _____ Date: 5/9/12

Printed: 05/09/2012 12:38:49 Page 1 of 1

u:\Stealth\Crystal.rpt\except1.rpt

Injection Log

Directory: J:\MS16\DATA\050212-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0502.D	1.	DCM		
2	1	0502001.D	1.	DWSTD5-53A 1 PPB		02 May 2012 28:3
3	4	0502002.D	1.	043012-MB		02 May 2012 29:1
4	5	0502003.D	1.	043012-LCS – ~~NR, report only~~ report Q rerun NR rerun		02 May 2012 30:0
5	6	0502004.D	1.	P1201573-002		02 May 2012 30:4
6	7	0502005.D	1.	P1201573-002 MS		02 May 2012 31:2
7	8	0502006.D	1.	P1201573-002 DMS - NR rerun		02 May 2012 32:0
8		0502007.D	1.	CARRYOVER BLANK		02 May 2012 32:5
9	2	0502008.D	1.	DWSTD5-53C 5 PPB		02 May 2012 33:3
						02 May 2012 34:1

Exception Report

Batch Exceptions

Batch ID: KWG1204795

Data Path: J:\MS16\DATA\050812-521\

File ID	Laboratory ID	Client ID	Btl ID	Type	Matrix	Date Acquired	Pass	Fail	ReAnalyze?
0508013.D	KWG1204795-2	Continuing Calibration Verific		CCV	Not appli	05-08-2012 21:22	x		
0508016.D	KWG1204391-3	Lab Control Sample		LCS	Water	05-08-2012 23:29		x	
0508019.D	KWG1204391-2	Duplicate Matrix Spike		DMS	Water	05-09-2012 01:36		x	
0508024.D	KWG1204795-3	Continuing Calibration Verific		CCV	Not appli	05-09-2012 08:53	x		

Reviews

Level 1: _____ Date: May 9, 2012

Level 2: _____ Date: 5/9/12

Injection Log

Directory: J:\MS16\DATA\050812-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0508.D	1.	DCM		08 May 2012 23:0
2	1	0508001.D	1.	DWSTD5-55H 0.25 PPB		08 May 2012 23:4
3	2	0508002.D	1.	DWSTD5-55I 0.5 PPB	NR reinject	08 May 2012 25:3
4	3	0508003.D	1.	DWSTD5-55J 1 PPB		08 May 2012 26:1
5	2	0508004.D	1.	DWSTD5-55I 0.5 PPB		08 May 2012 27:0
6	4	0508005.D	1.	DWSTD5-55K 2 PPB		08 May 2012 27:4
7	5	0508006.D	1.	DWSTD5-55L 5 PPB		08 May 2012 28:2
8	6	0508007.D	1.	DWSTD5-55M 7 PPB		08 May 2012 29:0
9	7	0508008.D	1.	DWSTD5-55N 10 PPB	NR, not needed	08 May 2012 29:5
10	8	0508009.D	1.	DWSTD5-55O 15 PPB		08 May 2012 30:3
11	9	0508010.D	1.	DWSTD5-55P 20 PPB		08 May 2012 31:1
12	10	0508011.D	1.	DWSTD5-56B ICV 10		08 May 2012 31:5
13		0508012.D	1.	DCM		08 May 2012 32:3
14	3	0508013.D	1.	DWSTD5-55J 1 PPB		08 May 2012 33:2
15	11	0508014.D	1.	043012-MRL		08 May 2012 34:0
16	12	0508015.D	1.	043012-MB		08 May 2012 34:4
17	13	0508016.D	1.	043012-LCS	(Surr only)	08 May 2012 35:2
18	14	0508017.D	1.	P1201573-002		09 May 2012 12:1
19	15	0508018.D	1.	P1201573-002 MS		09 May 2012 12:5
20	16	0508019.D	1.	P1201573-002 DMS	(Surr only)	09 May 2012 13:3
21	17	0508020.D	1.	P1201573-003		09 May 2012 14:1
22	18	0508021.D	1.	P1201588-002		09 May 2012 15:0
23	19	0508022.D	1.	P1201604-005		09 May 2012 15:4
24		0508023.D	1.	CARRYOVER BLANK		09 May 2012 20:1
25	5	0508024.D	1.	DWSTD5-55L 5 PPB	NDMA FAIL 4	09 May 2012 20:5

1,4-Dioxane

Organic Analysis:
1,4-Dioxane by GC/MS

Summary Package

Sample and QC Results

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201588

Cover Page - Organic Analysis Data Package
1,4-Dioxane by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
MW-13	P1201588-002	04/24/2012	04/24/2012

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Carl Dogan

Date: 5/8/12 Title: SVM Supervisor

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	04/24/2012
Sample Matrix:	Water	**Date Received:**	04/24/2012

1,4-Dioxane by GC/MS

Sample Name:	MW-13	**Units:**	ug/L
Lab Code:	P1201588-002	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**2.5**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	81	48-118	05/03/12	Acceptable

Comments:

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1204380-5	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	90	48-118	05/03/12	Acceptable

Comments:

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201588

Surrogate Recovery Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	K1203834-003	80
MW-13	P1201588-002	81
Method Blank	KWG1204380-5	90
Batch QCMS	KWG1204380-1	80
Batch QCDMS	KWG1204380-2	80
Lab Control Sample	KWG1204380-3	93
Duplicate Lab Control Sample	KWG1204380-4	96

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Dioxane-d8	48-118

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/03/2012
Time Analyzed: 16:29

Internal Standard Area and RT Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F003.D
Instrument ID: MS26
Analysis Method: 8270D SIM

Lab Code: KWG1204586-2
Analysis Lot: KWG1204586

		1,4-Dichlorobenzene-d4	
		Area	RT
	Results ==>	14,092	5.28
	Upper Limit ==>	28,184	5.78
	Lower Limit ==>	7,046	4.78
	ICAL Result ==>	15,754	5.29
Associated Analyses			
Method Blank	KWG1204380-5	14,307	5.28
Lab Control Sample	KWG1204380-3	15,930	5.28
Duplicate Lab Control Sample	KWG1204380-4	14,308	5.27
Batch QCMS	KWG1204380-1	14,342	5.27
Batch QCDMS	KWG1204380-2	13,718	5.27
Batch QC	K1203834-003	16,251	5.28
MW-13	P1201588-002	15,964	5.27

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012

Matrix Spike/Duplicate Matrix Spike Summary
1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1203834-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

Analyte Name	Sample Result	Batch QCMS KWG1204380-1 Matrix Spike			Batch QCDMS KWG1204380-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,4-Dioxane	ND	24.3	25.0	97	23.8	25.0	95	33-127	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201588
Date Extracted: 04/30/2012
Date Analyzed: 05/03/2012

Lab Control Spike/Duplicate Lab Control Spike Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1204380

	Lab Control Sample KWG1204380-3 Lab Control Spike			Duplicate Lab Control Sample KWG1204380-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,4-Dioxane	23.6	25.0	94	22.8	25.0	91	52-111	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	16:48

Method Blank Summary
1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS26
Lab Code:	KWG1204380-5	**File ID:**	J:\MS26\DATA\050312\0503F004.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/12	17:08
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/12	17:27
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-13	P1201588-002	J:\MS26\DATA\050312\0503F017.D	05/03/12	20:57

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	17:08

Lab Control Sample Summary
1,4-Dioxane by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS26
Lab Code:	KWG1204380-3	**File ID:**	J:\MS26\DATA\050312\0503F005.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/12	16:48
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-13	P1201588-002	J:\MS26\DATA\050312\0503F017.D	05/03/12	20:57

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/03/2012
Time Analyzed: 16:10

Tune Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F002.D
Instrument ID: MS26
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1204586

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
198	442	30	100	53.1	327258	PASS
199	198	5	9	6.7	22072	PASS
275	198	10	60	28.6	93752	PASS
365	442	1	50	2.1	12870	PASS
441	443	0	100	73.0	87834	PASS
442	442	100	100	100.0	615872	PASS
443	442	15	24	19.5	120280	PASS
51	198	10	80	16.9	55287	PASS
68	69	0	2	1.3	1000	PASS
69	198	0	100	23.0	75190	PASS
70	69	0	2	0.4	321	PASS
127	198	10	80	41.2	134864	PASS
197	198	0	2	0.0	0	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1204586-2	J:\MS26\DATA\050312\0503F003.D	05/03/2012	16:29	
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/2012	16:48	
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/2012	17:08	
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/2012	17:27	
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/2012	17:46	
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/2012	18:05	
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/2012	18:24	
MW-13	P1201588-002	J:\MS26\DATA\050312\0503F017.D	05/03/2012	20:57	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS26\DATA\041112\0411F009.D	E	J:\MS26\DATA\041112\0411F013.D
B	J:\MS26\DATA\041112\0411F010.D	F	J:\MS26\DATA\041112\0411F014.D
C	J:\MS26\DATA\041112\0411F011.D	G	J:\MS26\DATA\041112\0411F015.D
D	J:\MS26\DATA\041112\0411F012.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,4-Dioxane	A	2.0	0.346	B	4.0	0.323	C	10	0.385	D	20	0.376	E	50	0.406
	F	100	0.417	G	200	0.401									
1,4-Dioxane-d8	A	2.0	0.360	B	4.0	0.348	C	10	0.389	D	20	0.384	E	50	0.381
	F	100	0.407	G	200	0.394									

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201588
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26
Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,4-Dioxane	MS	AverageRF	% RSD	9.0		≤ 20	0.379		0.01
1,4-Dioxane-d8	SURR	AverageRF	% RSD	5.4		≤ 20	0.380		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Calibration Date: 04/11/2012
Date Analyzed: 04/11/2012

Second Source Calibration Verification
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL11446
Units: ng/ml

File ID: J:\MS26\DATA\041112\0411F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	21	0.379	0.404	7	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/03/2012

Continuing Calibration Verification Summary
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 04/11/2012
Calibration ID: CAL11446
Analysis Lot: KWG1204586
Units: ng/ml

File ID: J:\MS26\DATA\050312\0503F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	20	0.01	0.379	0.376	-1	NA	± 20 %	AverageRF
1,4-Dioxane-d8	20	17	0.01	0.380	0.314	-17	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL-GW-2Q12/100006114
Service Request: P1201588

Analysis Run Log
1,4-Dioxane by GC/MS

Analysis Method: 8270D SIM
Analysis Lot: KWG1204586
Instrument ID: MS26

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0503F002.D	GC/MS Tuning - Generic	KWG1204586-1	5/3/2012	16:10		5/3/2012	16:20
0503F003.D	Continuing Calibration Verification	KWG1204586-2	5/3/2012	16:29		5/3/2012	16:39
0503F004.D	Method Blank	KWG1204380-5	5/3/2012	16:48		5/3/2012	16:58
0503F005.D	Lab Control Sample	KWG1204380-3	5/3/2012	17:08		5/3/2012	17:18
0503F006.D	Duplicate Lab Control Sample	KWG1204380-4	5/3/2012	17:27		5/3/2012	17:37
0503F007.D	Batch QCMS	KWG1204380-1	5/3/2012	17:46		5/3/2012	17:56
0503F008.D	Batch QCDMS	KWG1204380-2	5/3/2012	18:05		5/3/2012	18:15
0503F009.D	Batch QC	K1203834-003	5/3/2012	18:24		5/3/2012	18:34
0503F010.D	ZZZZZZ	ZZZZZZ	5/3/2012	18:43		5/3/2012	18:53
0503F011.D	ZZZZZZ	ZZZZZZ	5/3/2012	19:02		5/3/2012	19:12
0503F012.D	ZZZZZZ	ZZZZZZ	5/3/2012	19:21		5/3/2012	19:31
0503F013.D	ZZZZZZ	ZZZZZZ	5/3/2012	19:40		5/3/2012	19:50
0503F014.D	ZZZZZZ	ZZZZZZ	5/3/2012	20:00		5/3/2012	20:10
0503F015.D	ZZZZZZ	ZZZZZZ	5/3/2012	20:19		5/3/2012	20:29
0503F016.D	ZZZZZZ	ZZZZZZ	5/3/2012	20:38		5/3/2012	20:48
0503F017.D	MW-13	P1201588-002	5/3/2012	20:57		5/3/2012	21:07
0503F018.D	ZZZZZZ	ZZZZZZ	5/3/2012	21:16		5/3/2012	21:26
0503F019.D	ZZZZZZ	ZZZZZZ	5/3/2012	21:35		5/3/2012	21:45

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201588
Date Extracted: 04/30/2012

Extraction Prep Log
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Extraction Lot: KWG1204380
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MW-13	P1201588-002	04/24/12	04/24/12	100ml	50ml	NA	
Method Blank	KWG1204380-5	NA	NA	100ml	50ml	NA	
Batch QC	K1203834-003	NA	NA	100ml	50ml	NA	
Batch QCMS	KWG1204380-1	NA	NA	100ml	50ml	NA	
Batch QCDMS	KWG1204380-2	NA	NA	100ml	50ml	NA	
Lab Control Sample	KWG1204380-3	NA	NA	100ml	50ml	NA	
Duplicate Lab Control Sample	KWG1204380-4	NA	NA	100ml	50ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

QC Reports

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201588

Surrogate Recovery Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	K1203834-003	80
MW-13	P1201588-002	81
Method Blank	KWG1204380-5	90
Batch QCMS	KWG1204380-1	80
Batch QCDMS	KWG1204380-2	80
Lab Control Sample	KWG1204380-3	93
Duplicate Lab Control Sample	KWG1204380-4	96

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Dioxane-d8	48-118

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/03/2012
Time Analyzed: 16:29

Internal Standard Area and RT Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F003.D
Instrument ID: MS26
Analysis Method: 8270D SIM

Lab Code: KWG1204586-2
Analysis Lot: KWG1204586

		1,4-Dichlorobenzene-d4	
		Area	RT
	Results ==>	14,092	5.28
	Upper Limit ==>	28,184	5.78
	Lower Limit ==>	7,046	4.78
	ICAL Result ==>	15,754	5.29
Associated Analyses			
Method Blank	KWG1204380-5	14,307	5.28
Lab Control Sample	KWG1204380-3	15,930	5.28
Duplicate Lab Control Sample	KWG1204380-4	14,308	5.27
Batch QCMS	KWG1204380-1	14,342	5.27
Batch QCDMS	KWG1204380-2	13,718	5.27
Batch QC	K1203834-003	16,251	5.28
MW-13	P1201588-002	15,964	5.27

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012

Matrix Spike/Duplicate Matrix Spike Summary
1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1203834-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

Analyte Name	Sample Result	Batch QCMS KWG1204380-1 Matrix Spike			Batch QCDMS KWG1204380-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,4-Dioxane	ND	24.3	25.0	97	23.8	25.0	95	33-127	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL-GW-2Q12/100006114
Sample Matrix: Water

Service Request: P1201588
Date Extracted: 04/30/2012
Date Analyzed: 05/03/2012

Lab Control Spike/Duplicate Lab Control Spike Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1204380

	Lab Control Sample KWG1204380-3 Lab Control Spike			Duplicate Lab Control Sample KWG1204380-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,4-Dioxane	23.6	25.0	94	22.8	25.0	91	52-111	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	16:48

Method Blank Summary
1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS26
Lab Code:	KWG1204380-5	**File ID:**	J:\MS26\DATA\050312\0503F004.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/12	17:08
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/12	17:27
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-13	P1201588-002	J:\MS26\DATA\050312\0503F017.D	05/03/12	20:57

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	17:08

Lab Control Sample Summary
1,4-Dioxane by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS26
Lab Code:	KWG1204380-3	**File ID:**	J:\MS26\DATA\050312\0503F005.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/12	16:48
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-13	P1201588-002	J:\MS26\DATA\050312\0503F017.D	05/03/12	20:57

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Raw Data

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	04/24/2012
Sample Matrix:	Water	**Date Received:**	04/24/2012

1,4-Dioxane by GC/MS

Sample Name:	MW-13	**Units:**	ug/L
Lab Code:	P1201588-002	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**2.5**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	81	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F017.D
Lab ID: P1201588-002
RunType: SMPL
Matrix: WATER

Date Acquired: 05/03/2012 20:57
Date Quantitated: 05/04/2012 08:53
Batch ID: KWG1204586
Analysis Method: 8270D SIM
ListJoinID: LJ2865

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Duplicate Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: MAY 04 2012

Secondary Review: CM 05·04·12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F017.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 20:57	**Quant Date:**	05/04/2012 08:53	**Vial:**	17
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201588-002			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**	04/24/2012	**Receive Date:**	04/24/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	P1201588
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121261	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:	1,4-Dioxane by GC/MS	**Report List ID:**	LJ2865
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	15964	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.19	0.00	0.00	96	4929	40.60	81	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.21		0.00	88	614**m**	5.07	2.5		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F017.D Vial: 17
Acq On : 3 May 2012 8:57 pm Operator: KBailey
Sample : P1201588-002 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:22 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

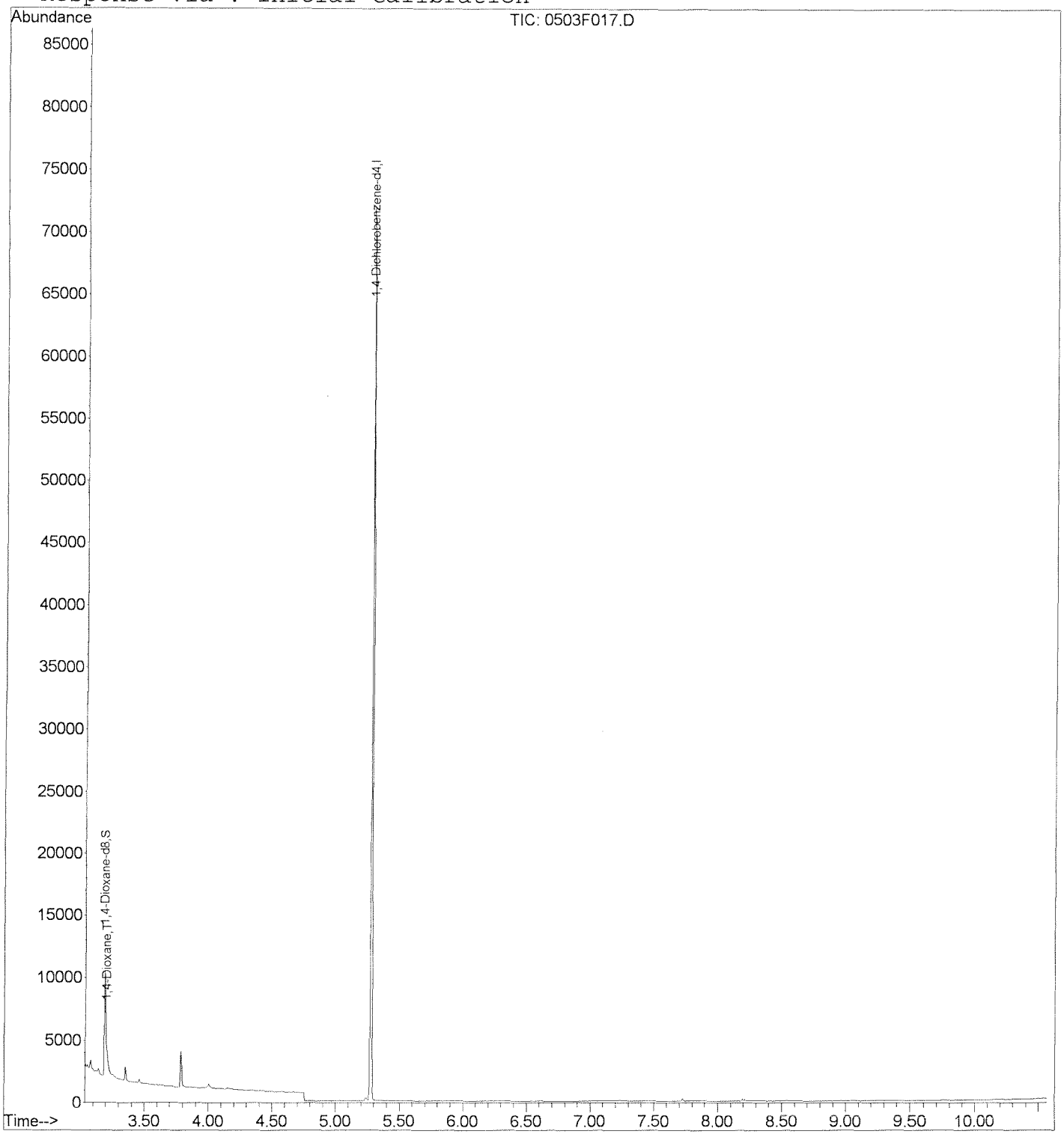
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	15964	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.19	96	4929	40.60	ng/ml	-0.04
Spiked Amount 50.000			Recovery = 81.20%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.21	88	614m	5.07	ng/ml	

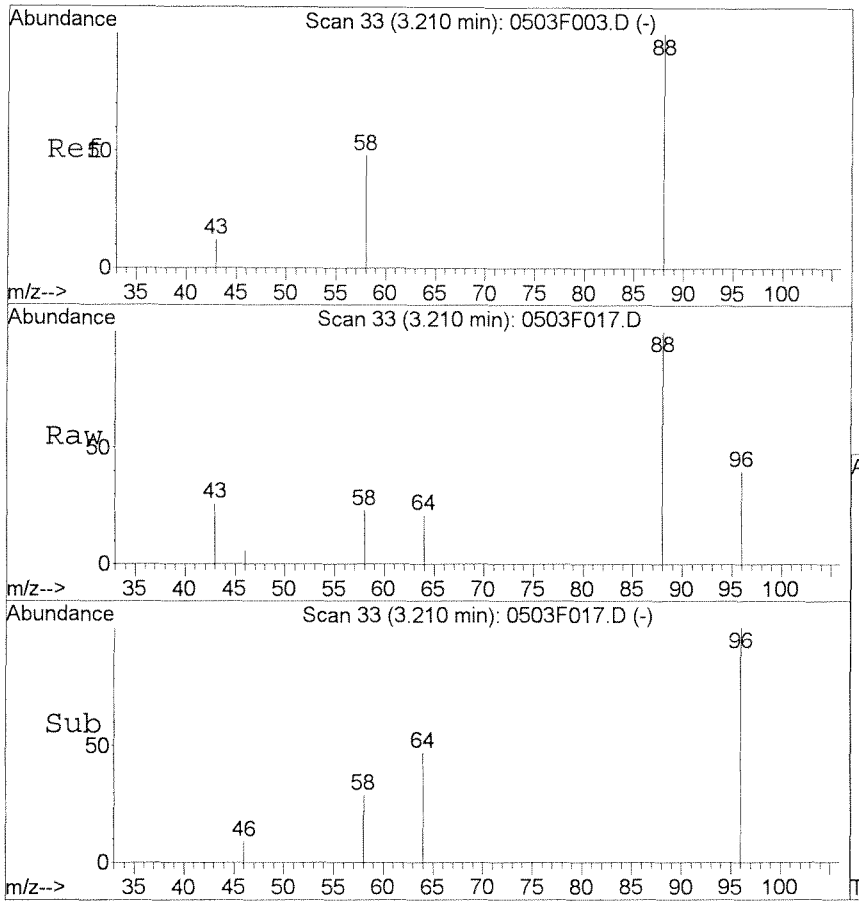
(#) = qualifier out of range (m) = manual integration
0503F017.D 041112_DX.M Fri May 04 08:54:36 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F017.D Vial: 17
Acq On : 3 May 2012 8:57 pm Operator: KBailey
Sample : P1201588-002 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:53 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

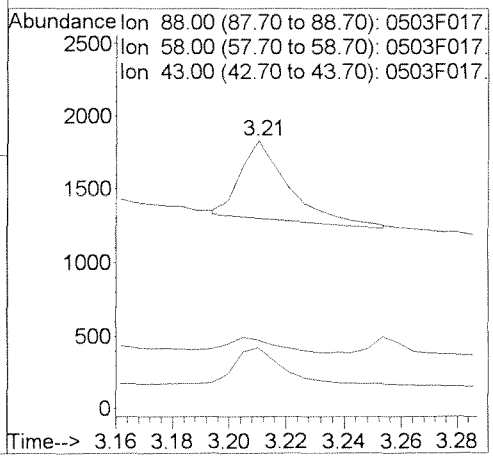




#3
1,4-Dioxane
Concen: 5.07 ng/ml m
RT: 3.21 min Scan# 33
Delta R.T. -0.03 min
Lab File: 0503F017.D
Acq: 3 May 2012 8:57 pm

Tgt Ion: 88 Resp: 614

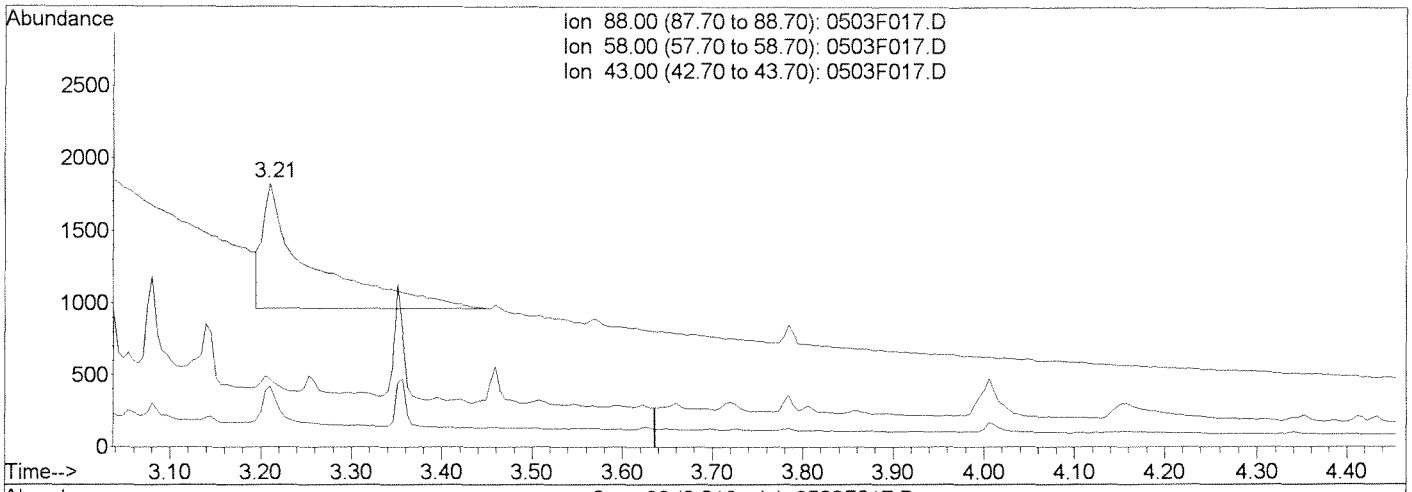
Ion	Ratio	Lower	Upper
88	100		
58	23.0	0.0	35.5
43	25.9	0.0	35.9

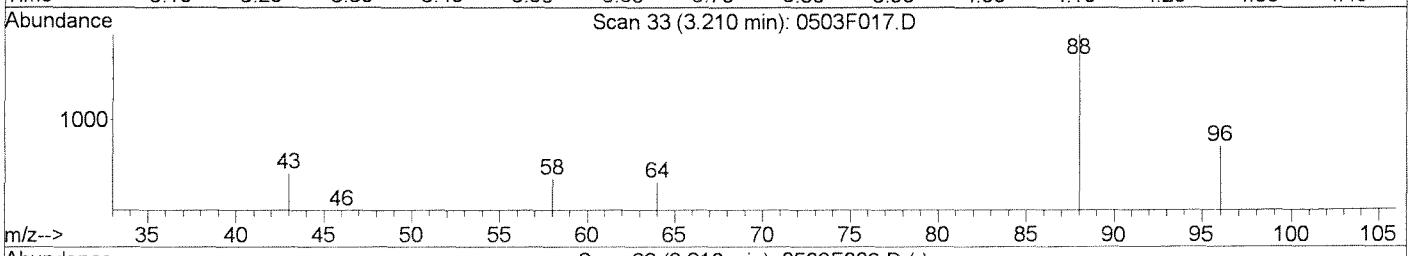


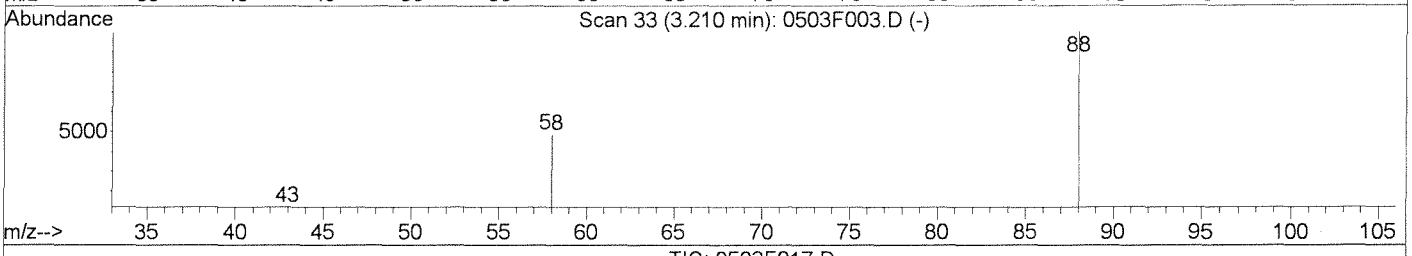
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F017.D Vial: 17
Acq On : 3 May 2012 8:57 pm Operator: KBailey
Sample : P1201588-002 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F017.D

(3) 1,4-Dioxane (T)

3.21min 26.14ng/ml

response 3164

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	33.06
43.00	15.90	6.71
0.00	0.00	0.00

Manual Integration:

Before

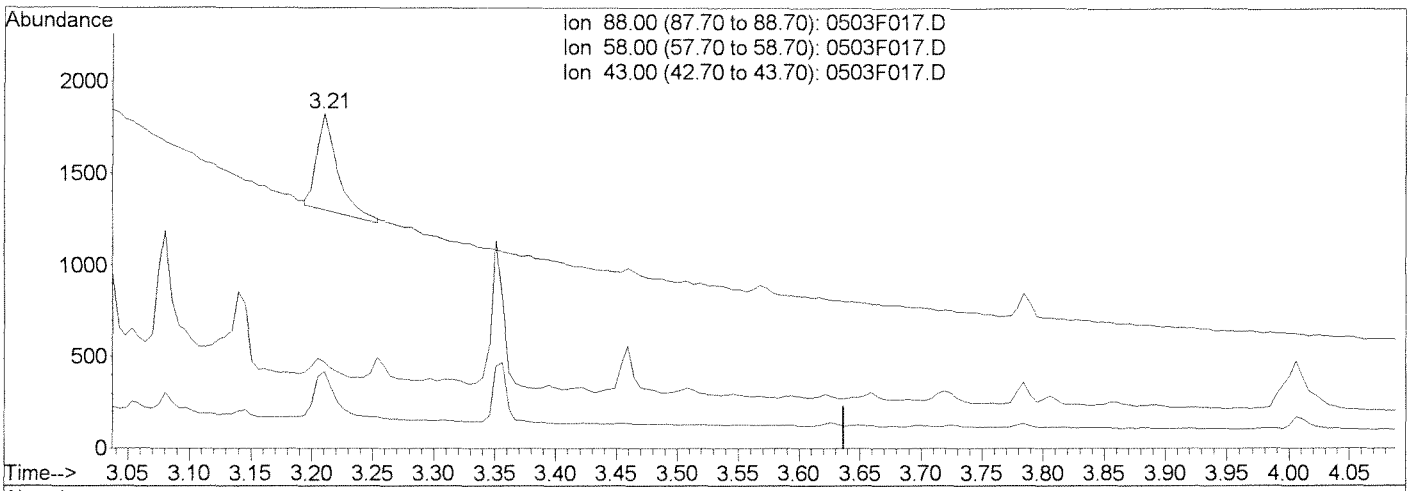
0503F017.D 041112_DX.M Fri May 04 08:53:25 2012

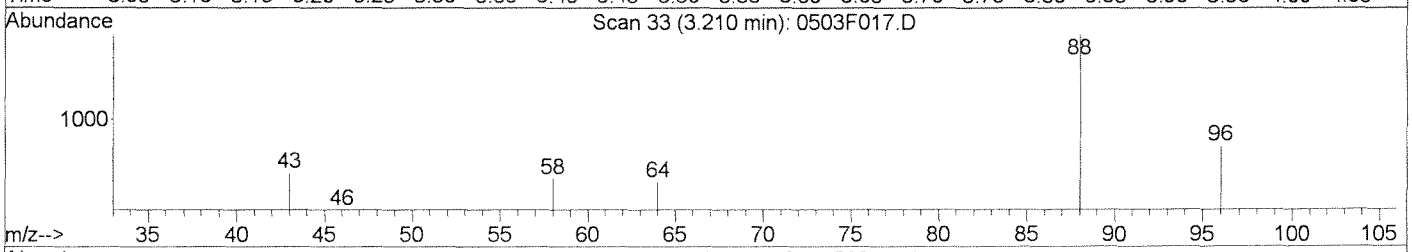
Quantitation Report (Qedit)

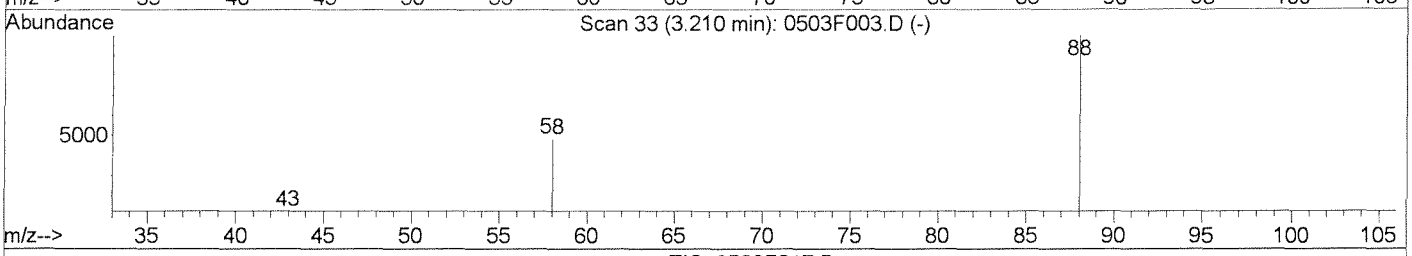
Data File : J:\MS26\DATA\050312\0503F017.D
Acq On : 3 May 2012 8:57 pm
Sample : P1201588-002
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:53 2012

Vial: 17
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F017.D

(3) 1,4-Dioxane (T)

3.21min 5.07ng/ml m

response 614

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	23.02
43.00	15.90	25.86
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

CK LB

0503F017.D 041112_DX.M Fri May 04 08:53:42 2012

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1204380-5	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	90	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F004.D
Lab ID: KWG1204380-5
RunType: MB
Matrix: WATER

Date Acquired: 05/03/2012 16:48
Date Quantitated: 05/04/2012 08:46
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

L3834
L3902
P1573
P1588
PLC4
PLC30

Primary Review: LCB MAY 04 2012

Secondary Review: CK 05.04.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F004.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 16:48	**Quant Date:**	05/04/2012 08:46	**Vial:**	4
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1204380-5			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121267	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.00?	152	14307	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.20	0.01	0.00	96	4916	45.18	90	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (Not Reviewed)

Data File : J:\MS26\DATA\050312\0503F004.D Vial: 4
Acq On : 3 May 2012 4:48 pm Operator: KBailey
Sample : KWG1204380-5 | MB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:19 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	14307	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.20	96	4916	45.18	ng/ml	-0.03
Spiked Amount 50.000			Recovery = 90.36%			

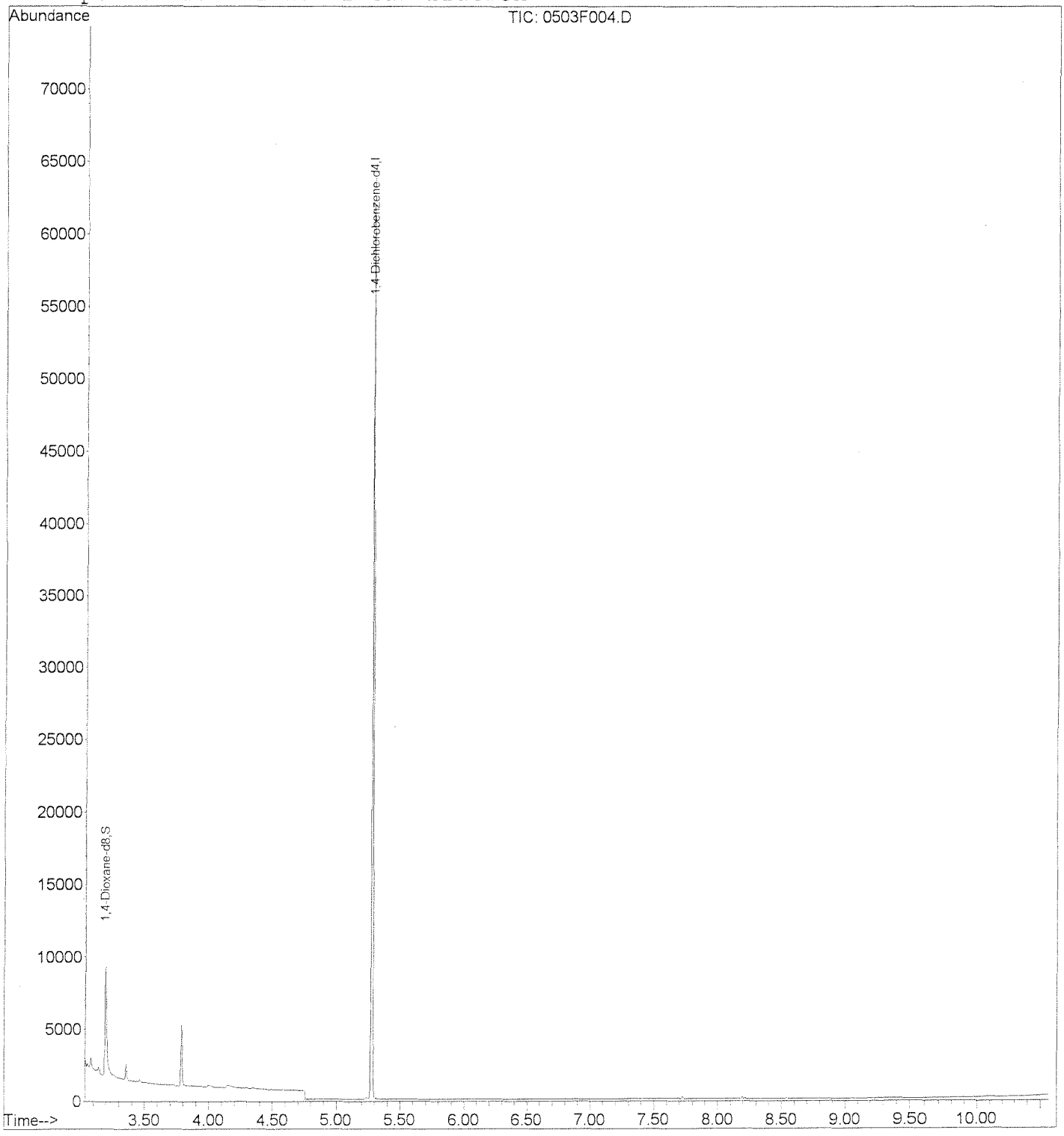
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration
0503F004.D 041112_DX.M Fri May 04 08:54:29 2012 Page 1

Quantitation Report (Not Reviewed)

Data File : J:\MS26\DATA\050312\0503F004.D Vial: 4
Acq On : 3 May 2012 4:48 pm Operator: KBailey
Sample : KWG1204380-5 | MB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1203834-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	80	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F009.D
Lab ID: K1203834-003
RunType: SMPL
Matrix: WATER

Date Acquired: 05/03/2012 18:24
Date Quantitated: 05/04/2012 08:48
Batch ID: KWG1204586
Analysis Method: 8270D SIM
ListJoinID: LJ2865

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Duplicate Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
L3902
P1573
P1588
P1L04
P1L30

Primary Review: MAY 04 2012

Secondary Review: 05·04·12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F009.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 18:24	**Quant Date:**	05/04/2012 08:48	**Vial:**	9
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1203834-003			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**	04/23/2012	**Receive Date:**	04/25/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	K1203834
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121255	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:	1,4-Dioxane by GC/MS	**Report List ID:**	LJ2865
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.00?	152	16251	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.22	0.03	0.01	96	4920m	39.81	80	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F009.D Vial: 9
Acq On : 3 May 2012 6:24 pm Operator: KBailey
Sample : K1203834-003 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:21 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	16251	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	4920m	39.81	ng/ml	-0.01
Spiked Amount 50.000			Recovery =	79.62%		

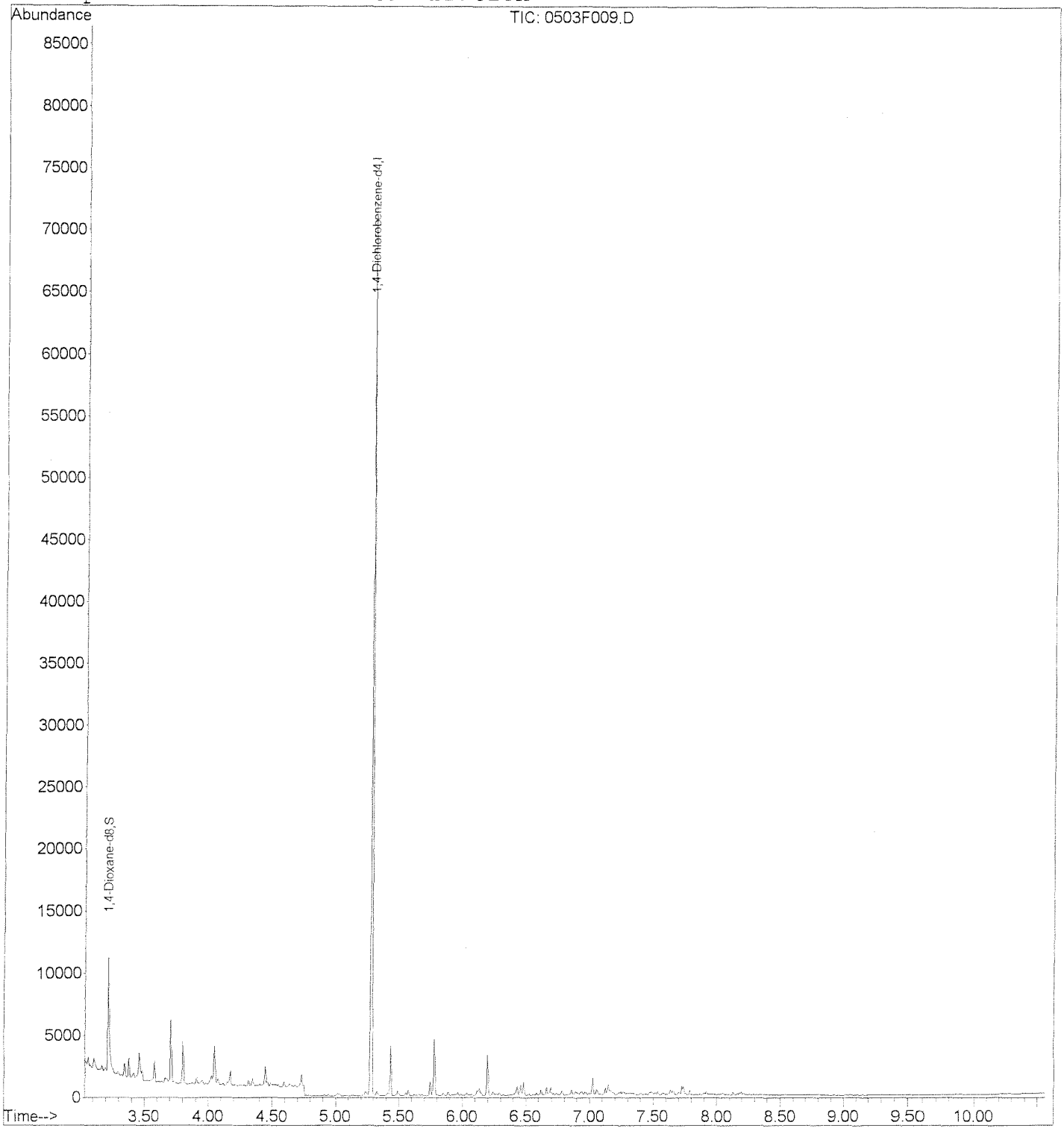
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration
0503F009.D 041112_DX.M Fri May 04 08:54:32 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F009.D Vial: 9
Acq On : 3 May 2012 6:24 pm Operator: KBailey
Sample : K1203834-003 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:48 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

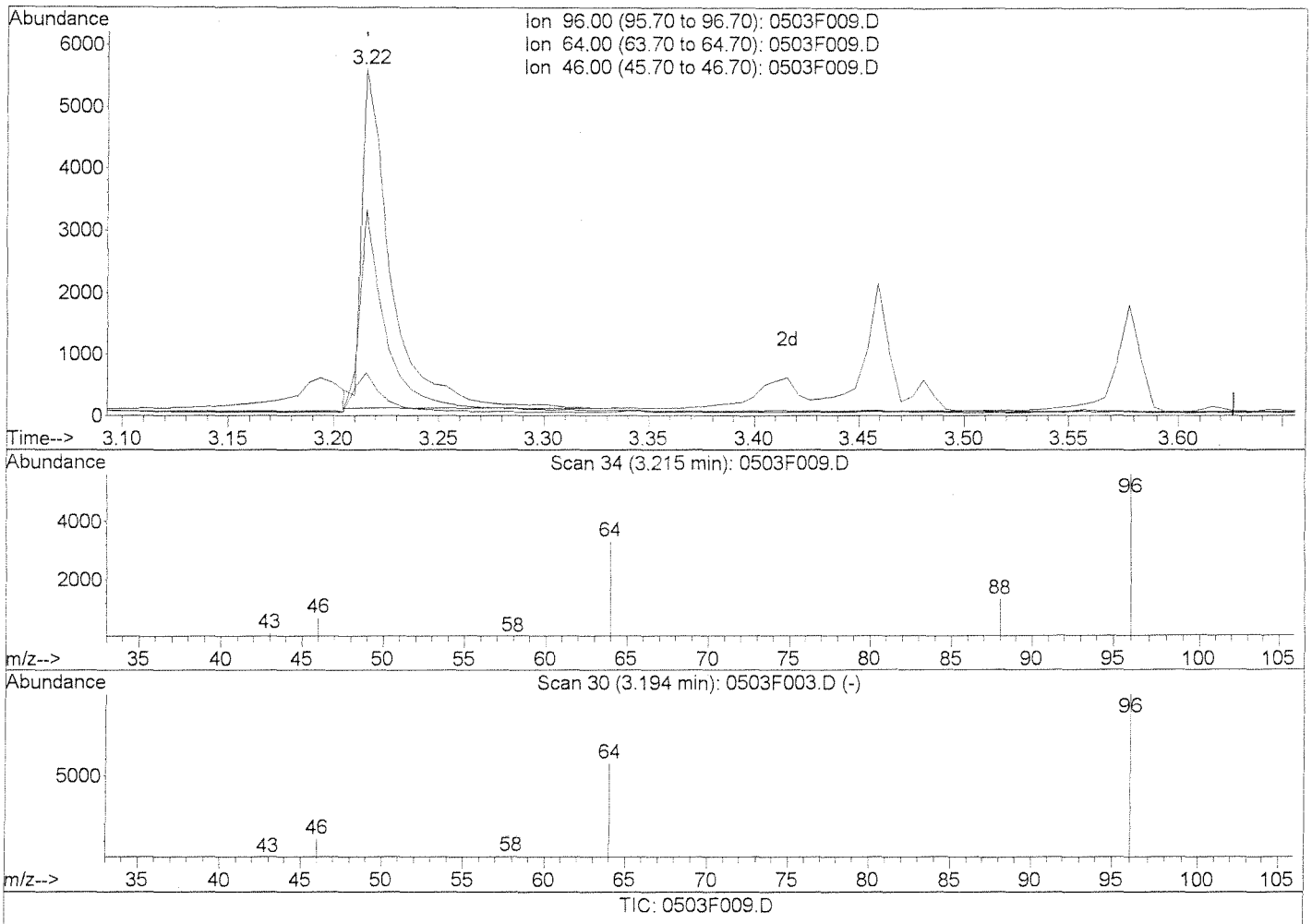


Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F009.D
Acq On : 3 May 2012 6:24 pm
Sample : K1203834-003
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012

Vial: 9
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F009.D

(2) 1,4-Dioxane-d8 (S)

3.22min 43.05ng/ml

response 5320

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	59.32
46.00	9.50	11.67
0.00	0.00	0.00

Manual Integration:

Before

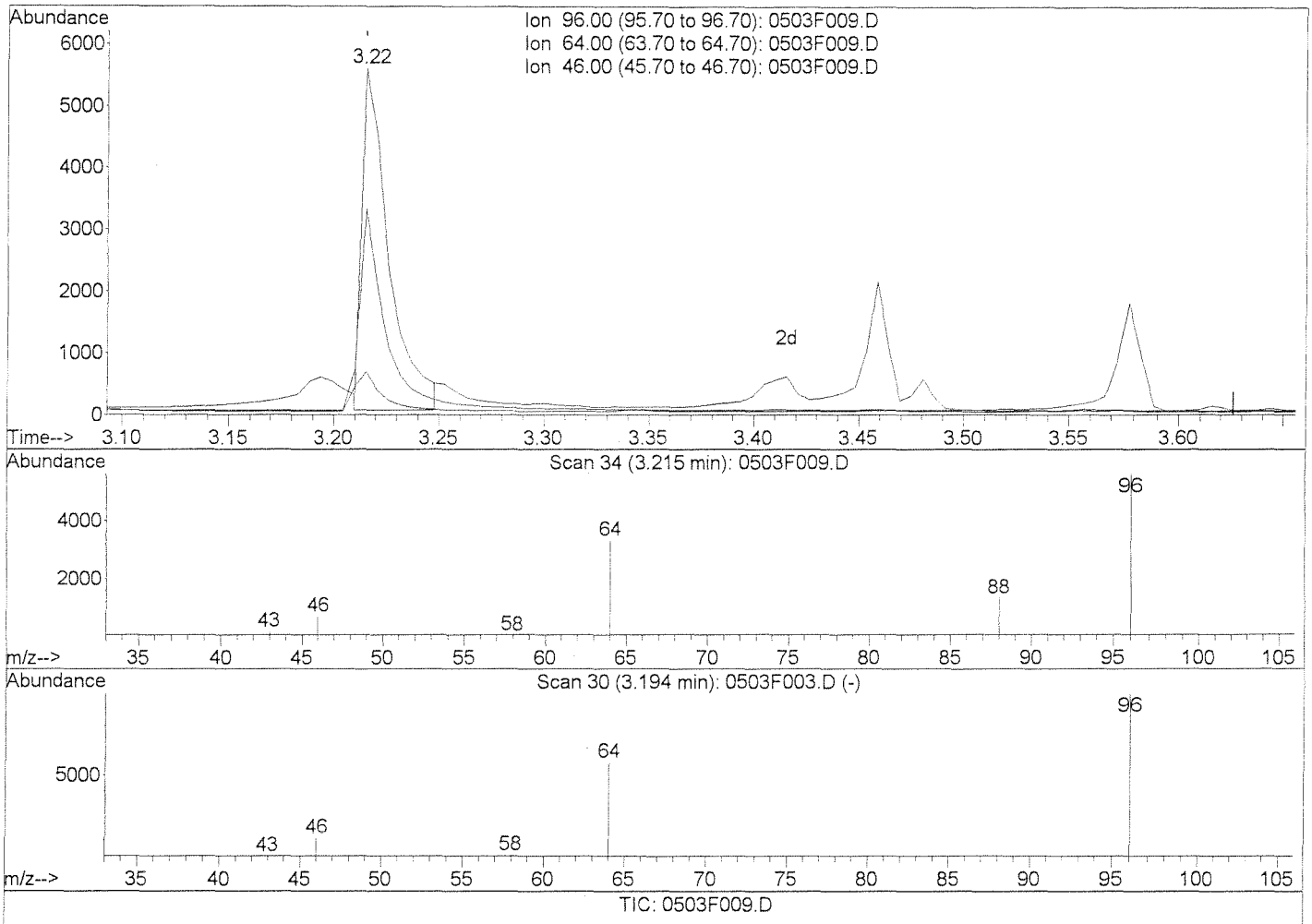
0503F009.D 041112_DX.M Fri May 04 08:48:05 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F009.D
Acq On : 3 May 2012 6:24 pm
Sample : K1203834-003
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:48 2012

Vial: 9
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



(2) 1,4-Dioxane-d8 (S)

3.22min 39.81ng/ml m

response 4920

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	59.36
46.00	9.50	12.44
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F009.D 041112_DX.M Fri May 04 08:48:15 2012

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QCMS	**Units:**	ug/L
Lab Code:	KWG1204380-1	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**24.3**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	80	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F007.D
Lab ID: KWG1204380-1 -- K1203834-003MS
RunType: MS
Matrix: WATER

Date Acquired: 05/03/2012 17:46
Date Quantitated: 05/04/2012 08:47
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
L3902
P1573
P1588
PLCS
PLC30

Primary Review: MAY 04 2012

Secondary Review: 05/04/12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F007.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 17:46	**Quant Date:**	05/04/2012 08:47	**Vial:**	7
Run Type:	MS			**Dilution:**	1.0
Lab ID:	KWG1204380-1 -- K1203834-003MS			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121263	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M			**Calibration ID:**	CAL11446
Title:					
Tune Ref:	J:\MS26\DATA\050312\0503F002.D			**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D			**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	14342	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.18	-0.01	0.00	96	4336m	39.76	80	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.19	-0.02	0.00	88	5291m	48.65	24.3		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

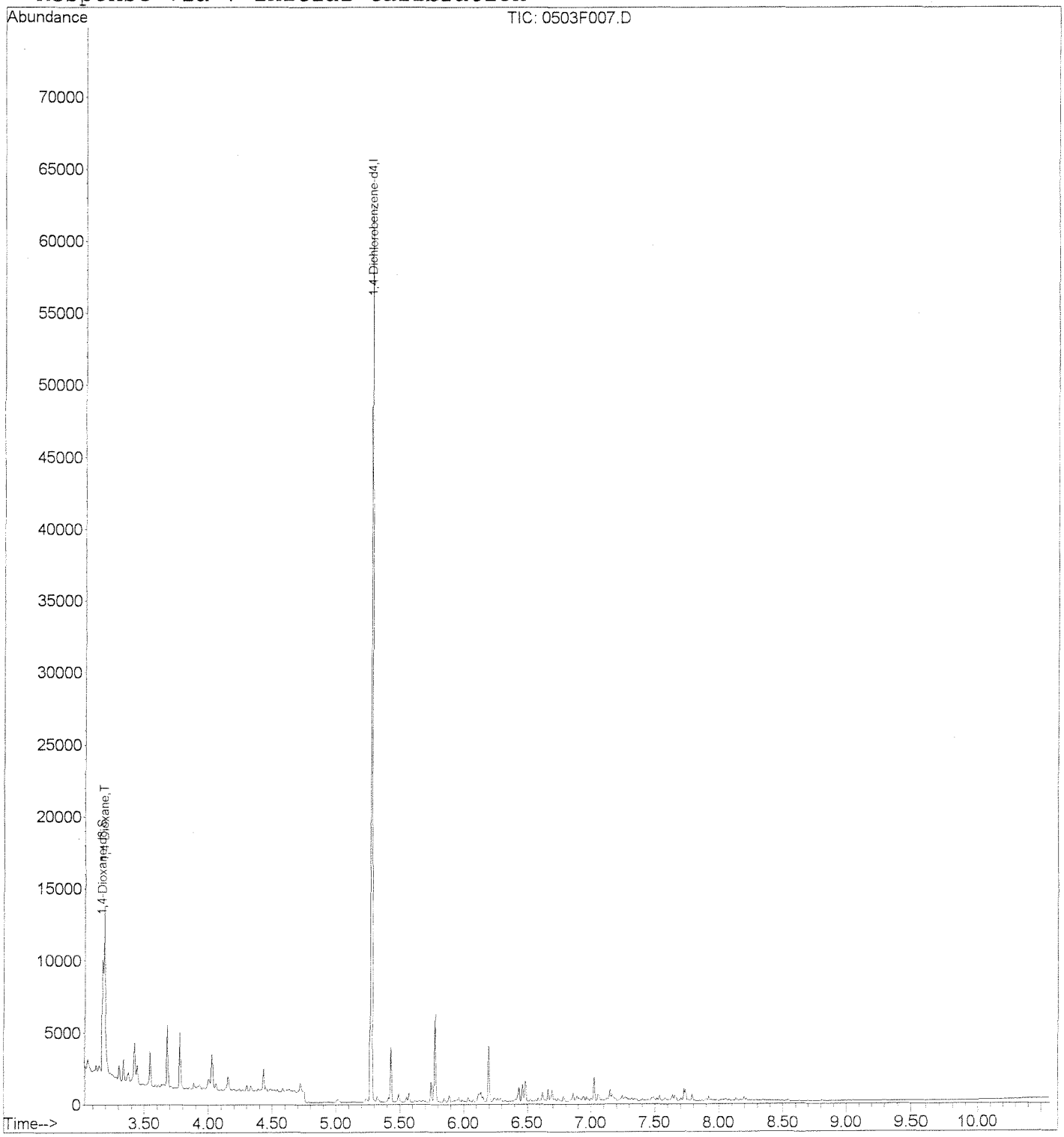
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	14342	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.18	96	4336m	39.76	ng/ml	-0.05
Spiked Amount 50.000			Recovery =	79.52%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.19	88	5291m	48.65	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F007.D 041112_DX.M Fri May 04 08:54:30 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: 041112_DX.RE

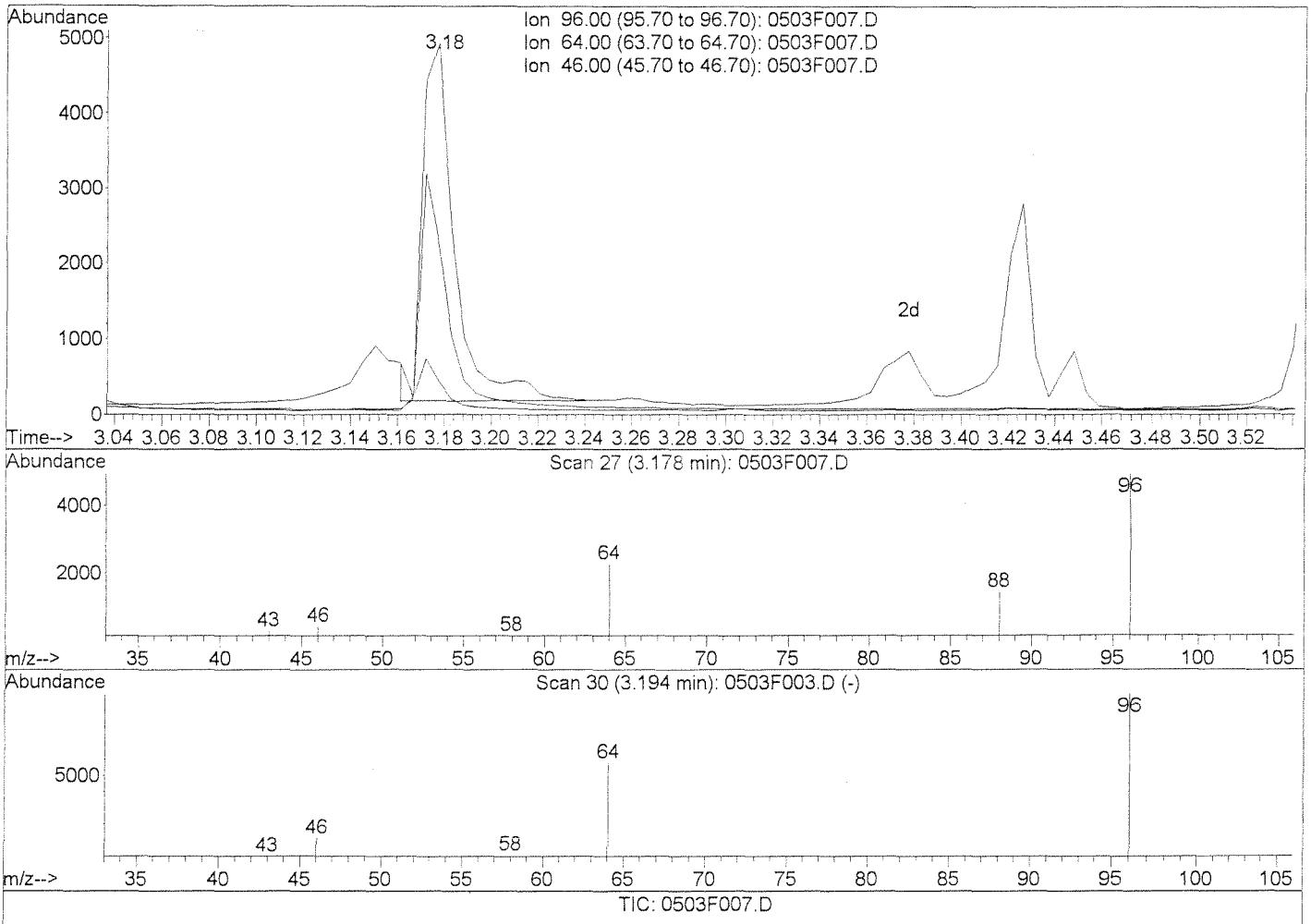
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration



Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



(2) 1,4-Dioxane-d8 (S)

3.18min 40.96ng/ml

response 4467

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	46.36
46.00	9.50	8.07
0.00	0.00	0.00

Manual Integration:

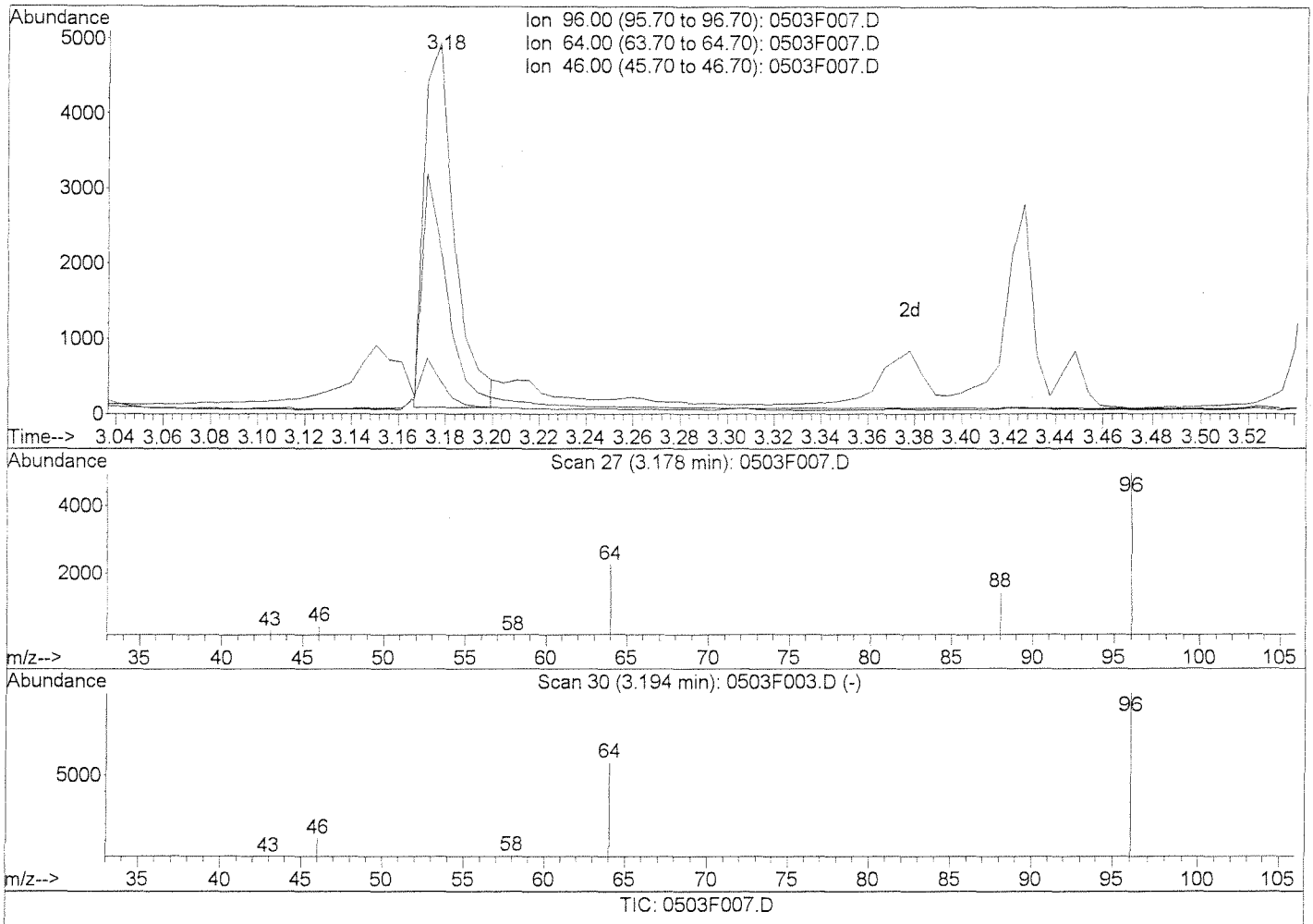
Before

0503F007.D 041112_DX.M Fri May 04 08:47:13 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



(2) 1,4-Dioxane-d8 (S)

3.18min 39.76ng/ml m

response 4336

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	46.06
46.00	9.50	8.91
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

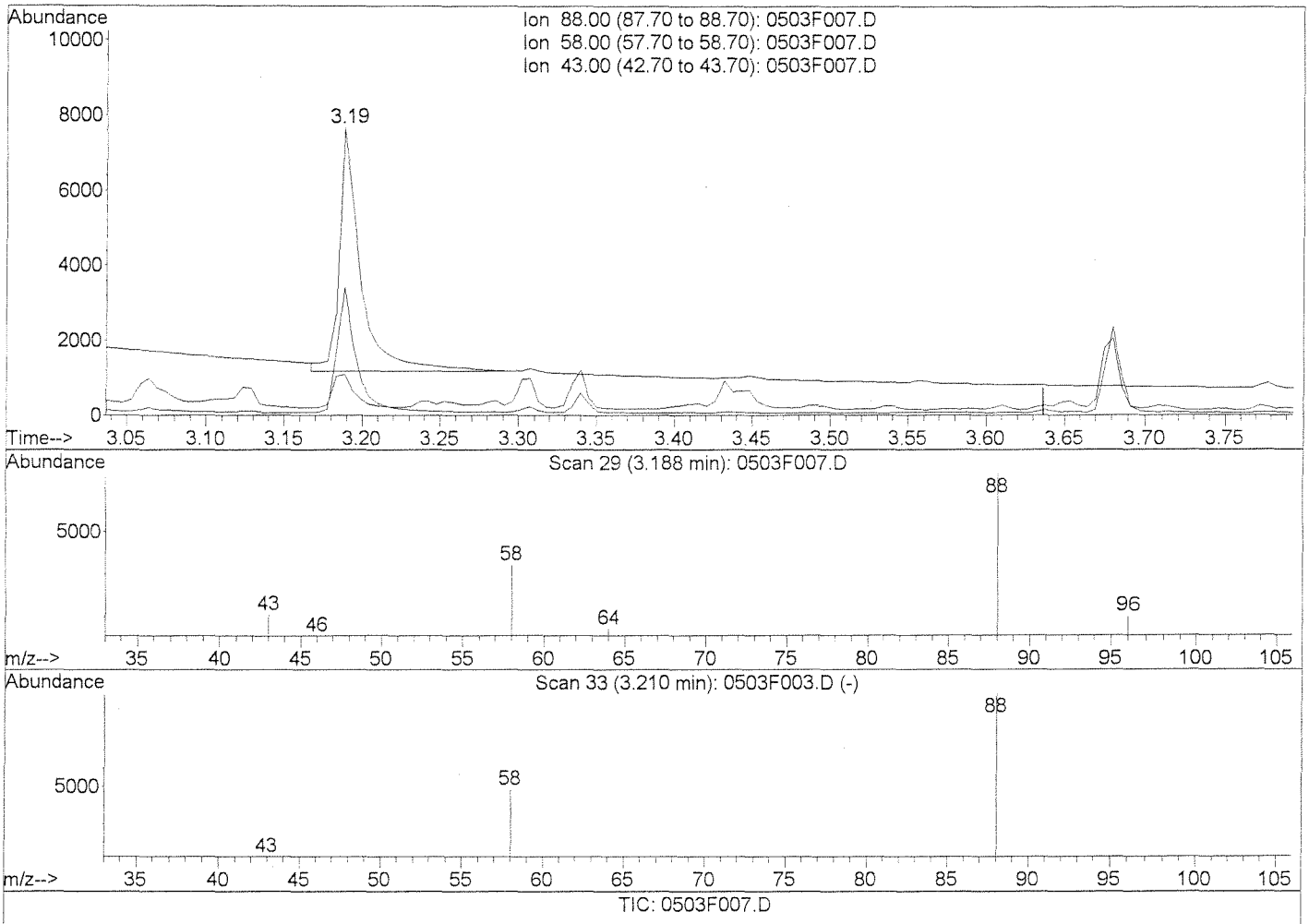
CM 143

0503F007.D 041112_DX.M Fri May 04 08:47:19 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F007.D

(3) 1,4-Dioxane (T)

3.19min 56.85ng/ml

response 6183

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	51.74#
43.00	15.90	13.70
0.00	0.00	0.00

Manual Integration:

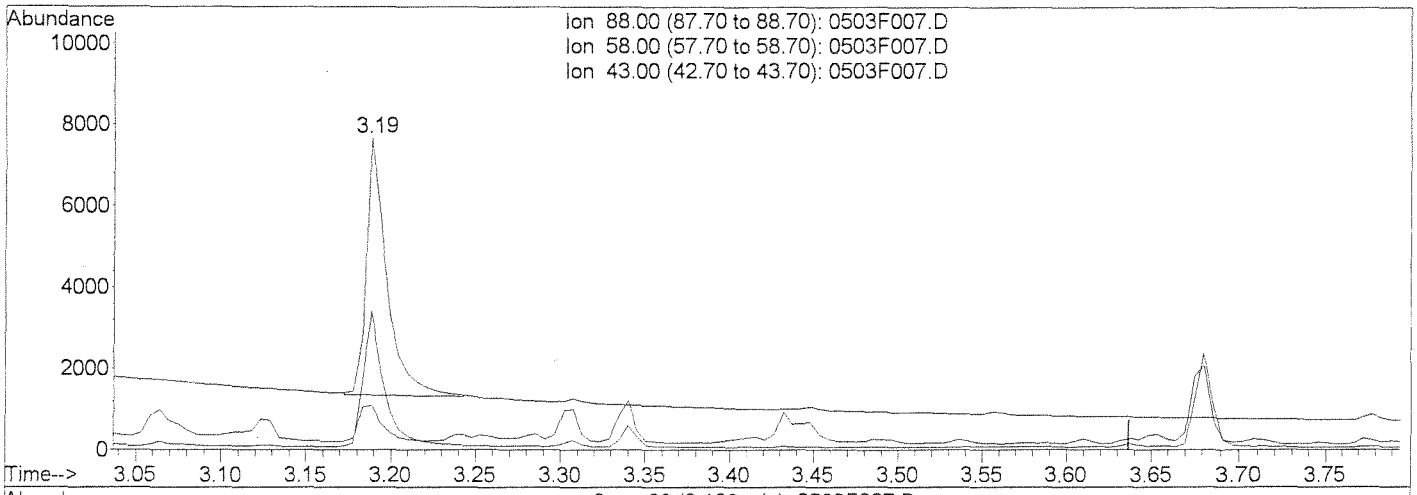
Before

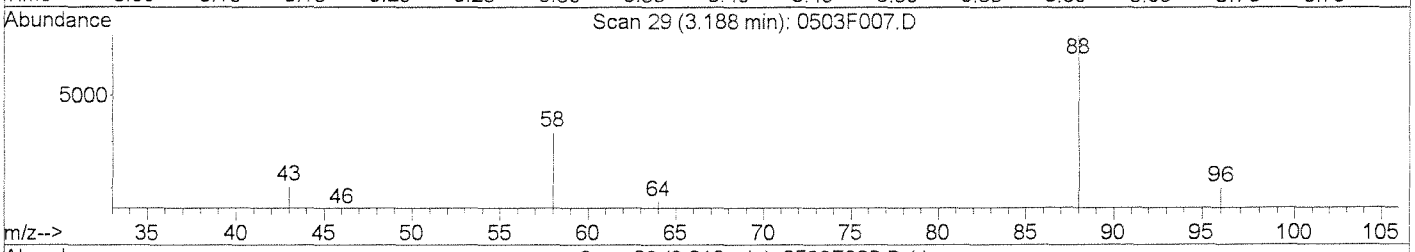
0503F007.D 041112_DX.M Fri May 04 08:47:24 2012

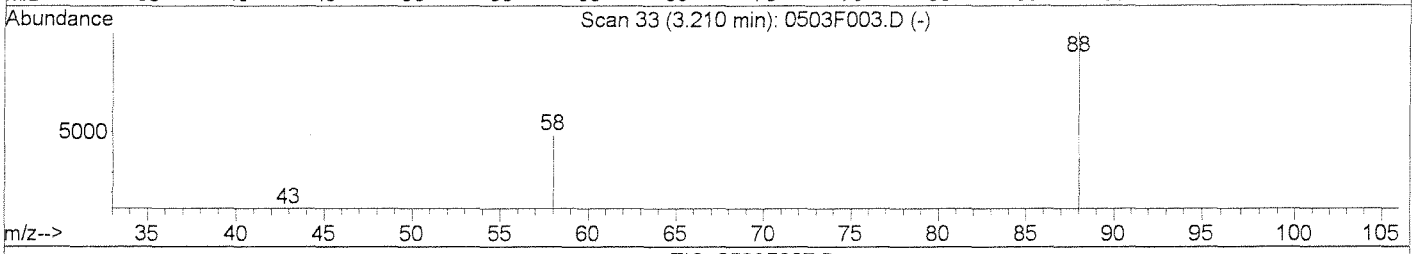
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F007.D

(3) 1,4-Dioxane (T)

3.19min 48.65ng/ml m

response 5291

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	44.73#
43.00	15.90	14.31
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12 KB

0503F007.D 041112_DX.M Fri May 04 08:47:29 2012

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QCDMS	**Units:**	ug/L
Lab Code:	KWG1204380-2	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**23.8**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	80	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F008.D
Lab ID: KWG1204380-2 -- K1203834-003DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/03/2012 18:05
Date Quantitated: 05/04/2012 08:47
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
L 3902
P 1573
P 1588
P 1604
P 1630

Primary Review: [signature] MAY 04 2012

Secondary Review: CH 05.04.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F008.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 18:05	**Quant Date:**	05/04/2012 08:47	**Vial:**	8
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1204380-2 -- K1203834-003DMS			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121264	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	13718	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.16	-0.03	0.00	96	4176m	40.03	80	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.18	-0.03	0.00	88	4942m	47.51	23.8		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

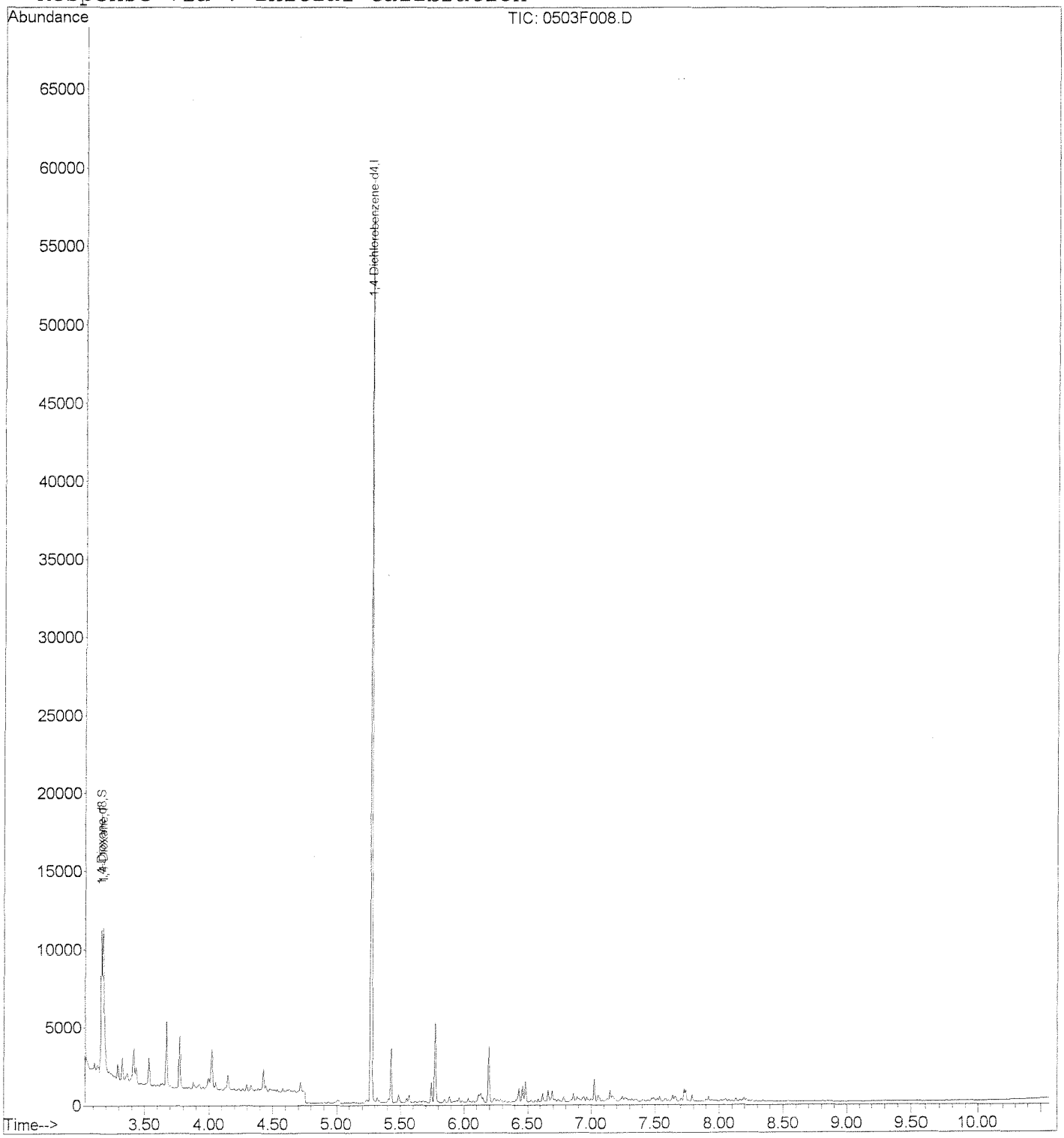
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	13718	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.16	96	4176m	40.03	ng/ml	-0.07
Spiked Amount 50.000			Recovery =	80.06%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.18	88	4942m	47.51	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F008.D 041112_DX.M Fri May 04 08:54:31 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: 041112_DX.RE

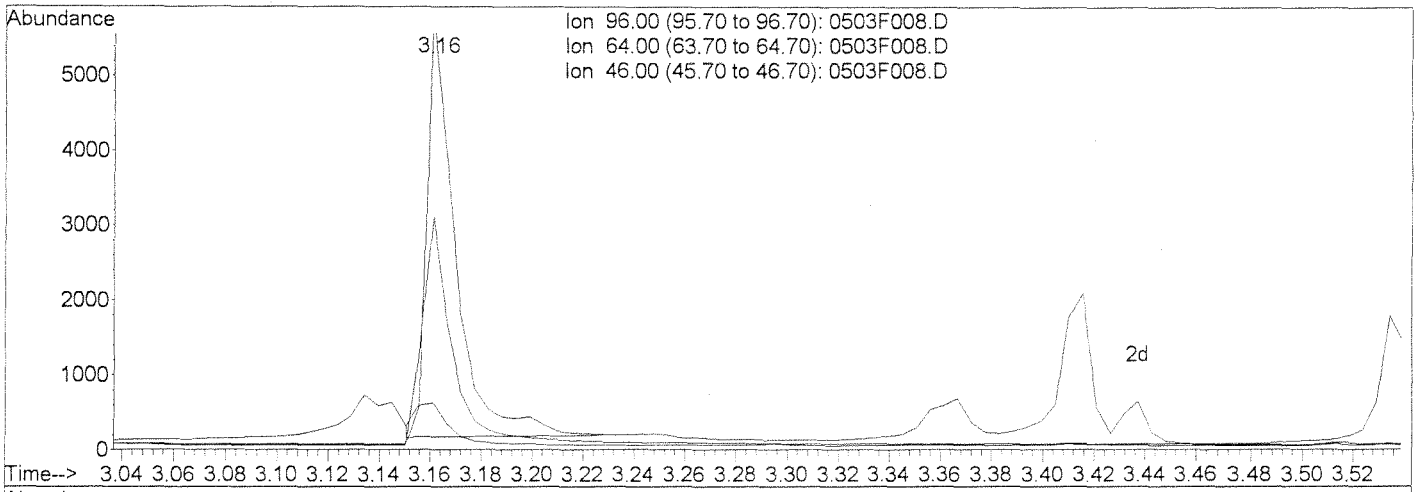
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

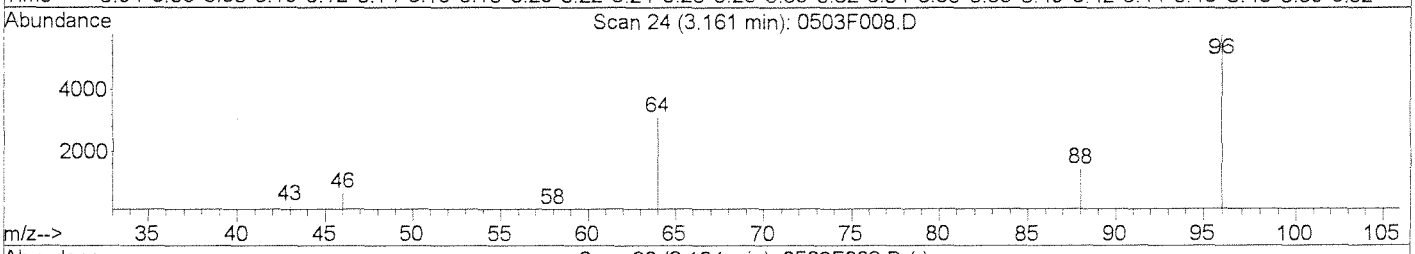


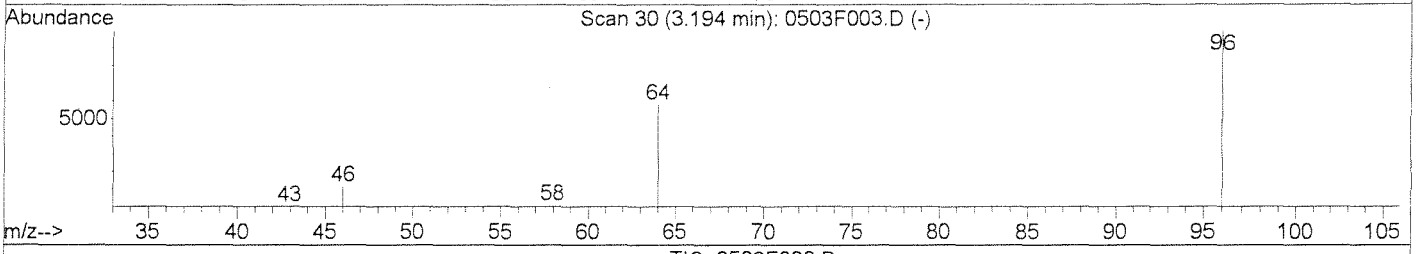
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F008.D

(2) 1,4-Dioxane-d8 (S)

3.16min 41.83ng/ml

response 4364

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	54.05
46.00	9.50	10.07
0.00	0.00	0.00

Manual Integration:

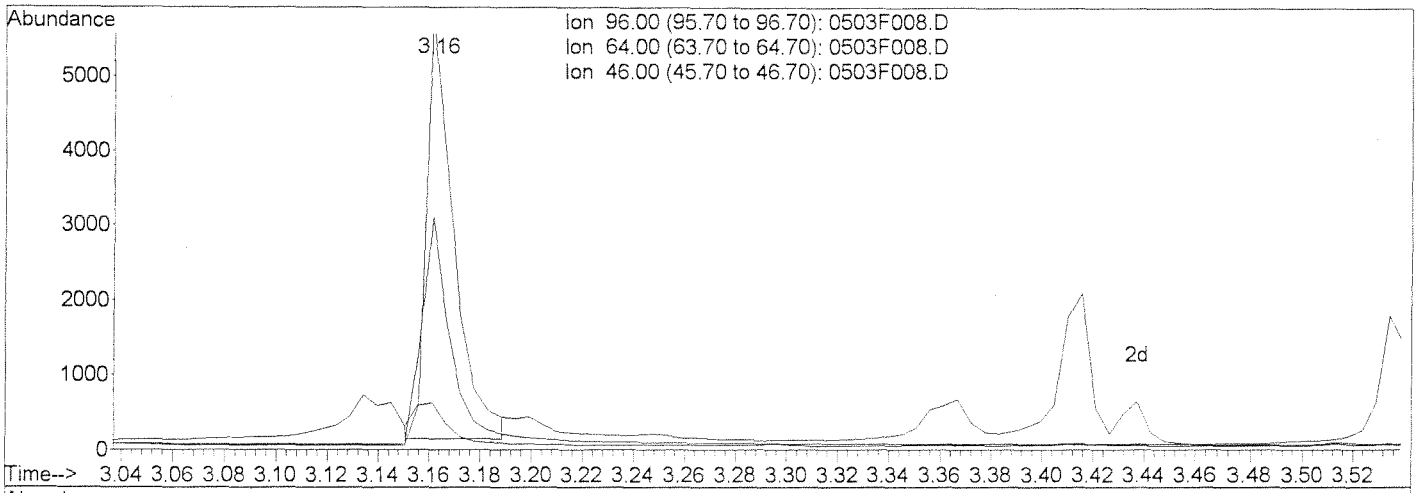
Before

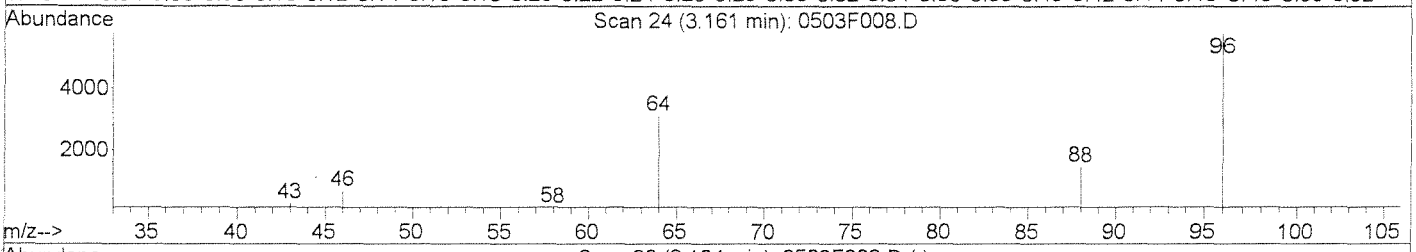
0503F008.D 041112_DX.M Fri May 04 08:47:37 2012

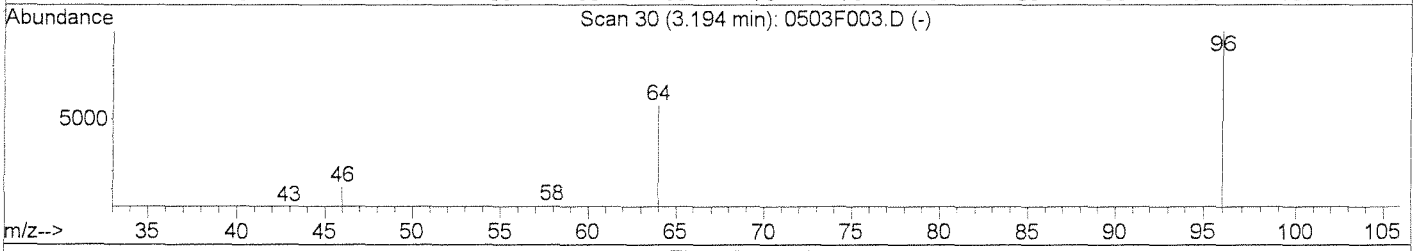
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F008.D

(2) 1,4-Dioxane-d8 (S)

3.16min 40.03ng/ml m

response 4176

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	53.53
46.00	9.50	10.74
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

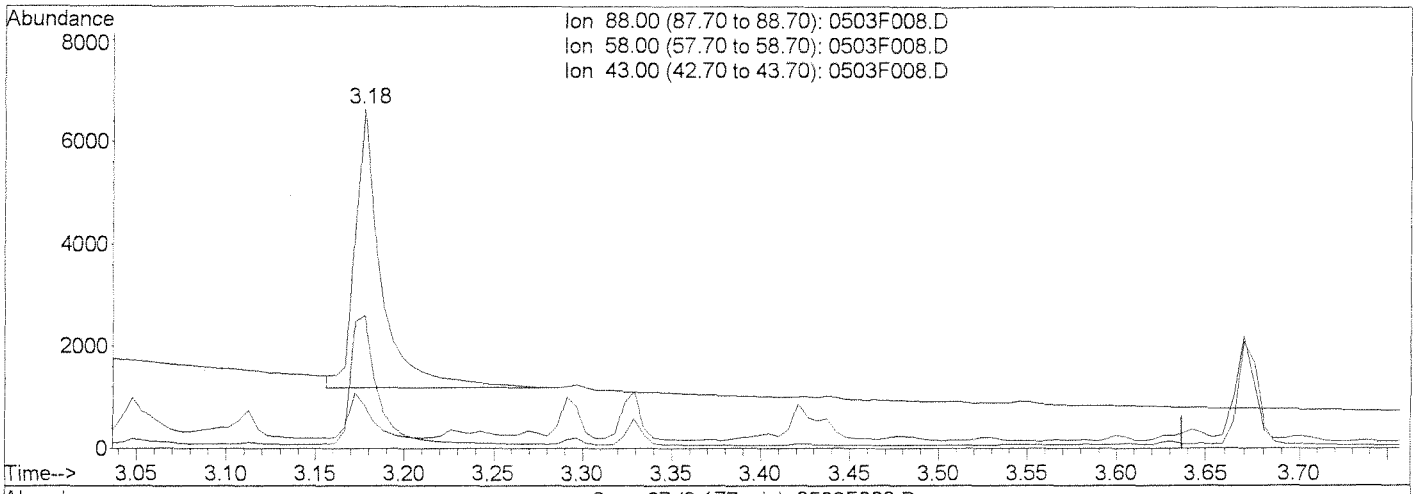
05/04/12

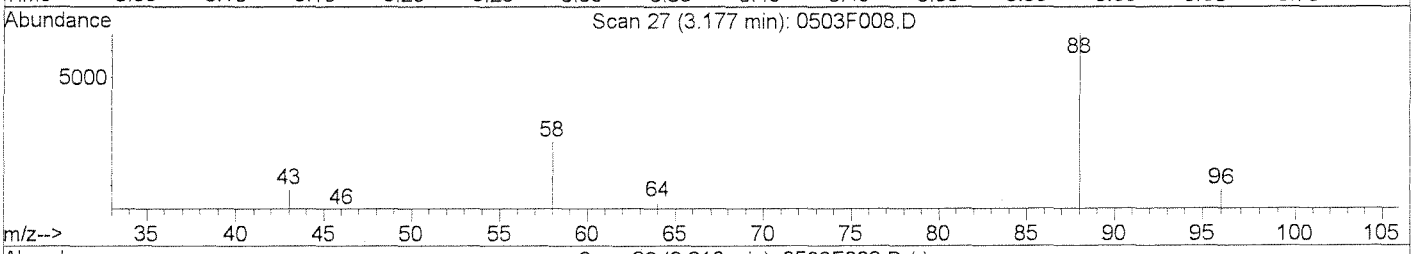
0503F008.D 041112_DX.M Fri May 04 08:47:45 2012

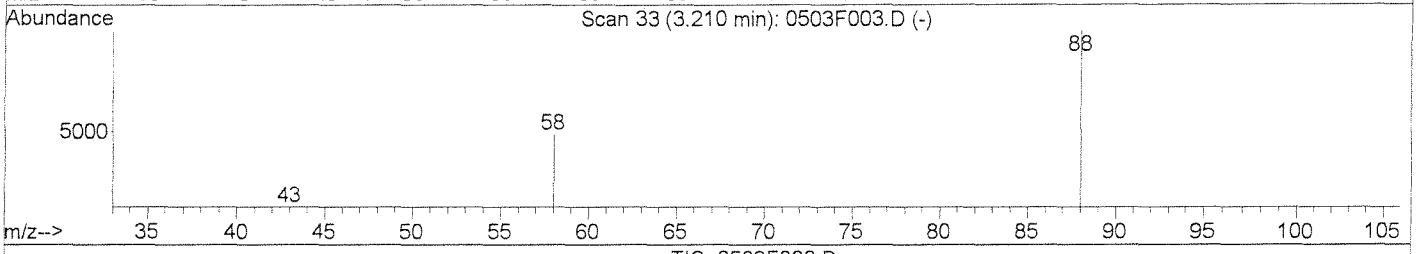
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F008.D

(3) 1,4-Dioxane (T)

3.18min 54.17ng/ml

response 5635

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	46.28#
43.00	15.90	11.78
0.00	0.00	0.00

Manual Integration:

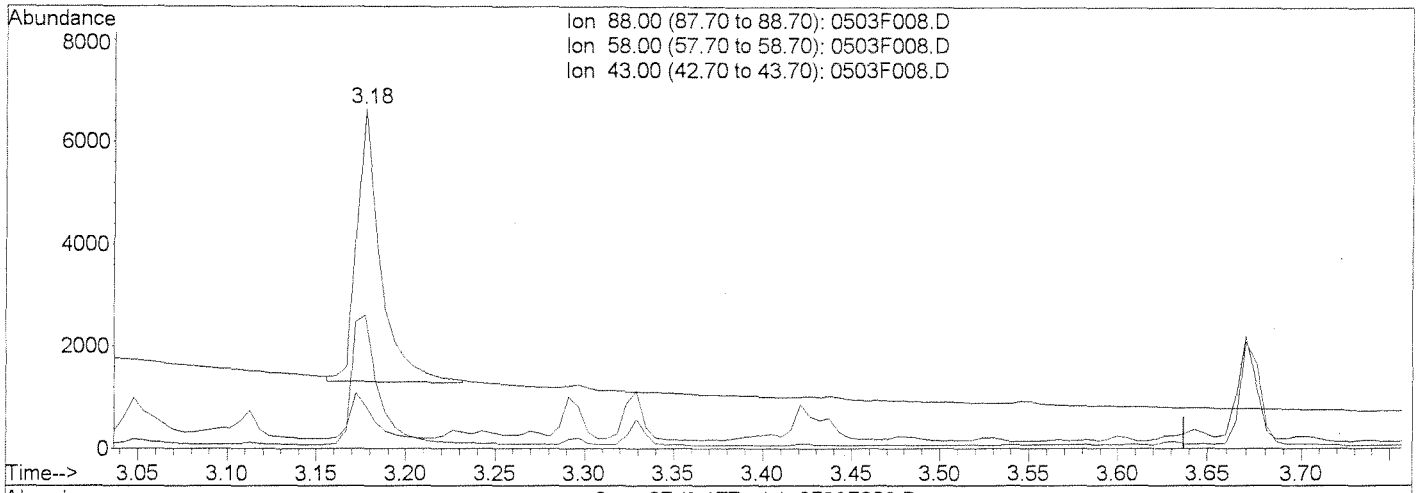
Before

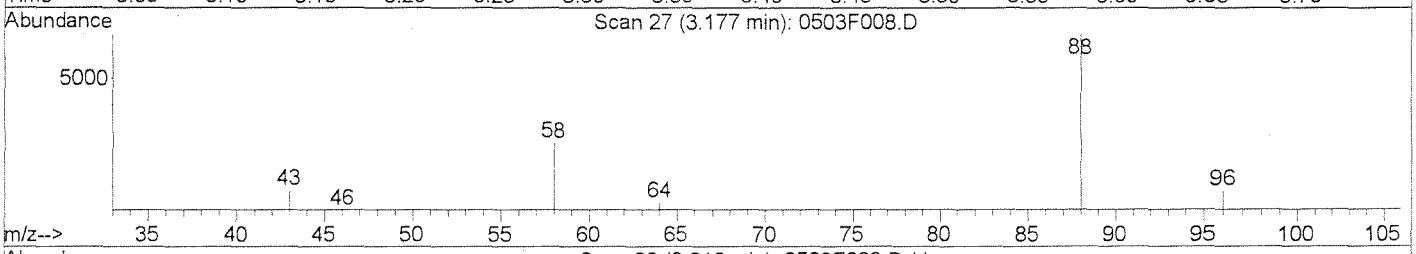
0503F008.D 041112_DX.M Fri May 04 08:47:49 2012

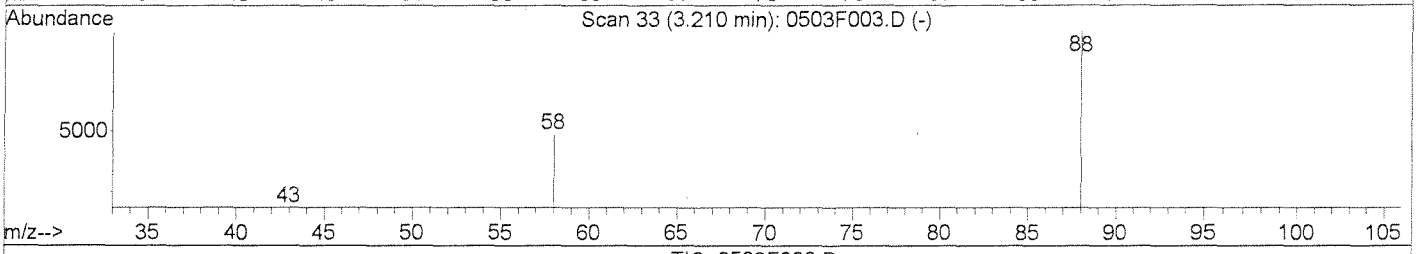
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F008.D

(3) 1,4-Dioxane (T)

3.18min 47.51ng/ml m

response 4942

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	39.25#
43.00	15.90	12.67
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F008.D 041112_DX.M Fri May 04 08:47:57 2012

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1204380-3	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**23.6**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	93	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F005.D
Lab ID: KWG1204380-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/03/2012 17:08
Date Quantitated: 05/04/2012 08:46
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

L 38834
L 3902
P 1573
P 1588
P 1604
P 1630

Primary Review: LB MAY 04 2012

Secondary Review: CM 05 MAY 12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F005.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 17:08	**Quant Date:**	05/04/2012 08:46	**Vial:**	5
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1204380-3			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121265	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.00?	152	15930	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.20	0.01	0.00	96	5614	46.34	93	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.22	0.01	0.00	88	5706m	47.23	23.6		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F005.D Vial: 5
Acq On : 3 May 2012 5:08 pm Operator: KBailey
Sample : KWG1204380-3 | LCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

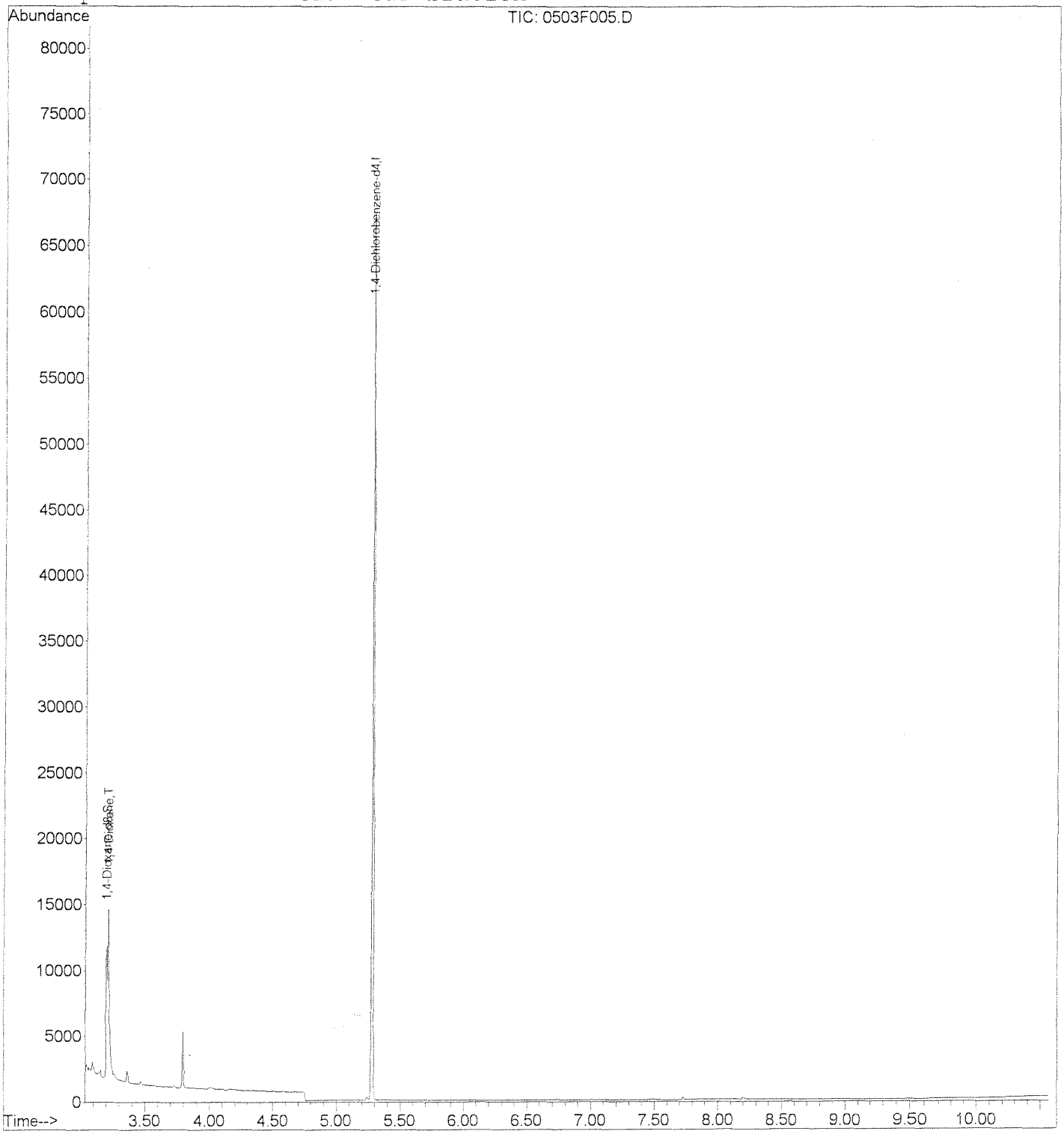
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	15930	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.20	96	5614	46.34	ng/ml	-0.02
Spiked Amount 50.000			Recovery = 92.68%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.22	88	5706m	47.23	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F005.D 041112_DX.M Fri May 04 08:54:29 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F005.D Vial: 5
Acq On : 3 May 2012 5:08 pm Operator: KBailey
Sample : KWG1204380-3 | LCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

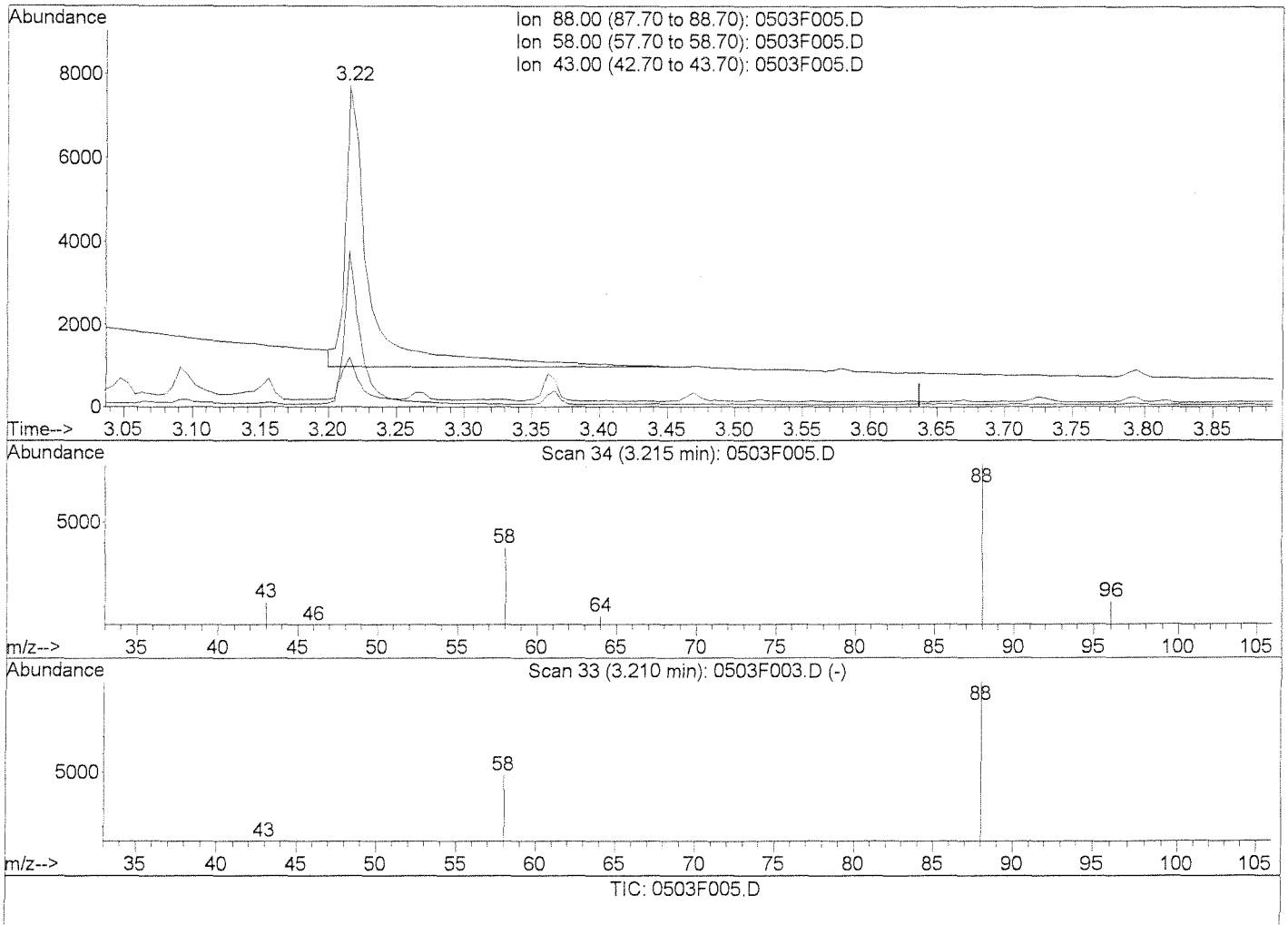


Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F005.D
Acq On : 3 May 2012 5:08 pm
Sample : KWG1204380-3 | LCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012

Vial: 5
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F005.D

(3) 1,4-Dioxane (T)

3.22min 71.24ng/ml

response 8606

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	54.96#
43.00	15.90	15.21
0.00	0.00	0.00

Manual Integration:

Before

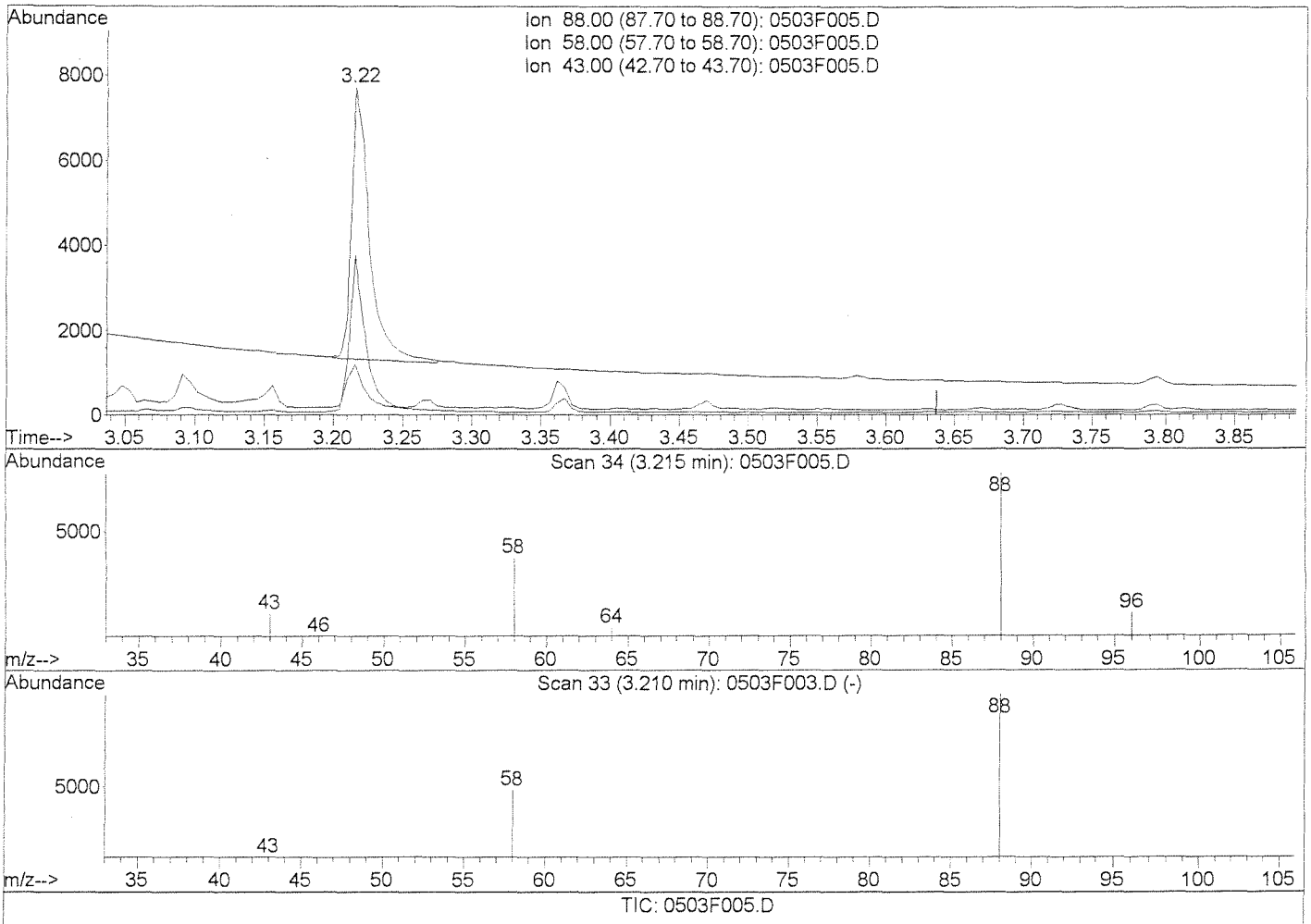
0503F005.D 041112_DX.M Fri May 04 08:46:42 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F005.D
Acq On : 3 May 2012 5:08 pm
Sample : KWG1204380-3 | LCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012

Vial: 5
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F005.D

(3) 1,4-Dioxane (T)

3.22min 47.23ng/ml m

response 5706

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	48.89#
43.00	15.90	15.60
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F005.D 041112_DX.M Fri May 04 08:46:49 2012

Client:	Battelle	**Service Request:**	P1201588
Project:	JPL-GW-2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Duplicate Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1204380-4	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**22.8**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	96	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F006.D
Lab ID: KWG1204380-4
RunType: DLCS
Matrix: WATER

Date Acquired: 05/03/2012 17:27
Date Quantitated: 05/04/2012 08:47
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

L3834
L3902
P1573
P1588
P1L04
P1L30

Primary Review: MAY 04 2012

Secondary Review: CM 05·04·12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F006.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 17:27	**Quant Date:**	05/04/2012 08:47	**Vial:**	6
Run Type:	DLCS			**Dilution:**	1.0
Lab ID:	KWG1204380-4			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121266	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	14308	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.17	-0.02	0.00	96	5246	48.21	96	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.18	-0.03	0.00	88	4957m	45.68	22.8		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F006.D Vial: 6
Acq On : 3 May 2012 5:27 pm Operator: KBailey
Sample : KWG1204380-4 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

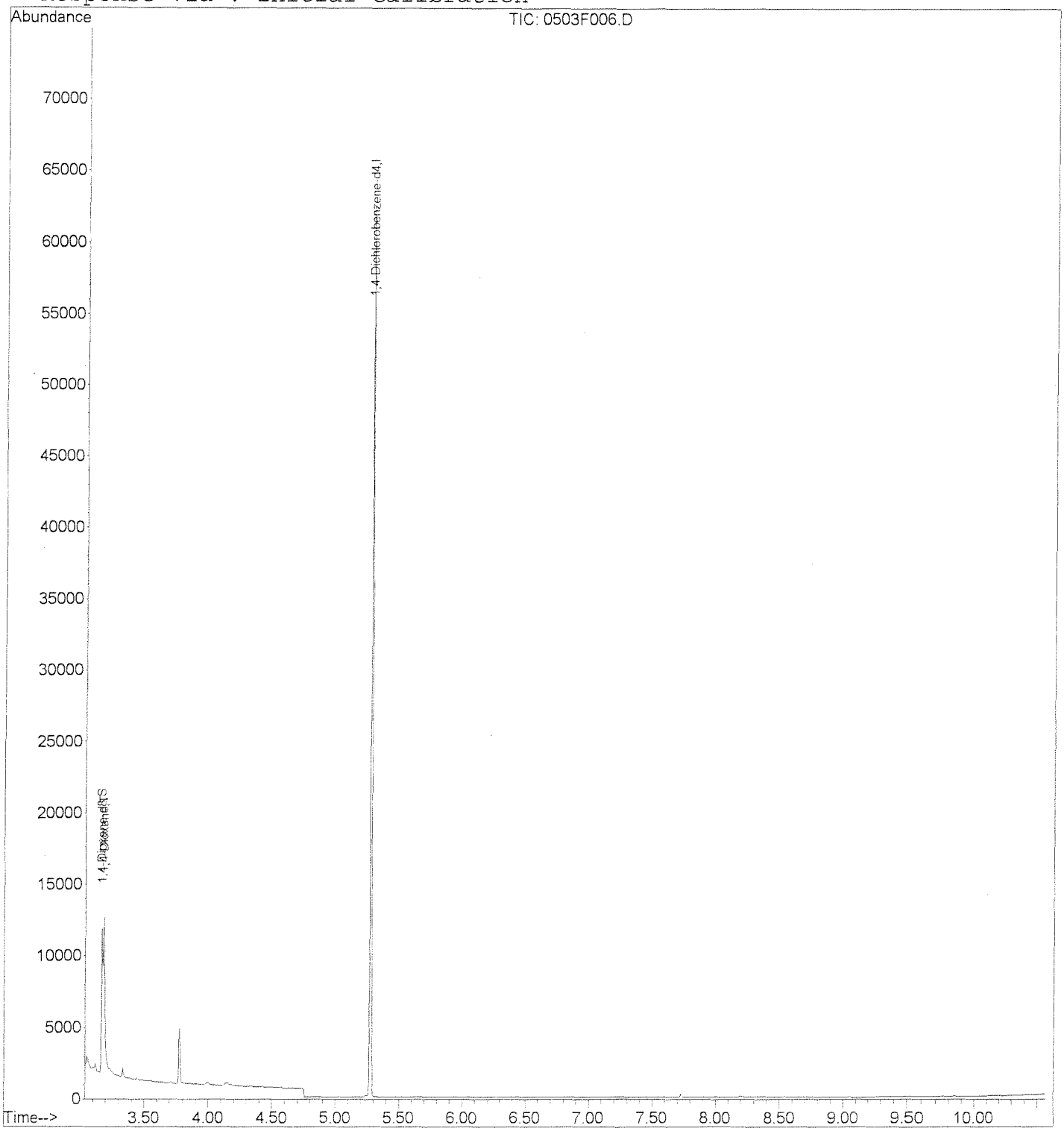
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	14308	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.17	96	5246	48.21	ng/ml	-0.06
Spiked Amount 50.000			Recovery = 96.42%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.18	88	4957m	45.68	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F006.D 041112_DX.M Fri May 04 08:54:30 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F006.D Vial: 6
Acq On : 3 May 2012 5:27 pm Operator: KBailey
Sample : KWG1204380-4 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

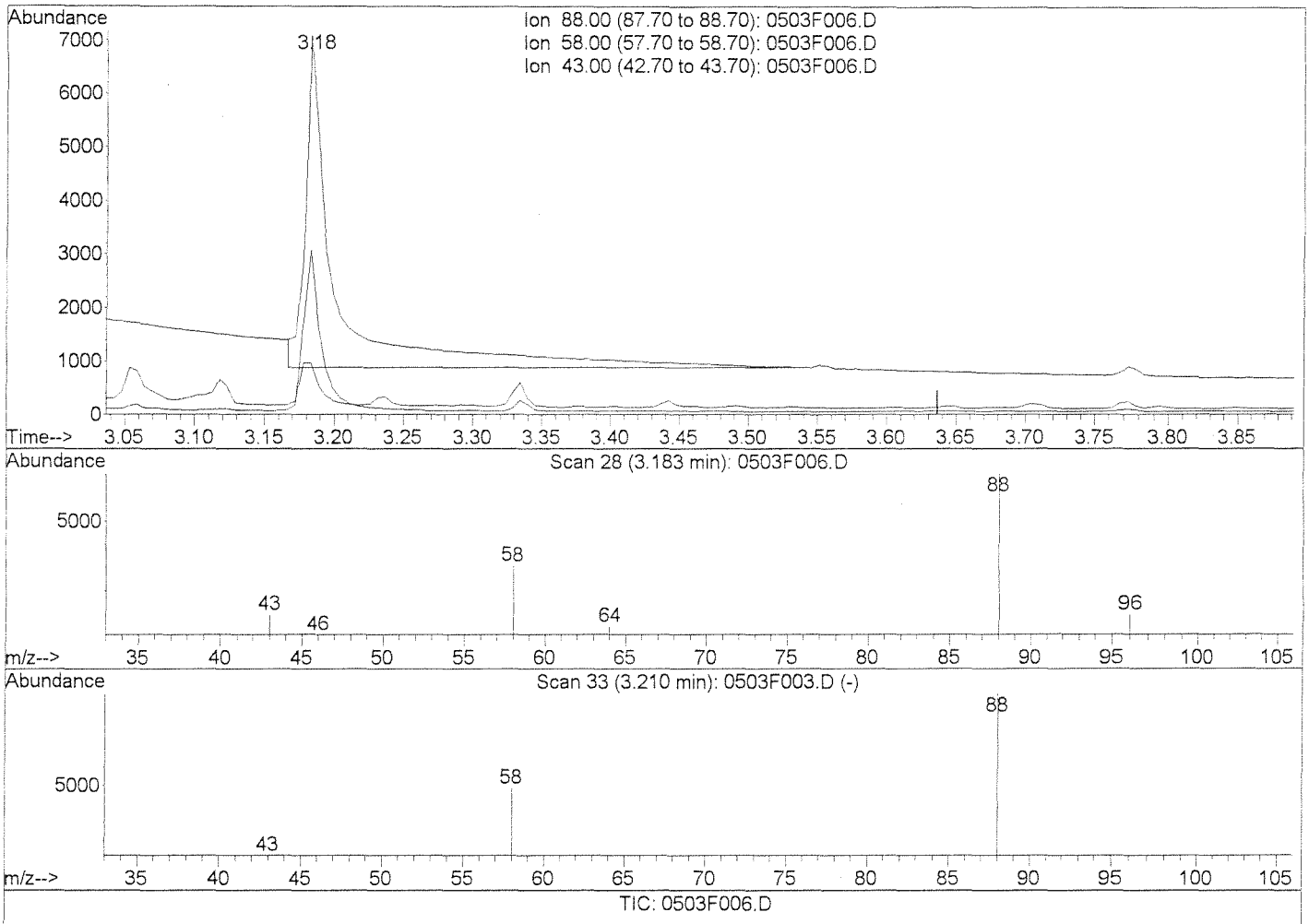


Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F006.D
Acq On : 3 May 2012 5:27 pm
Sample : KWG1204380-4 | DLCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012

Vial: 6
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F006.D

(3) 1,4-Dioxane (T)

3.18min 89.94ng/ml

response 9759

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	48.55#
43.00	15.90	13.38
0.00	0.00	0.00

Manual Integration:

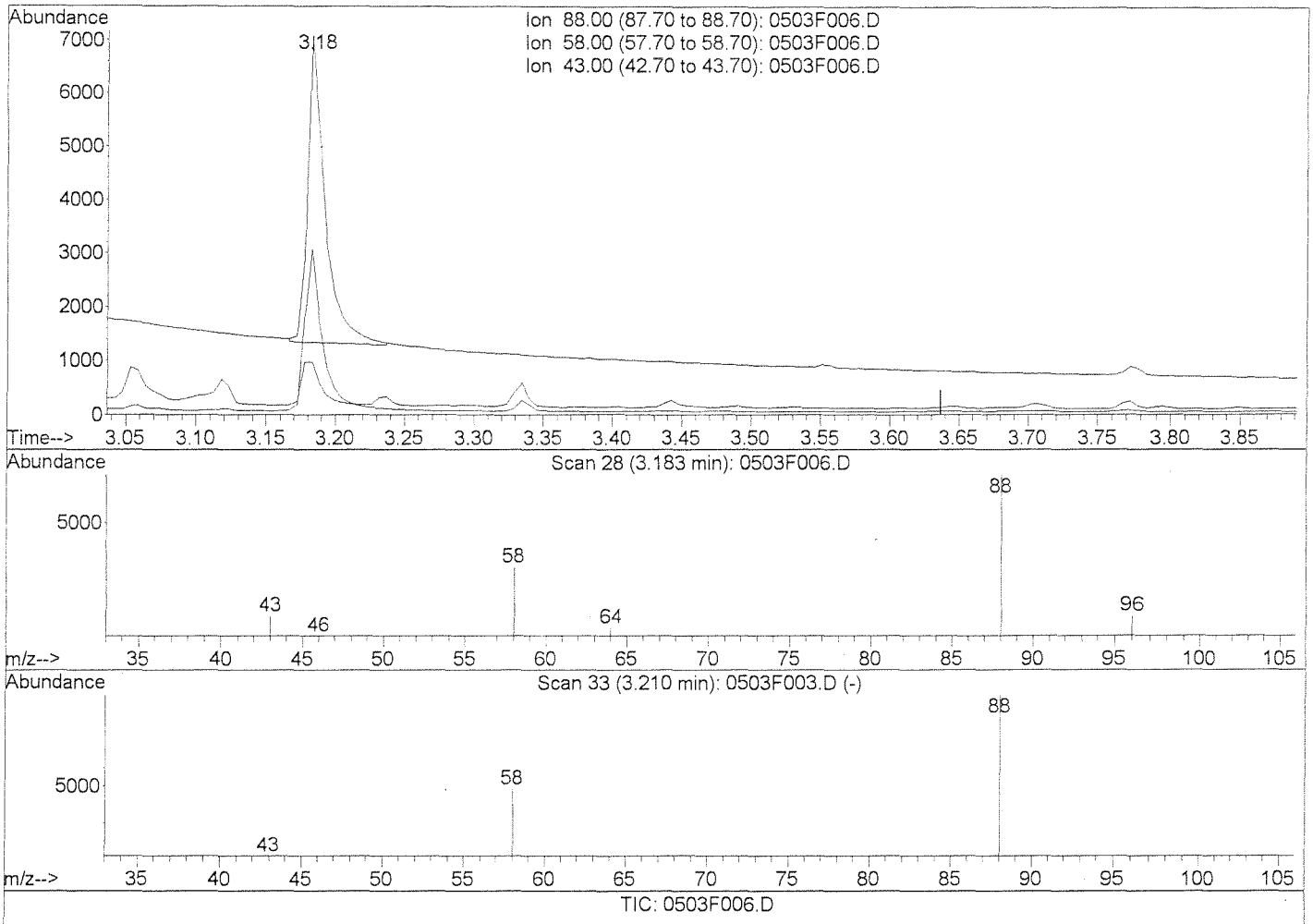
Before

0503F006.D 041112_DX.M Fri May 04 08:46:57 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F006.D Vial: 6
Acq On : 3 May 2012 5:27 pm Operator: KBailey
Sample : KWG1204380-4 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F006.D

(3) 1,4-Dioxane (T)

3.18min 45.68ng/ml m

response 4957

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	43.34#
43.00	15.90	13.74
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F006.D 041112_DX.M Fri May 04 08:47:04 2012

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Standards Data

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/03/2012
Time Analyzed: 16:10

Tune Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F002.D
Instrument ID: MS26
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1204586

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.9	55287	PASS
68	69	0	2	1.3	1000	PASS
69	198	0	100	23.0	75190	PASS
70	69	0	2	0.4	321	PASS
127	198	10	80	41.2	134864	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	53.1	327258	PASS
199	198	5	9	6.7	22072	PASS
275	198	10	60	28.6	93752	PASS
365	442	1	50	2.1	12870	PASS
441	443	0	100	73.0	87834	PASS
442	442	100	100	100.0	615872	PASS
443	442	15	24	19.5	120280	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1204586-2	J:\MS26\DATA\050312\0503F003.D	05/03/2012	16:29	
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/2012	16:48	
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/2012	17:08	
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/2012	17:27	
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/2012	17:46	
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/2012	18:05	
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/2012	18:24	
MW-13	P1201588-002	J:\MS26\DATA\050312\0503F017.D	05/03/2012	20:57	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Exception Report

Data File:	J:\MS26\DATA\050312\0503F002.D	**Date Acquired:**	05/03/2012 16:10
Lab ID:	KWG1204586-1	**Date Quantitated:**	
RunType:	TUNE	**Batch ID:**	KWG1204586
Matrix:	WATER	**Analysis Method:**	DFTPP
		ListJoinID:	LJ1965

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Ion Ratio	NA	NA	NA	x	

Primary Review: MAY 04 2012

Secondary Review: 04.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F002.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 16:10	**Quant Date:**		**Vial:**	2
Run Type:	TUNE			**Dilution:**	1.0
Lab ID:	KWG1204586-1			**Soln Conc. Units:**	

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-DIOXA	**Collect Date:**		**Receive Date:**	05/04/2012

Analysis Lot:	KWG1204586	**Prep Lot:**		**Report Group:**	
Analysis Method:	DFTPP	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS26\METHODS\SIM\A_DFTPP.M	**Calibration ID:**	CAL11446
Title:		**Report List ID:**	LJ1965
Tune Ref:		**Method ID:**	MJ190
MB Ref:		**Quant based on Report List**	

Tune Results

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.9	55287	Pass
68	69	0	2	1.3	1000	Pass
69	198	0	100	23.0	75190	Pass
70	69	0	2	0.4	321	Pass
127	198	10	80	41.2	134864	Pass
197	198	0	2	0.0	0	Pass
198	442	30	100	53.1	327258	Pass
199	198	5	9	6.7	22072	Pass
275	198	10	60	28.6	93752	Pass
365	442	1	50	2.1	12870	Pass
441	443	0.01	100	73.0	87834	Pass
442	442	100	100	100.0	615872	Pass
443	442	15	24	19.5	120280	Pass

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

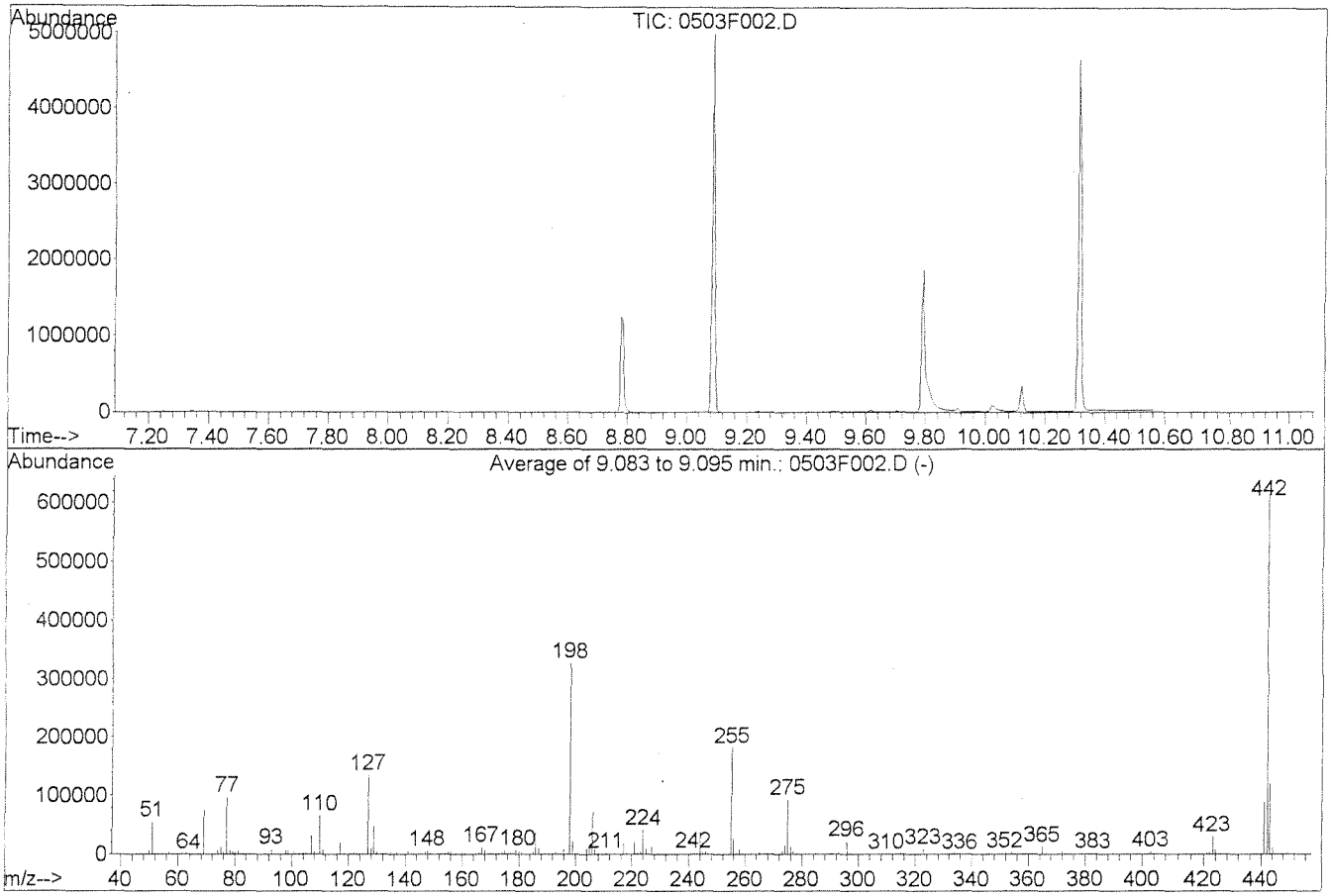
D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

DFTPP

Data File : J:\MS26\DATA\050312\0503F002.D
Acq On : 3 May 2012 4:10 pm
Sample : 3.0ug/mL DFTPP | SVM38-66A
Misc :
MS Integration Params: rteint.p
Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix

Vial: 2
Operator: KBailey
Inst : MS26
Multiplr: 1.00



AutoFind: Scans 1048, 1049, 1050; Background Corrected with Scan 1044

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	16.9	55287	PASS
68	69	0.00	2	1.3	1000	PASS
69	198	0.00	100	23.0	75190	PASS
70	69	0.00	2	0.4	321	PASS
127	198	10	80	41.2	134864	PASS
197	198	0.00	2	0.0	0	PASS
198	442	30	100	53.1	327258	PASS
199	198	5	9	6.7	22072	PASS
275	198	10	60	28.6	93752	PASS
365	442	1	50	2.1	12870	PASS
441	443	0.01	100	73.0	87834	PASS
442	442	30	100	100.0	615872	PASS
443	442	15	24	19.5	120280	PASS

0503F002.D A_DFTPP.M Fri May 04 08:45:18 2012

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
50.00	6876	64.00	352	78.10	6815	88.95	161
51.10	55287	65.00	1502	79.00	5089	91.00	1410
52.05	2927	65.95	106	80.00	4015	92.00	1577
53.00	135	68.00	1000	81.00	6202	93.00	9215
55.00	256	69.00	75190	82.00	1575	94.00	617
56.00	1557	70.00	321	83.00	1681	95.05	167
57.00	4279	73.00	509	83.90	104	96.00	498
58.00	188	74.00	6705	85.00	1392	96.90	79
61.00	705	75.00	11971	85.95	1570	97.10	99
62.00	796	76.00	4210	87.00	908	98.00	6875
63.00	2549	77.10	97394	88.00	337	99.00	6754

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
100.00	510	111.00	9455	123.00	3121	134.00	1247
101.00	4100	112.00	1239	124.00	1428	135.00	3756
102.00	218	113.00	306	125.00	1441	136.00	1479
103.00	1256	114.10	50	126.05	241	137.00	2070
104.00	2334	116.00	1561	127.00	134864	137.85	421
105.00	2171	117.00	19510	128.00	10194	138.95	163
106.00	689	118.00	1575	129.00	47451	139.95	508
107.00	31702	118.90	255	130.00	4014	141.00	5477
108.00	5271	120.00	381	131.00	749	142.00	1958
109.00	781	121.00	66	132.00	455	142.95	1384
110.00	66449	122.00	1934	132.95	258	144.00	325

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
144.95	293	156.00	5404	167.00	12018	177.95	713
146.00	931	157.00	1113	168.00	7575	179.00	8907
147.00	2906	157.95	1089	169.00	1154	180.00	6888
148.00	5927	159.00	825	169.95	362	181.00	3151
149.00	1447	160.00	1871	170.90	470	182.00	433
149.95	396	161.00	2982	172.00	984	182.90	281
151.10	779	162.00	848	173.00	1464	184.00	658
151.80	181	163.00	239	174.00	2668	185.00	4322
153.00	1783	164.00	326	175.00	5114	186.00	37907
154.00	1449	165.00	2037	176.00	1660	187.00	10647
155.00	3313	166.00	1818	177.00	2145	188.00	1095

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
189.00	1957	201.50	1683	214.90	632	226.00	1108
189.95	311	203.00	1589	216.00	1430	227.00	14673
191.00	1030	204.00	9553	217.00	18216	228.00	2135
192.00	3098	205.00	16374	218.00	2285	229.00	3510
193.00	3297	206.00	72696	219.00	194	230.00	469
194.00	720	207.00	9550	220.20	60	231.00	1631
194.95	438	208.00	2084	221.00	20205	231.95	261
196.00	9416	209.00	728	221.80	408	232.95	236
198.00	327258	210.20	153	223.00	4122	234.00	937
199.00	22072	211.00	2734	224.00	41417	235.00	1098
200.00	1602	213.00	198	225.00	10316	236.00	677

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
237.00	1501	247.90	239	259.00	1465	273.00	6086
237.95	195	249.00	1370	259.95	224	274.00	15645
239.00	586	249.95	241	260.95	308	275.00	93752
240.00	473	250.90	238	263.00	52	276.00	12590
240.95	912	251.95	217	263.95	241	277.00	6285
242.00	2242	252.95	657	265.00	3503	278.00	1128
243.00	2447	253.95	792	265.90	436	279.00	194
244.05	37994	255.00	181877	267.90	55	280.90	105
245.00	5014	256.00	27027	269.80	111	281.95	229
246.00	5672	257.00	2053	270.95	281	283.00	795
247.00	1174	258.00	8980	272.00	425	284.00	583

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
285.00	1358	298.00	177	314.00	1192	327.00	1587
286.00	192	301.00	341	315.00	2593	328.00	870
289.00	224	302.00	432	316.00	1598	328.90	91
290.00	256	303.00	2986	317.00	300	332.00	676
291.00	84	304.00	753	320.00	58	333.00	886
292.00	322	304.90	56	321.00	882	334.00	6024
293.00	1644	308.00	368	322.00	456	335.10	1591
294.00	405	309.00	166	323.00	9485	336.00	110
295.00	401	310.00	396	324.00	1758	338.90	91
296.00	22619	310.90	51	325.10	108	340.00	82
297.00	3206	313.00	150	325.90	110	341.00	1104

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
342.00	334	366.90	75	391.00	630	423.00	30156
346.00	2241	369.95	281	392.05	411	424.00	7187
347.00	379	371.00	928	400.90	431	425.10	825
351.00	103	372.00	6222	402.00	2732	441.05	87834
352.00	3157	373.00	1596	403.00	4078	442.10	615872
353.00	2071	374.00	106	404.00	1407	443.05	120280
354.00	3214	376.90	100	405.00	235	444.05	11372
355.00	604	383.00	1794	409.90	62	445.05	660
359.00	223	384.00	501	415.00	172		
365.00	12870	385.00	87	421.00	3968		
366.00	2005	390.00	921	422.00	3564		

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26

Column: MS

Level ID	File ID
A	J:\MS26\DATA\041112\0411F009.D
B	J:\MS26\DATA\041112\0411F010.D
C	J:\MS26\DATA\041112\0411F011.D
D	J:\MS26\DATA\041112\0411F012.D
E	J:\MS26\DATA\041112\0411F013.D
F	J:\MS26\DATA\041112\0411F014.D
G	J:\MS26\DATA\041112\0411F015.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,4-Dioxane	A	2.0	0.346	B	4.0	0.323	C	10	0.385	D	20	0.376	E	50	0.406
	F	100	0.417	G	200	0.401									
1,4-Dioxane-d8	A	2.0	0.360	B	4.0	0.348	C	10	0.389	D	20	0.384	E	50	0.381
	F	100	0.407	G	200	0.394									

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,4-Dioxane	MS	AverageRF	% RSD	9.0		≤ 20	0.379		0.01
1,4-Dioxane-d8	SURR	AverageRF	% RSD	5.4		≤ 20	0.380		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Calibration Date: 04/11/2012
Date Analyzed: 04/11/2012

Second Source Calibration Verification
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL11446
Units: ng/ml

File ID: J:\MS26\DATA\041112\0411F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	21	0.379	0.404	7	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Injection Log

Directory: J:\MS26\DATA\041112

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0411F001.d	1.	PR		11 Apr 2012 08:4
2	1	0411F002.d	1.	PR		11 Apr 2012 09:0
3	1	0411F003.d	1.	PR		11 Apr 2012 09:2
4	1	0411F004.d	1.	PR		11 Apr 2012 09:4
5	1	0411F005.d	1.	PR		11 Apr 2012 10:0
6	1	0411F006.d	1.	PR		11 Apr 2012 10:2
7	1	0411F007.d	1.	3.0ug/mL DFTPP | SVM37-61C		11 Apr 2012 10:4
8	2	0411F008.d	1.	IB		11 Apr 2012 11:0
9	3	0411F009.d	1.	2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A		11 Apr 2012 11:1
10	4	0411F010.d	1.	4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B		11 Apr 2012 11:3
11	5	0411F011.d	1.	10ng/mL ICAL 1,4-Dioxane | SVM37-76C		11 Apr 2012 11:5
12	6	0411F012.d	1.	20ng/mL ICAL 1,4-Dioxane | SVM37-76D / CCV		11 Apr 2012 12:1
13	7	0411F013.d	1.	50ng/mL ICAL 1,4-Dioxane | SVM37-76E		11 Apr 2012 12:3
14	8	0411F014.d	1.	100ng/mL ICAL 1,4-Dioxane | SVM37-76F		11 Apr 2012 12:5
15	9	0411F015.d	1.	200ng/mL ICAL 1,4-Dioxane | SVM37-76G		11 Apr 2012 13:1
16	10	0411F016.d	1.	20ng/mL ICV 1,4-Dioxane | SVM38-29B		11 Apr 2012 13:3
17	11	0411F017.d	1.	KWG1202790-5 | MB		11 Apr 2012 14:0
18	12	0411F018.d	1.	KWG1202790-1 | LOD		11 Apr 2012 14:2
19	13	0411F019.d	1.	KWG1202790-2 | LOD		11 Apr 2012 14:4
20	14	0411F020.d	1.	KWG1202790-3 | LOD		11 Apr 2012 14:5
21	15	0411F021.d	1.	KWG1202790-4 | LOQ		11 Apr 2012 15:1
22	16	0411F022.d	1.	KWG1202878-8 | MB		11 Apr 2012 15:3
23	17	0411F023.d	1.	KWG1202878-4 | LOD		11 Apr 2012 15:5
24	18	0411F024.d	1.	KWG1202878-5 | LOD		11 Apr 2012 16:1
25	19	0411F025.d	1.	KWG1202878-6 | LOD		11 Apr 2012 16:3
26	20	0411F026.d	1.	KWG1202878-7 | LOQ		11 Apr 2012 16:5

NR

Soil LOD's / LOQ

NR

CAL 11441

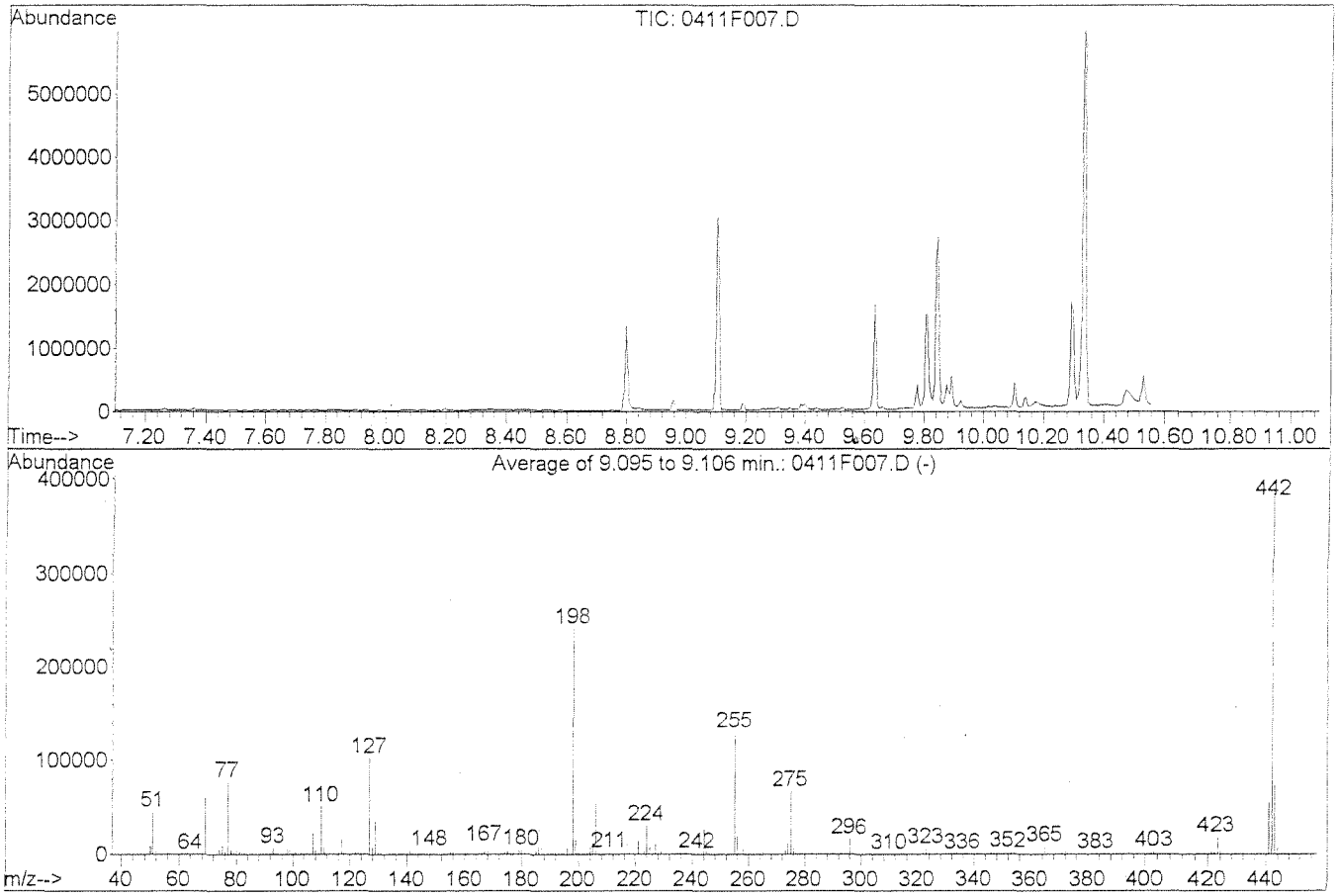
LB

APR 20 2012

CA 04-23-12

Data File : J:\MS26\DATA\041112\0411F007.D
Acq On : 11 Apr 2012 10:41 am
Sample : 3.0ug/mL DFTPP | SVM37-61C
Misc :
MS Integration Params: rteint.p
Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix

Vial: 1
Operator: KBailey
Inst : MS26
Multiplr: 1.00



AutoFind: Scans 1050, 1051, 1052; Background Corrected with Scan 1046

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	18.8	45513	PASS
68	69	0.00	2	1.3	787	PASS
69	198	0.00	100	25.2	60927	PASS
70	69	0.00	2	0.6	395	PASS
127	198	10	80	42.4	102442	PASS
197	198	0.00	2	0.0	81	PASS
198	442	30	100	63.0	241866	PASS
199	198	5	9	6.8	16472	PASS
275	198	10	60	27.6	66830	PASS
365	442	1	50	2.3	8721	PASS
441	443	0.01	100	72.5	54989	PASS
442	442	30	100	100.0	384122	PASS
443	442	15	24	19.7	75860	PASS

0411F007.D A_DFTPP.M Fri Apr 20 15:55:37 2012

APR 2 0 2012

APR 2 3 2012

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
50.05	9042	63.90	305	75.00	9570	87.00	741
51.00	45513	64.95	1170	76.10	3311	87.90	257
52.05	2433	65.90	27	77.05	76896	89.00	156
53.00	218	66.95	14	78.10	5645	91.00	1007
55.00	207	68.00	787	79.00	3998	92.00	1250
56.00	1413	69.00	60927	80.00	3175	93.00	7123
57.00	3547	70.00	395	81.00	4752	94.00	599
58.00	235	71.10	8	82.00	1230	94.95	117
61.00	612	72.00	158	83.00	1414	95.95	435
62.00	665	73.00	383	84.95	1127	97.05	223
63.00	2173	74.00	5511	85.90	761	98.00	5412

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
99.00	5076	110.00	50992	121.00	138	132.05	379
99.95	480	111.00	7373	122.00	1552	132.90	112
101.00	3277	111.95	963	123.00	2393	134.00	965
102.00	167	112.95	347	124.00	1200	135.00	2783
103.00	1009	113.90	53	125.00	1214	136.00	1175
104.00	1792	114.90	189	126.05	288	137.00	1568
105.00	1691	116.00	1246	127.00	102442	137.85	421
106.00	648	117.00	15489	128.00	7501	139.00	194
107.00	23908	118.00	1257	129.00	35771	139.95	460
108.00	4050	119.00	304	130.00	3102	141.00	4135
109.00	582	120.00	332	131.00	706	142.00	1473

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
142.95	1149	154.00	1125	165.00	1538	176.00	1237
144.00	339	155.00	2521	166.00	1349	177.00	1727
145.00	320	156.00	3927	167.00	9218	178.00	557
146.00	742	157.00	836	168.00	4967	179.00	6513
147.00	2358	157.95	818	169.00	829	180.00	4999
148.00	4480	159.00	634	170.00	293	181.00	2441
149.00	1168	160.00	1335	170.90	443	182.00	427
150.00	314	161.00	2203	171.95	758	182.95	246
151.15	648	161.95	670	173.00	1152	184.00	505
151.80	356	162.95	190	174.00	1988	185.00	3338
153.00	1442	164.00	297	175.05	3754	186.00	27785

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
187.00	7790	198.00	241866	210.30	505	224.00	30477
188.05	784	199.00	16472	211.00	2072	225.00	7686
189.00	1382	200.00	1269	213.00	130	226.00	775
190.00	266	201.50	1223	214.95	416	227.00	11131
191.10	777	203.00	1384	216.00	1045	228.00	1512
192.00	2338	204.00	7195	217.00	13414	229.00	2665
193.00	2567	205.00	12496	218.00	1765	230.00	408
194.00	604	206.00	53876	218.95	182	231.00	1191
195.05	293	207.00	7081	221.00	15072	232.00	193
196.00	7048	208.00	1454	221.80	200	232.95	187
196.90	81	209.00	601	223.00	3145	234.00	677

APR 23 2012

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
235.00	913	246.00	4147	257.00	1525	271.95	331
235.95	534	247.00	852	258.00	6574	273.00	4314
237.00	984	247.95	194	259.00	1050	274.00	11381
238.00	145	249.00	981	260.00	220	275.00	66830
239.00	386	249.95	182	260.95	214	276.00	9067
240.00	326	250.95	180	263.85	332	277.00	4502
241.00	685	251.95	167	265.00	2545	278.00	777
242.00	1745	253.00	442	265.85	393	278.95	149
243.05	1834	254.00	548	267.70	73	280.95	111
244.00	27432	255.00	130301	269.95	166	282.00	143
245.00	3713	256.00	19632	270.90	216	283.00	548

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
284.00	366	296.00	16243	314.00	897	328.00	621
285.00	860	297.00	2402	315.00	1899	328.90	61
286.00	179	298.00	153	316.00	1183	332.00	537
288.90	195	300.90	210	317.05	214	333.00	621
290.00	192	302.00	294	321.00	549	334.00	4228
290.80	51	303.05	2164	321.95	322	335.00	1082
291.00	60	304.00	521	323.00	6596	336.05	131
292.00	241	308.00	227	324.00	1317	338.90	57
293.00	1156	309.00	149	324.95	123	341.00	816
294.05	243	310.00	252	326.00	116	342.00	186
295.00	282	313.00	162	326.90	1122	346.00	1700

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
346.95	309	370.95	575	402.00	1868	442.05	384122
350.95	132	372.00	4201	403.00	2705	443.05	75860
352.00	2094	373.00	935	404.00	981	444.10	7088
353.05	1360	374.00	59	404.95	135	445.00	402
354.00	2293	377.00	63	414.90	77		
355.10	420	383.00	1093	421.00	2436		
358.95	172	383.90	347	422.00	2275		
365.00	8721	390.00	554	423.00	18632		
366.00	1367	391.00	382	424.00	3795		
366.90	56	392.05	328	425.00	378		
370.00	215	400.95	281	441.05	54989		

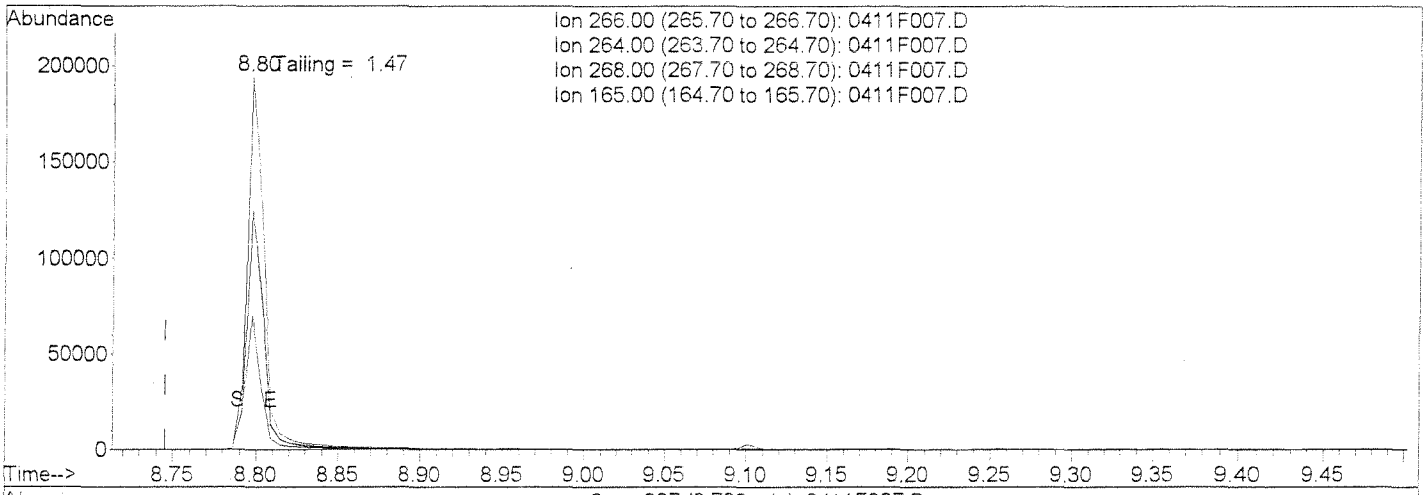
APR 20 2012

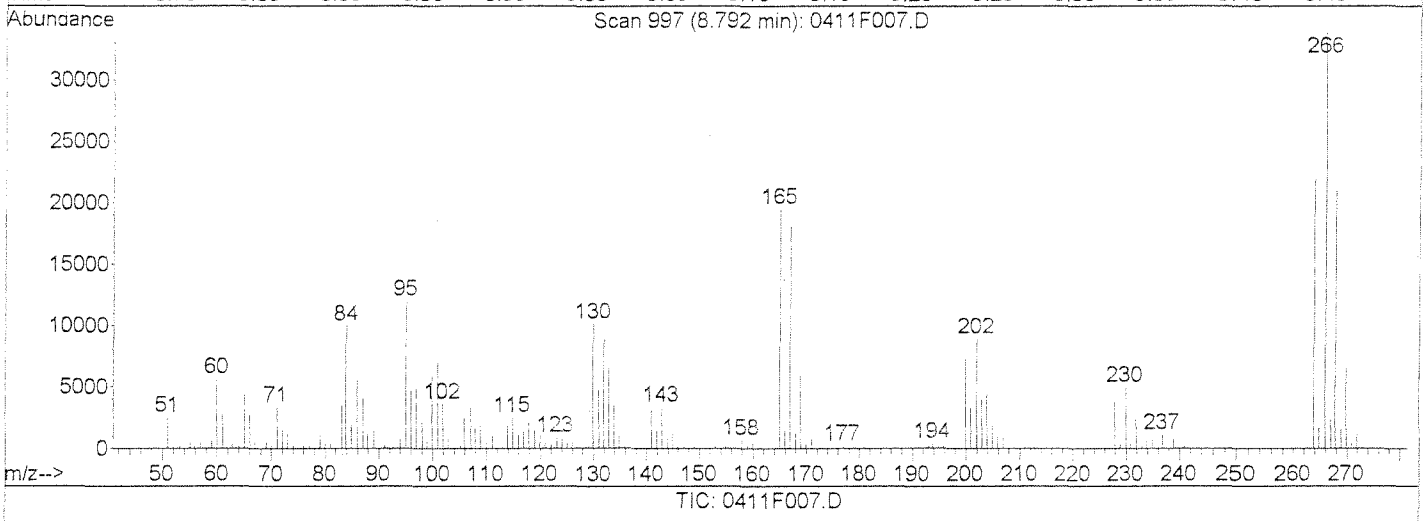
APR 23 2012

Quantitation Report

Data File : J:\MS26\DATA\041112\0411F007.D Vial: 1
Acq On : 11 Apr 2012 10:41 am Operator: KBailey
Sample : 3.0ug/mL DFTPP | SVM37-61C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: rteint.p

Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix
Last Update : Tue Nov 22 15:57:47 2011
Response via : Initial Calibration





TIC: 0411F007.D

(1) Pentachlorophenol

Exp R.T. 9.25min

response 0

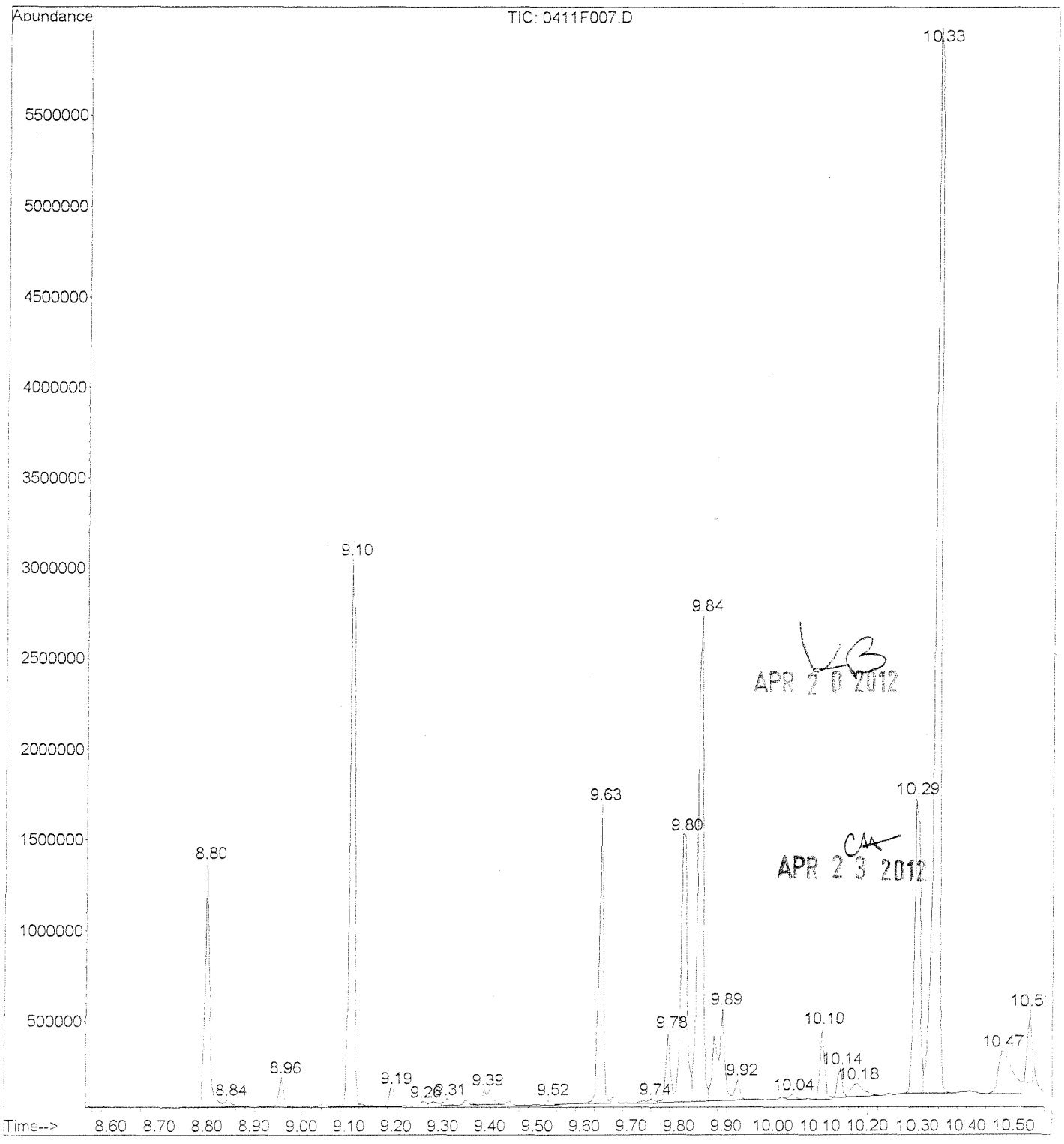
Ion	Exp%	Act%
266.00	100	100
264.00	0.00	64.74
268.00	0.00	62.17
165.00	0.00	57.67

APR 20 2012

APR 23 2012

0411F007.D A_DFTPP.M Fri Apr 20 15:55:57 2012

File : J:\MS26\DATA\041112\0411F007.D
Operator : KBailey
Acquired : 11 Apr 2012 10:41 am using AcqMethod TUNE14DX
Instrument : MS26
Sample Name: 3.0ug/mL DFTPP | SVM37-61C
Misc Info :
Vial Number: 1



1	3.791	rVB	0.069		33163	3.773	3.842
2	4.306	rVB	0.080		26100	4.288	4.368
3	4.849	rBV	0.040		24096	4.826	4.866
4	4.941	rVB	0.052		27968	4.918	4.969
5	5.278	rVB	0.034		23779	5.261	5.295
6	5.376	rBV	0.046		103298	5.353	5.398
7	5.507	rBV	0.080		90384	5.467	5.547
8	5.564	rBV	0.034		30855	5.547	5.582
9	5.650	rBV	0.046		27717	5.633	5.679
10	5.839	rVB	0.046		25401	5.816	5.862
11	6.142	rBV	0.040		24548	6.119	6.159
12	6.680	rVB	0.057		163712	6.657	6.714
13	7.264	rVB	0.069		28093	7.241	7.310
14	7.361	rBV	0.034		21076	7.344	7.378
15	8.196	rVB	0.097		37037	8.156	8.254
16	8.345	rVB	0.092		34196	8.305	8.397
17	8.797	rBV	0.063		919010	8.769	8.832
18	8.843	rVB	0.057		38087	8.832	8.889
19	8.957	rVB	0.063		113424	8.935	8.998
20	9.101	rBV	0.103		2248601	9.066	9.169
21	9.192	rVB	0.040		77660	9.169	9.209
22	9.255	rBV	0.034		23121	9.232	9.266
23	9.307	rVV	0.040		34046	9.295	9.335
24	9.387	rVB	0.063		113926	9.364	9.427
25	9.524	rBV	0.040		25688	9.507	9.547
26	9.633	rBV	0.063		1053543	9.593	9.656
27	9.741	rBV	0.046		38112	9.707	9.753
28	9.776	rVV	0.034		265686	9.753	9.787
29	9.804	rVV	0.040		1369413	9.787	9.827
30	9.844	rVV	0.034		2108008	9.827	9.862
31	9.890	rVV	0.052		617847	9.862	9.913
32	9.924	rVB	0.040	DDE	81597	9.913	9.953
33	10.039	rVB	0.034		24273	10.027	10.062
34	10.102	rBV	0.040		277908	10.085	10.125
35	10.142	rVV	0.029	DDD	114143	10.125	10.153
36	10.176	rVB	0.074		141948	10.153	10.228
37	10.291	rBV	0.040		1330979	10.268	10.308
38	10.331	rVB	0.063	DDT	4965607	10.308	10.371
39	10.474	rBV	0.069		484196	10.445	10.514
40	10.531	rBV	0.023		259658	10.514	10.537

Breakdown = 3.87.

LB
APR 2 0 2012

APR 2 3 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F008.D Vial: 2
Acq On : 11 Apr 2012 11:00 am Operator: KBailey
Sample : IB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 11 11:27:32 2012 Quant Results File: 040412_DX.RES

Quant Method : J:\MS26\METHODS\SIM\040412_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	13330	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	0.00	96	0	0.00	ng/ml	
Spiked Amount 50.000			Recovery =	0.00%		

Target Compounds Qvalue

APR 2 0 2012

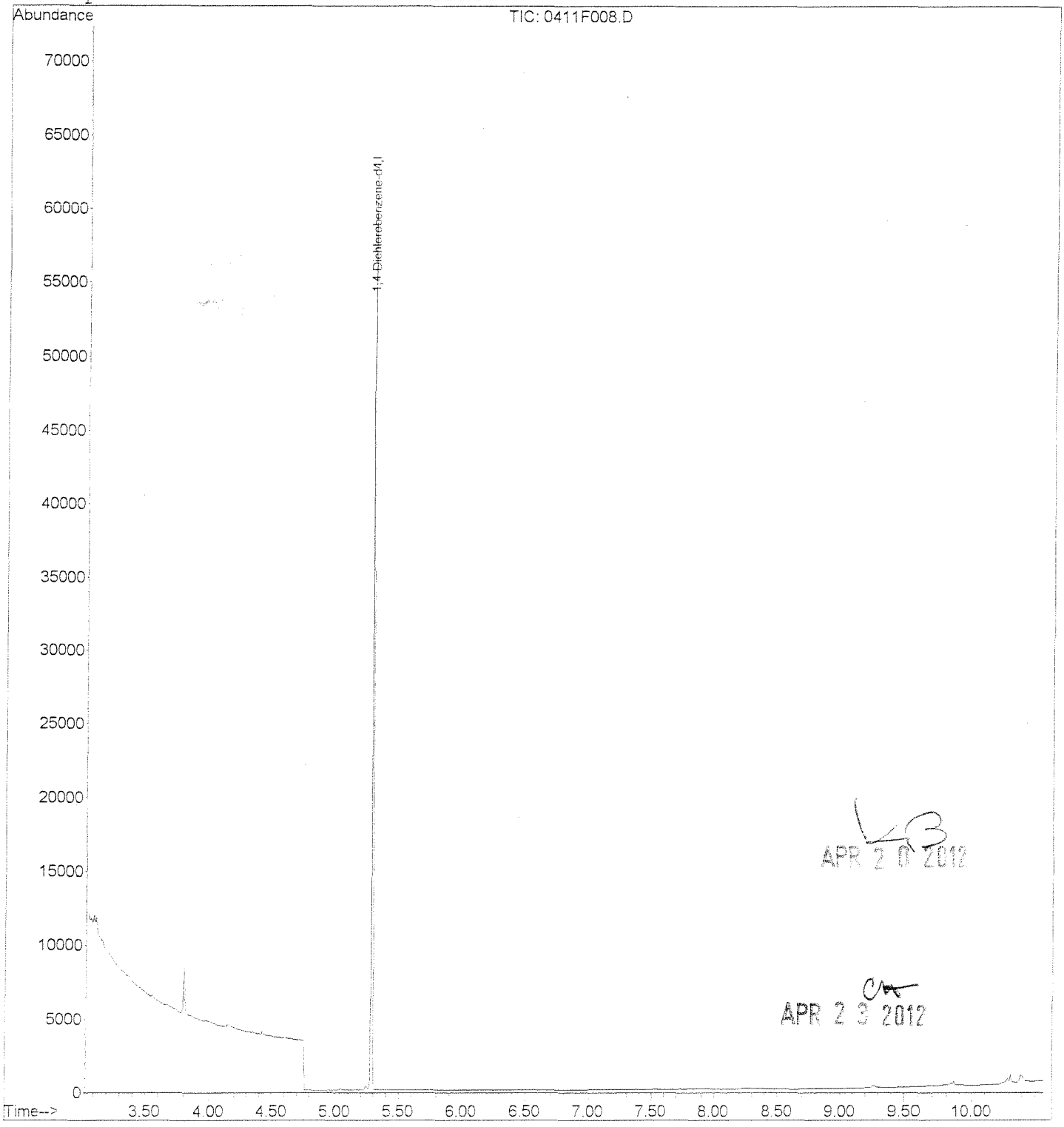
APR 2 3 2012

(#) = qualifier out of range (m) = manual integration
0411F008.D 040412_DX.M Fri Apr 20 15:56:43 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F008.D Vial: 2
Acq On : 11 Apr 2012 11:00 am Operator: KBailey
Sample : IB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 11 11:27 2012 Quant Results File: 040412_DX.RE

Method : J:\MS26\METHODS\SIM\040412_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration



APR 2 0 2012

APR 2 3 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:13 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14601	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	210m	1.99	ng/ml	0.00
Spiked Amount 50.000			Recovery =	3.98%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	202m	1.88	ng/ml	

APR 20 2012

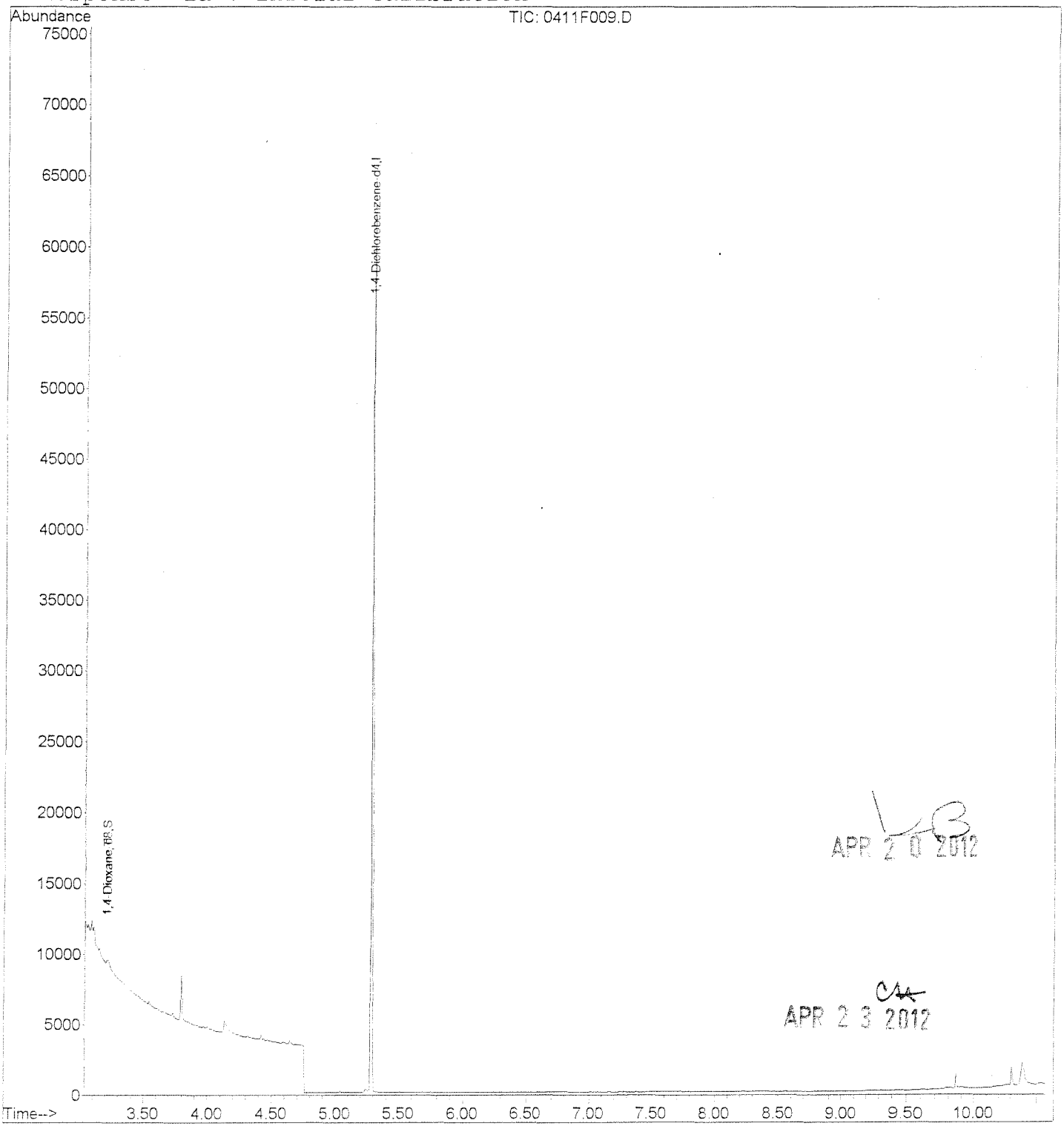
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F009.D 041112_DX.M Fri Apr 20 15:55:04 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: 041112_DX.RE

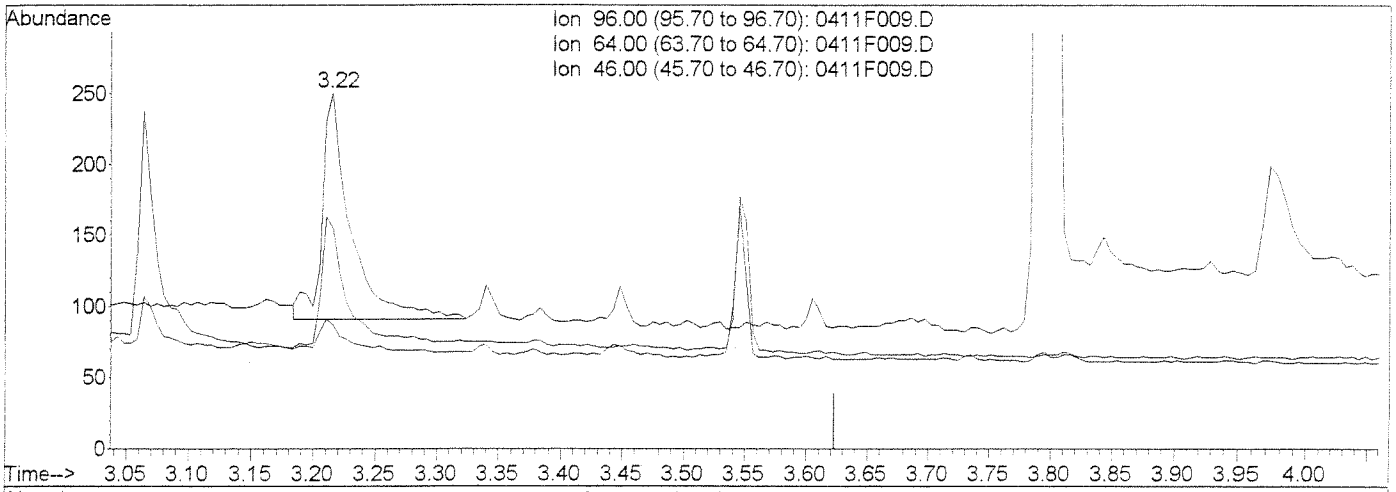
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration

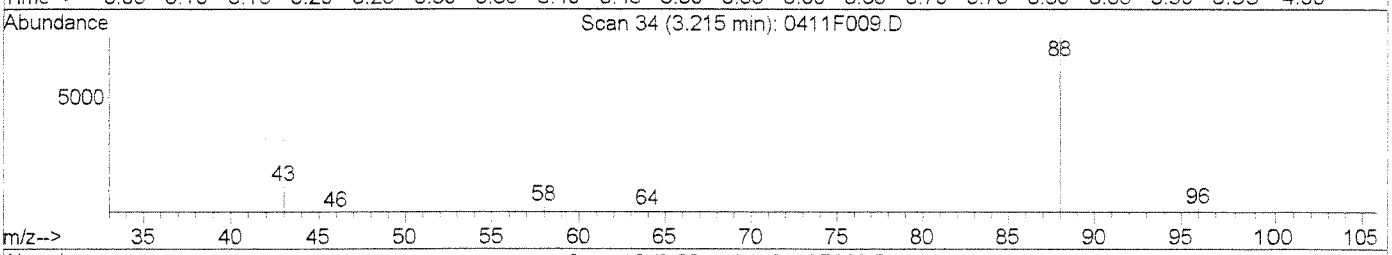


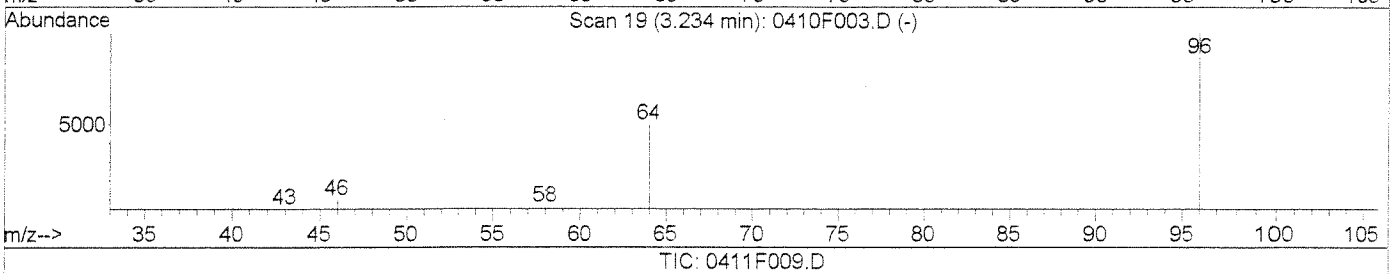
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F009.D

(2) 1,4-Dioxane-d8 (S)

3.22min 2.44ng/ml

response 258

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	52.50
46.00	9.50	11.88
0.00	0.00	0.00

Manual Integration:

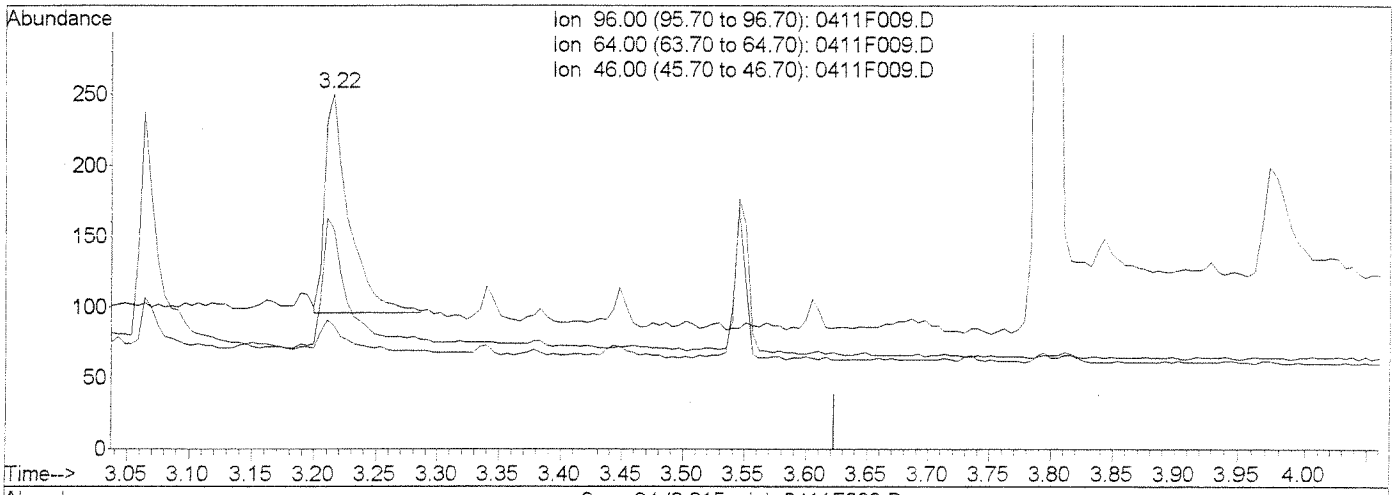
Before

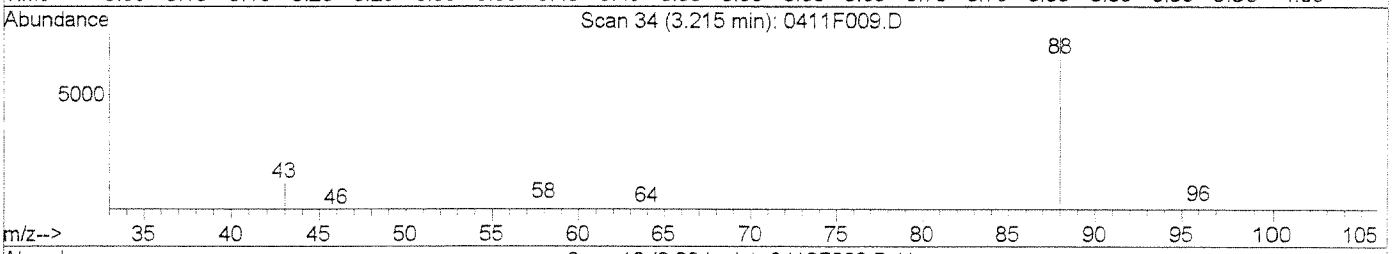
0411F009.D 041112_DX.M Thu Apr 19 19:36:34 2012

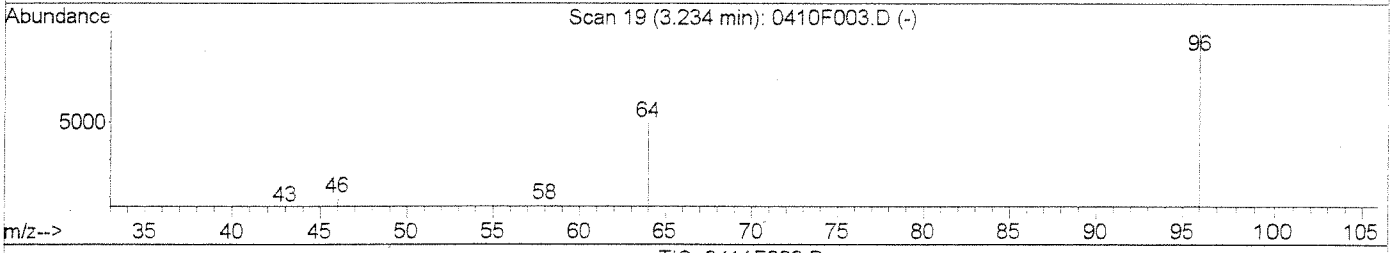
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F009.D

(2) 1,4-Dioxane-d8 (S)

3.22min 1.99ng/ml m

response 210

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	61.75
46.00	9.50	34.66#
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

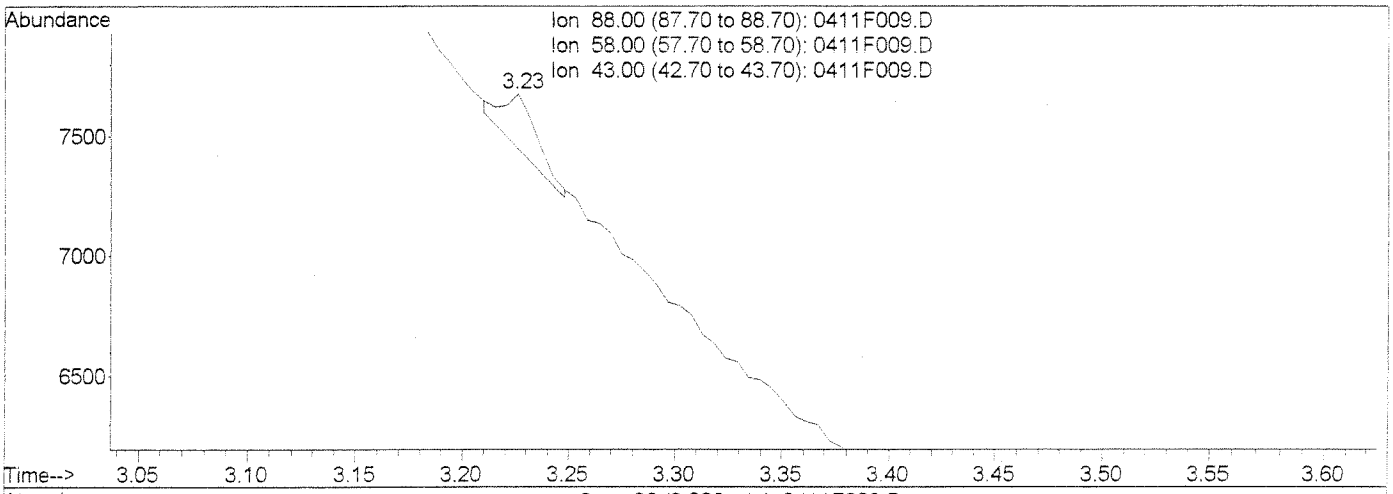
APR 23 2012

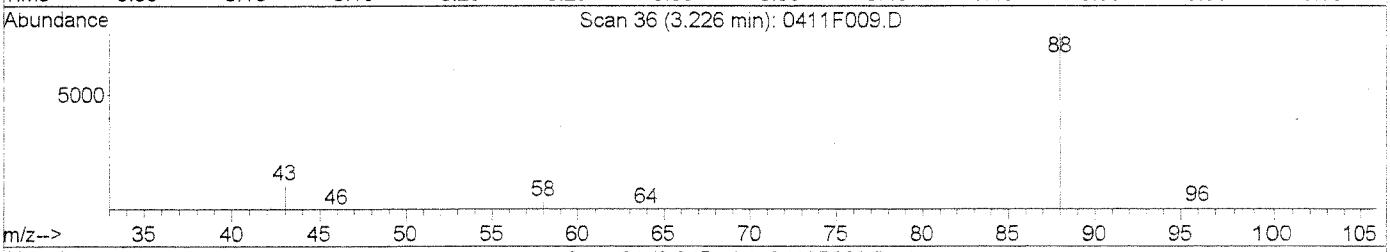
0411F009.D 041112_DX.M Thu Apr 19 19:36:43 2012

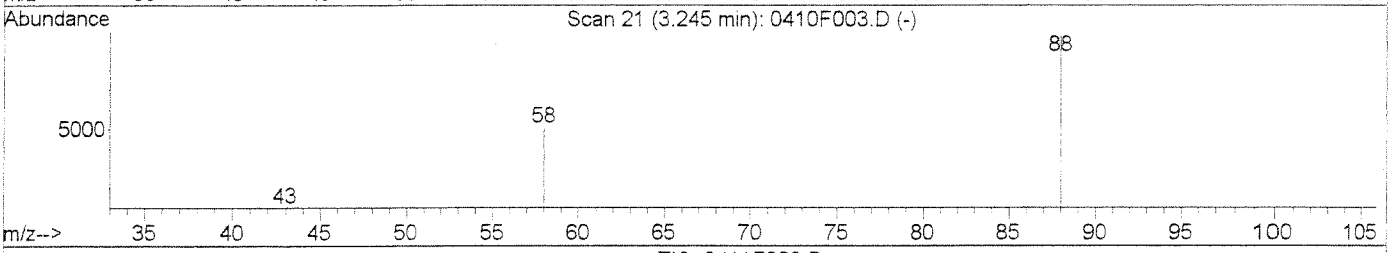
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F009.D

(3) 1,4-Dioxane (T)

3.23min 1.88ng/ml m

response 202

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	5.18
43.00	15.90	14.42
0.00	0.00	0.00

Manual Integration:

After

MP

04/19/12

APR 23 2012

0411F009.D 041112_DX.M Thu Apr 19 19:37:10 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14818	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	412m	3.84	ng/ml	0.00
Spiked Amount 50.000			Recovery =	7.68%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	383m	3.52	ng/ml	

APR 20 2012

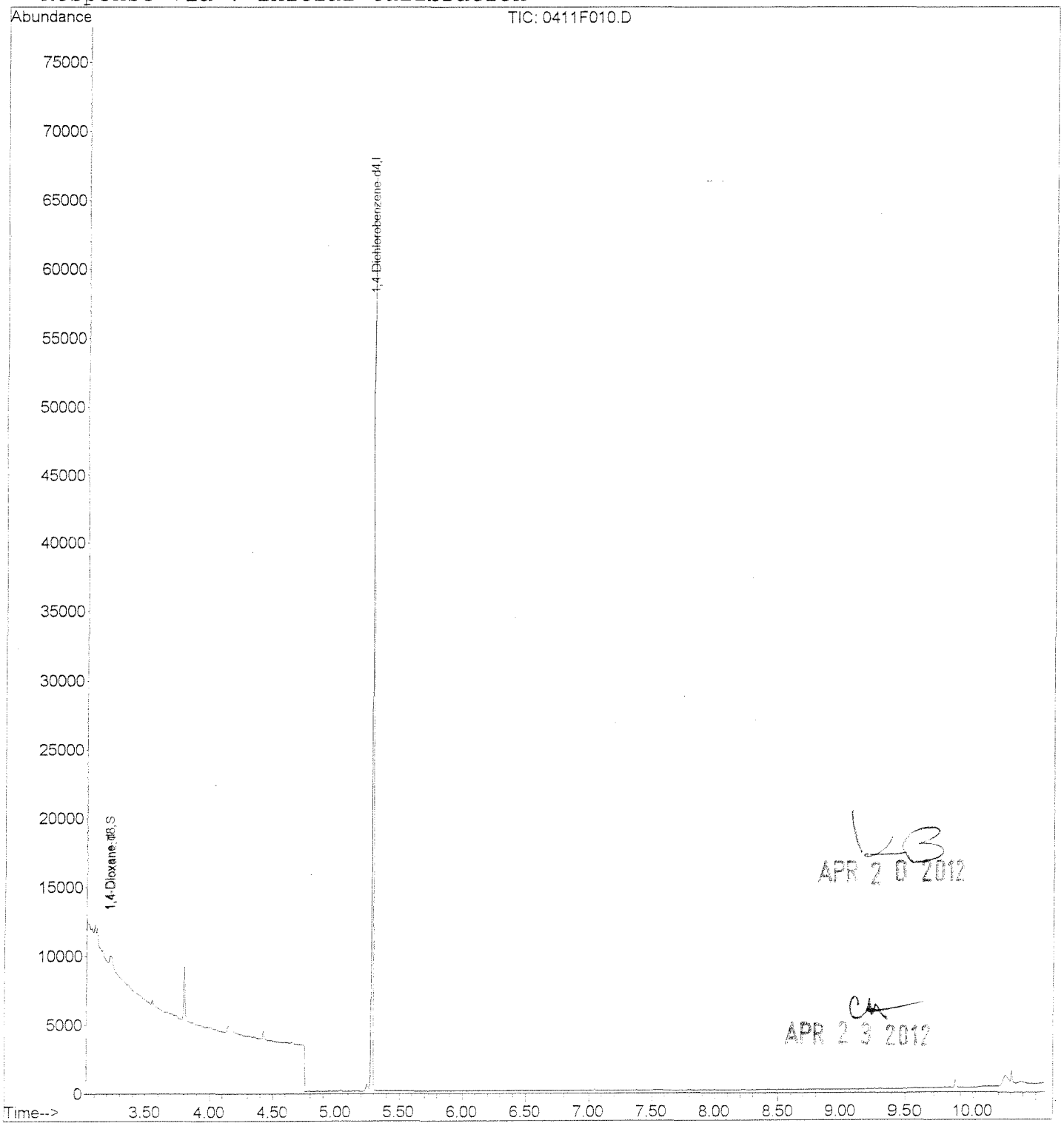
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F010.D 041112_DX.M Fri Apr 20 15:55:04 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



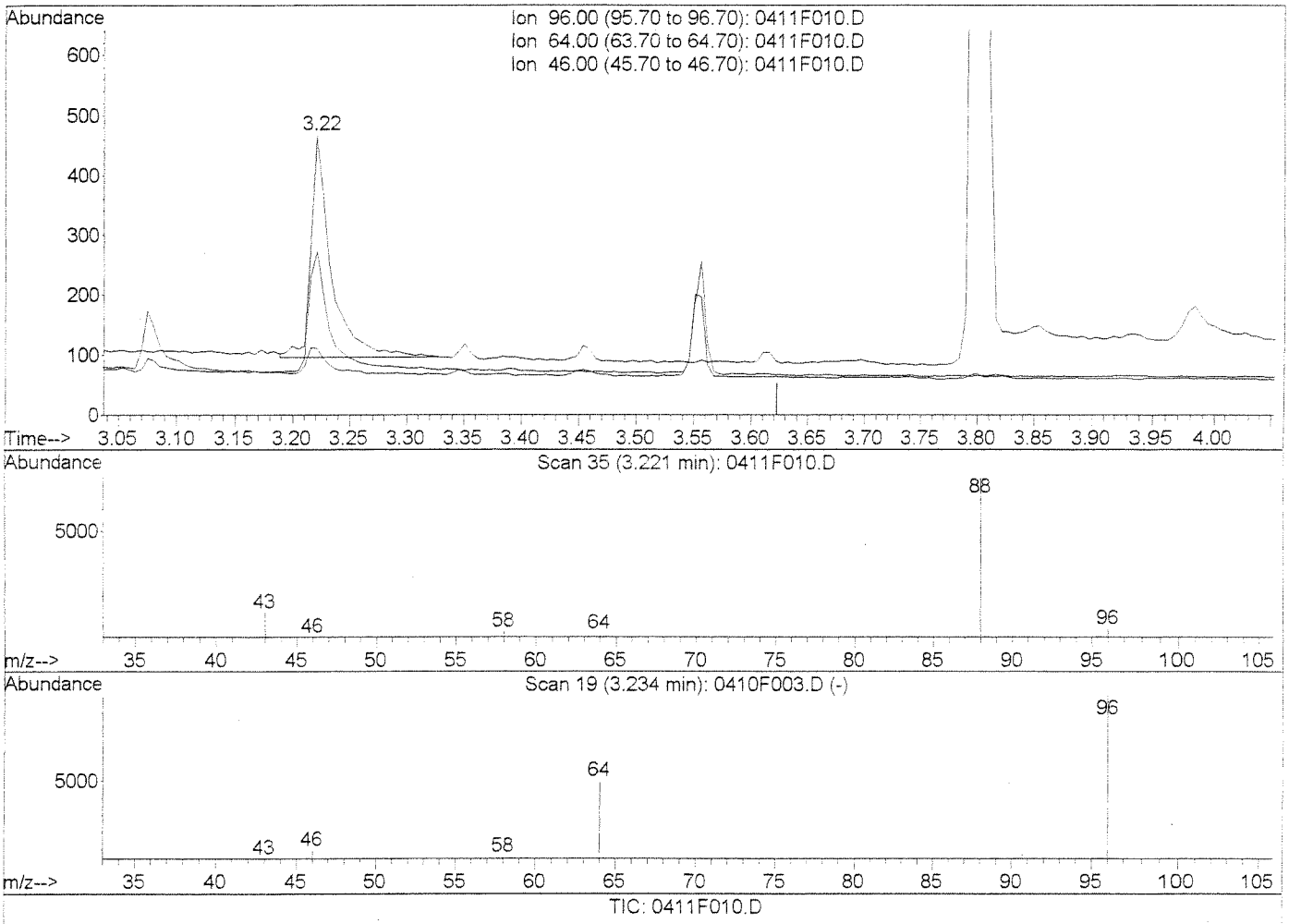
APR 20 2012

APR 23 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F010.D

(2) 1,4-Dioxane-d8 (S)

3.22min 4.30ng/ml

response 461

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	54.18
46.00	9.50	11.59
0.00	0.00	0.00

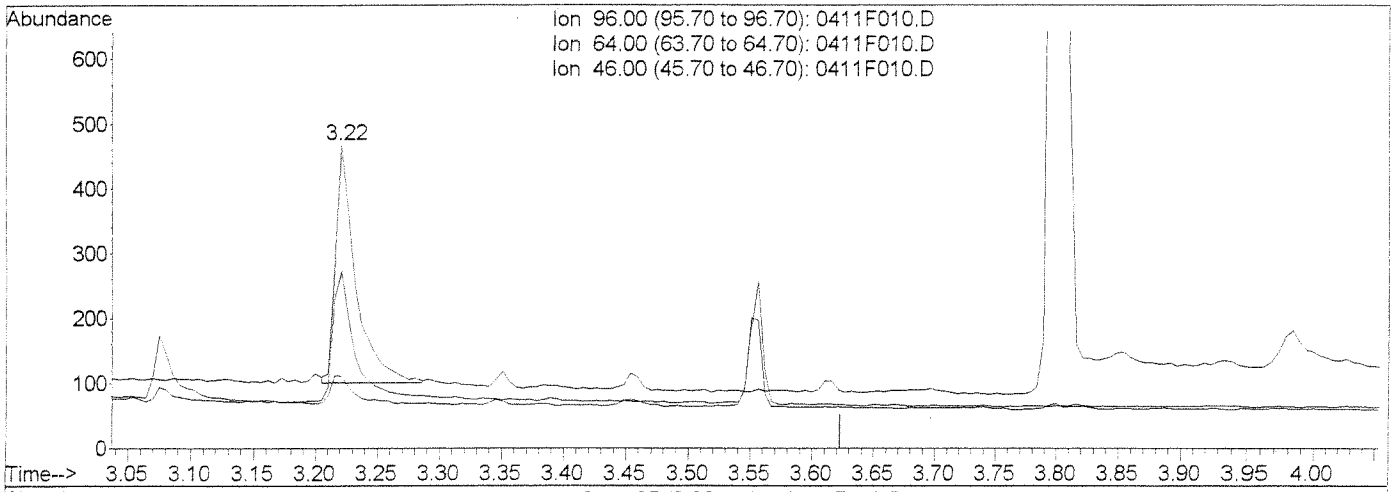
Manual Integration:

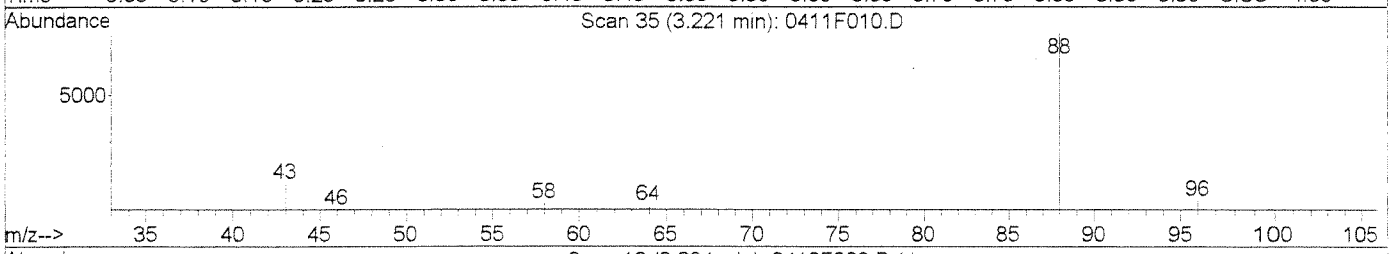
Before

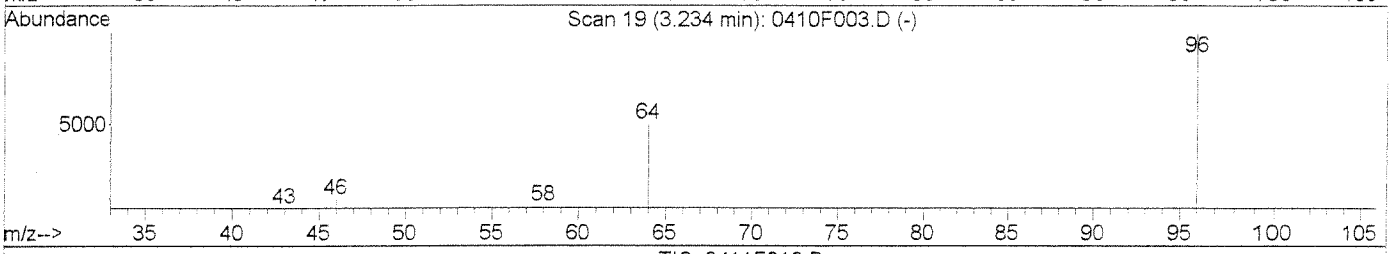
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F010.D

(2) 1,4-Dioxane-d8 (S)

3.22min 3.84ng/ml m

response 412

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	58.46
46.00	9.50	23.77
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

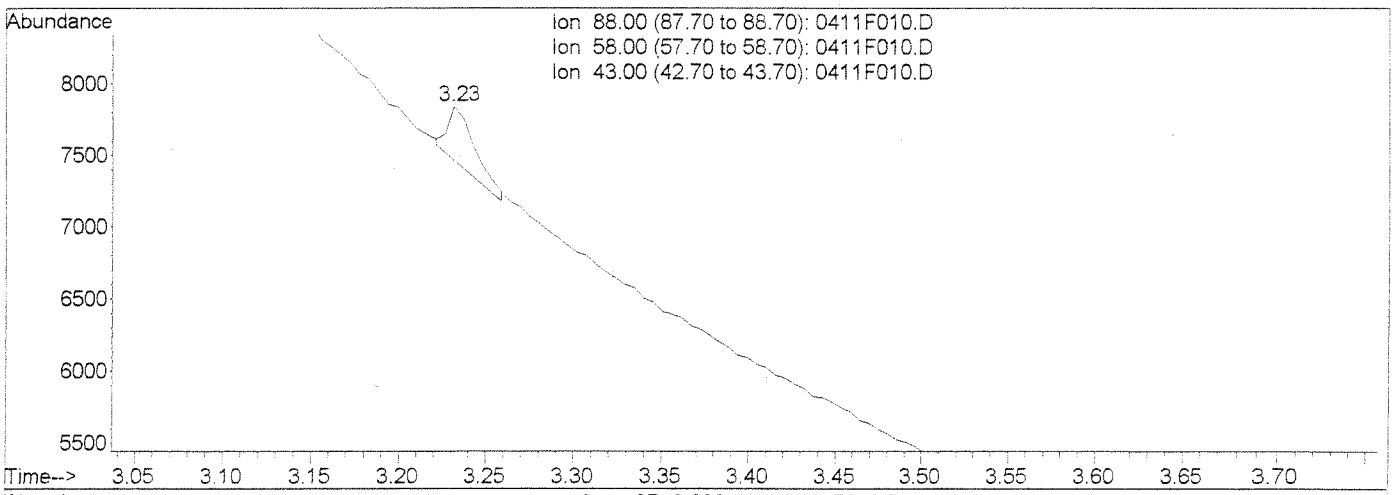
APR 2 3 2012

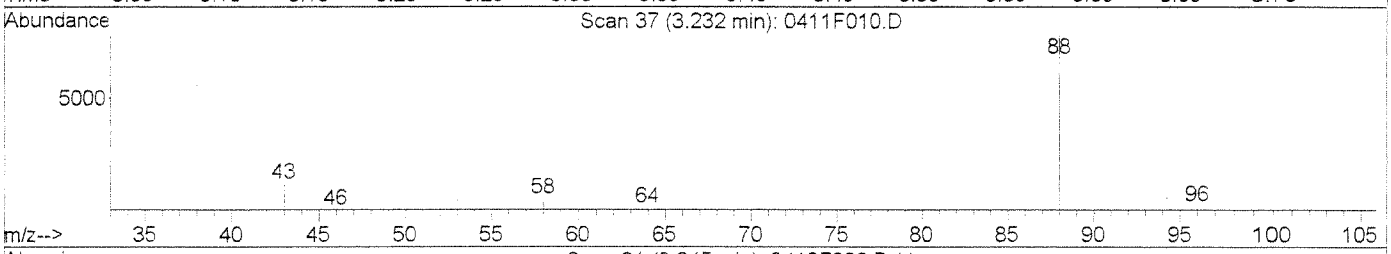
0411F010.D 041112_DX.M Thu Apr 19 19:37:28 2012

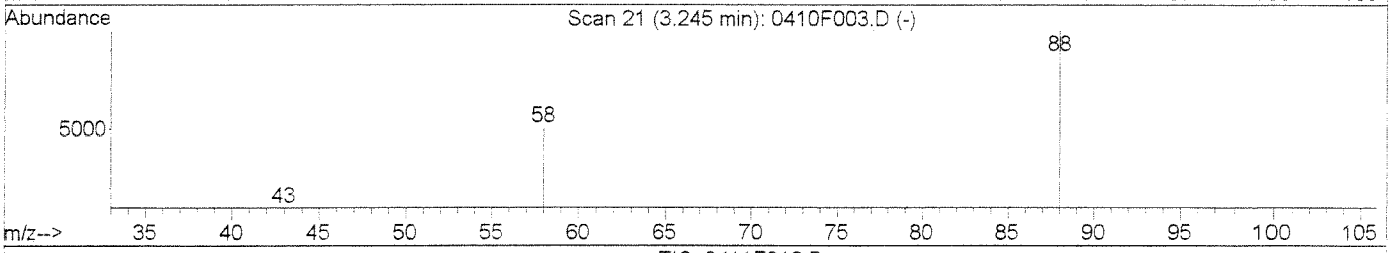
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F010.D

(3) 1,4-Dioxane (T)

3.23min 3.52ng/ml m

response 383

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	6.89
43.00	15.90	15.57
0.00	0.00	0.00

Manual Integration:

After

MP

04/19/12

LB

CA

APR 2 3 2012

0411F010.D 041112_DX.M Thu Apr 19 19:37:44 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	14921	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	1162	10.75	ng/ml	0.00
Spiked Amount 50.000			Recovery =	21.50%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.24	88	1150m	10.49	ng/ml	

APR 20 2012

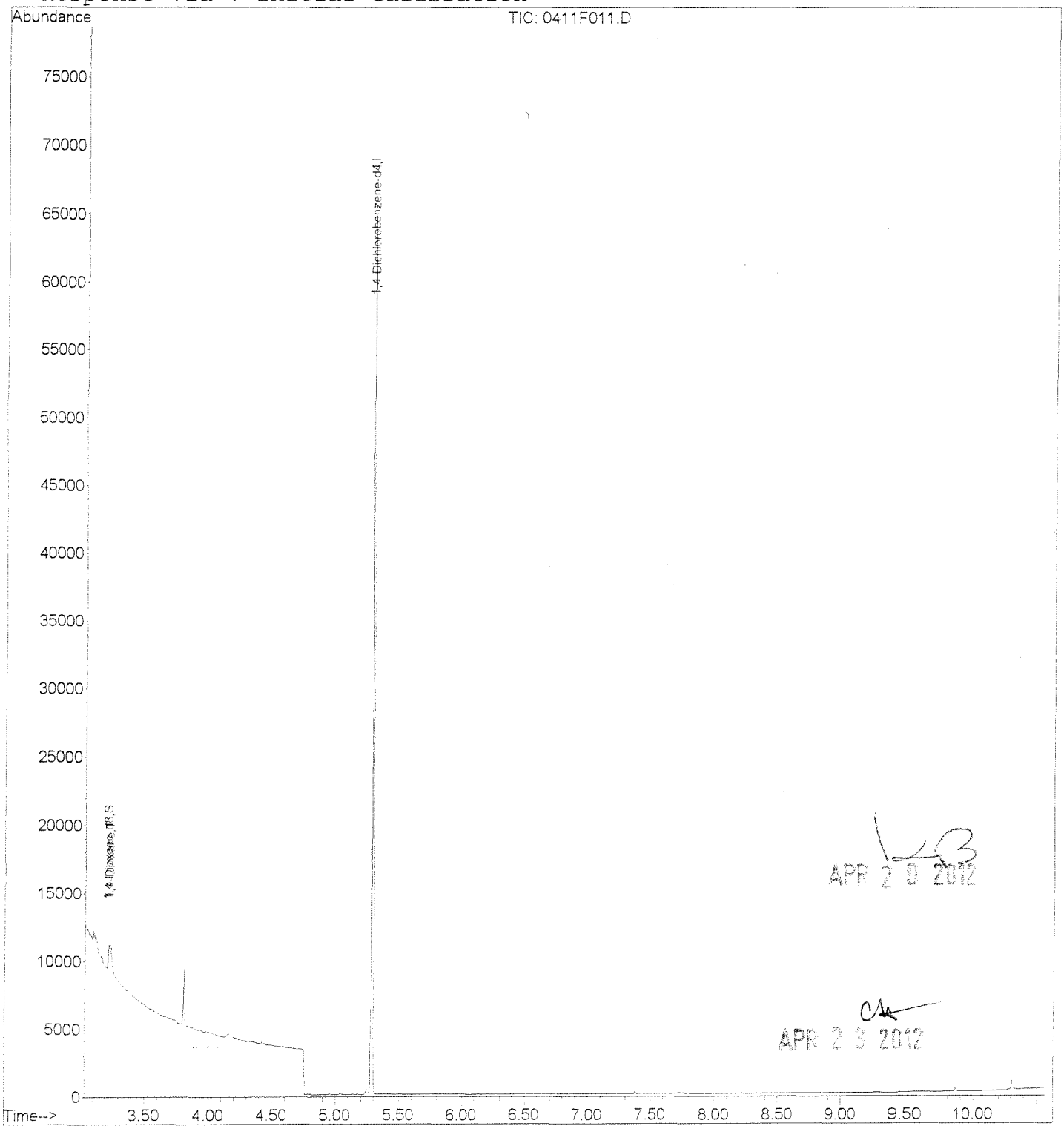
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F011.D 041112_DX.M Fri Apr 20 15:55:05 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



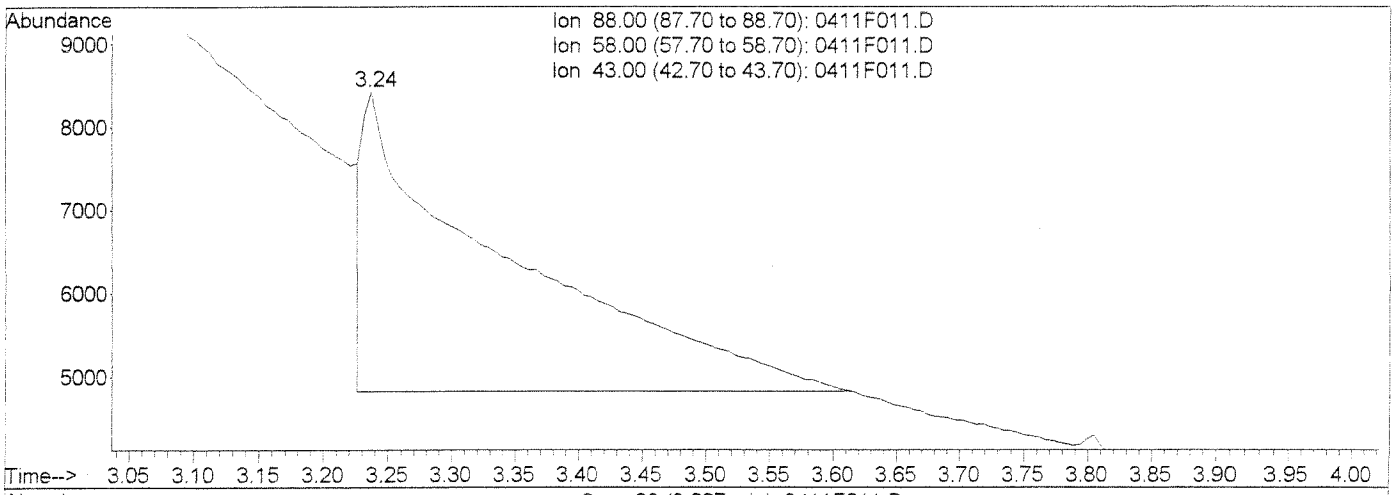
APR 20 2012

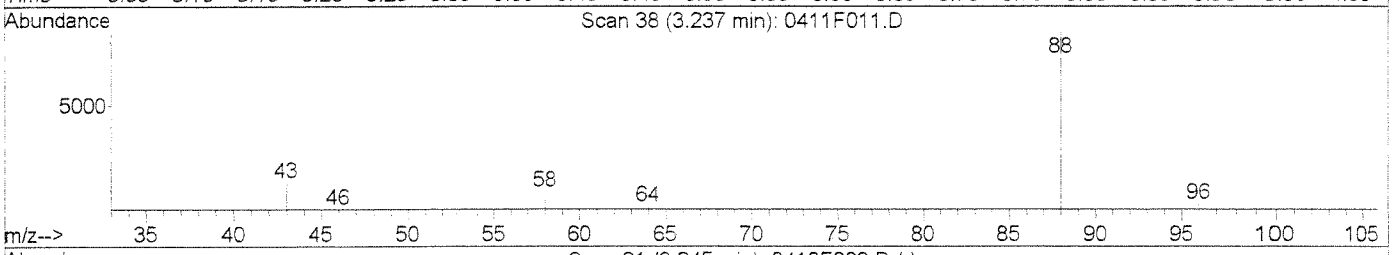
APR 23 2012

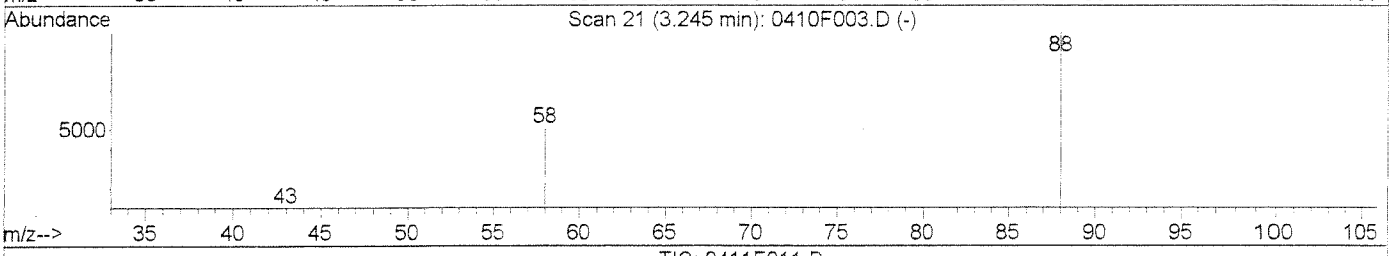
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F011.D

(3) 1,4-Dioxane (T)

3.24min 247.95ng/ml

response 27180

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	17.73
43.00	15.90	13.56
0.00	0.00	0.00

Manual Integration:

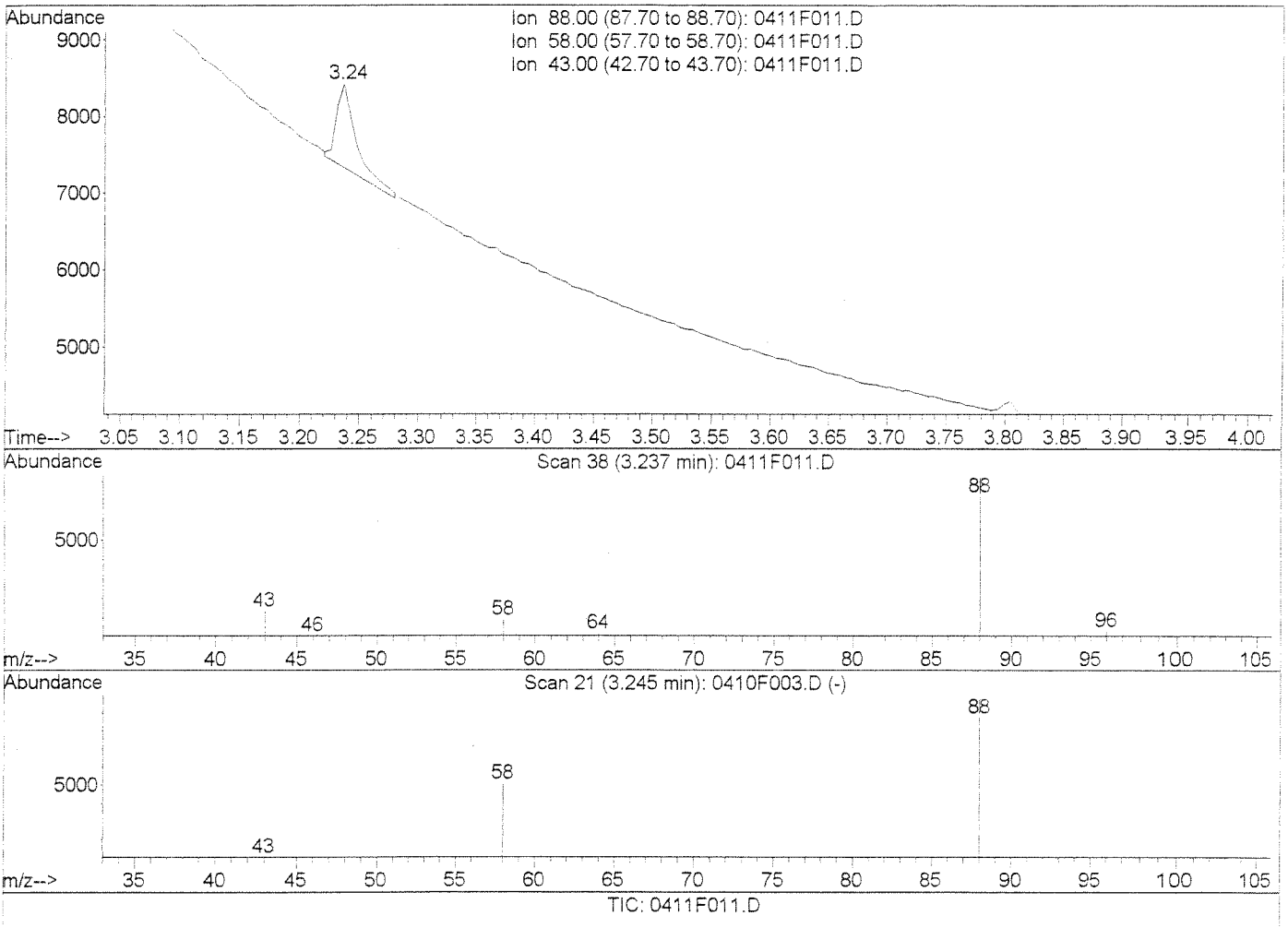
Before

0411F011.D 041112_DX.M Thu Apr 19 19:38:02 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F011.D

(3) 1,4-Dioxane (T)

3.24min 10.49ng/ml m

response 1150

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	10.69
43.00	15.90	15.92
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F011.D 041112_DX.M Thu Apr 19 19:38:10 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	15754	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.23	96	2418	21.19	ng/ml	0.00
Spiked Amount 50.000			Recovery = 42.38%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.24	88	2370m	20.48	ng/ml	

APR 2 0 2012

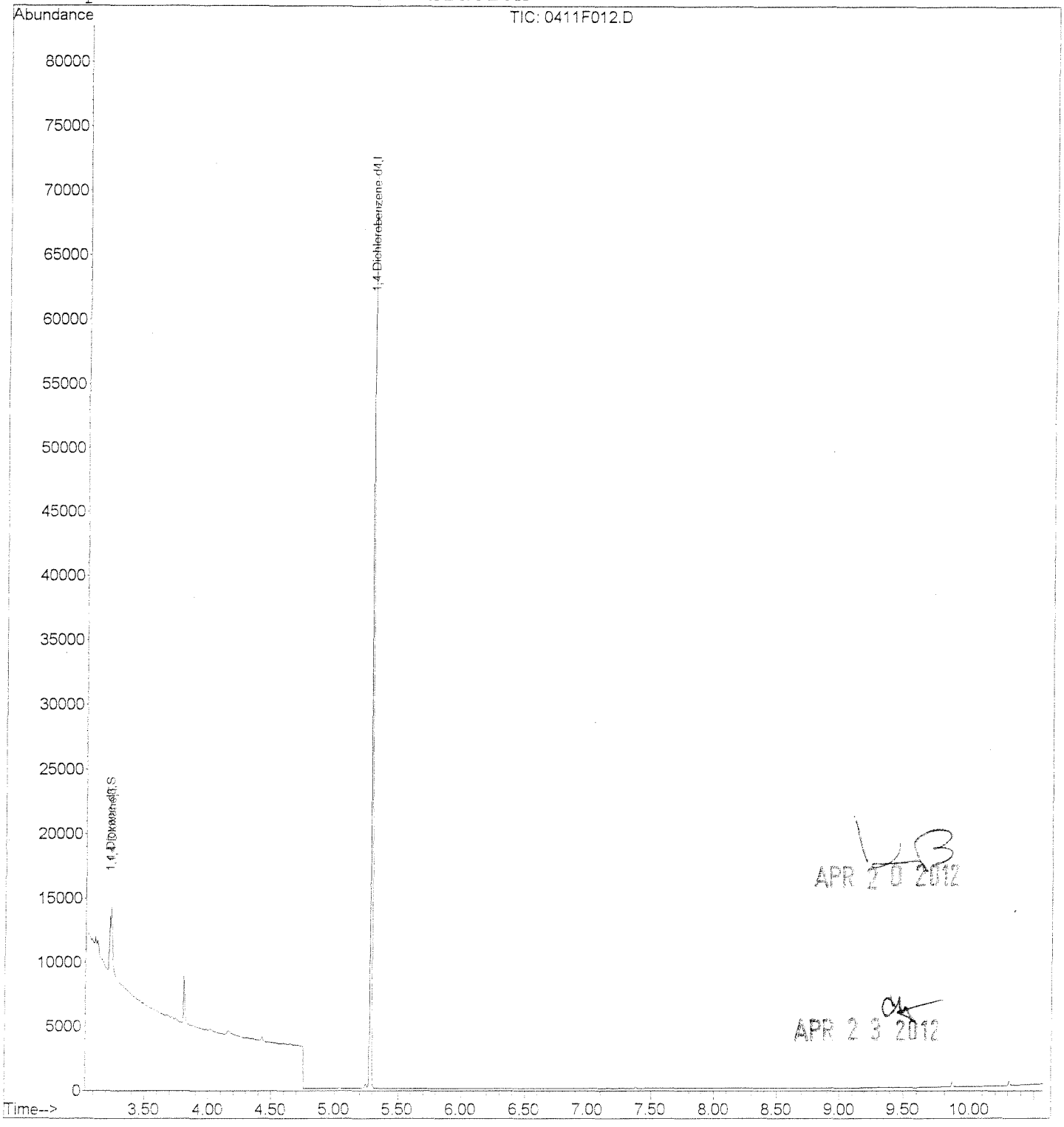
APR 2 3 2012

(#) = qualifier out of range (m) = manual integration
0411F012.D 041112_DX.M Fri Apr 20 15:55:05 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



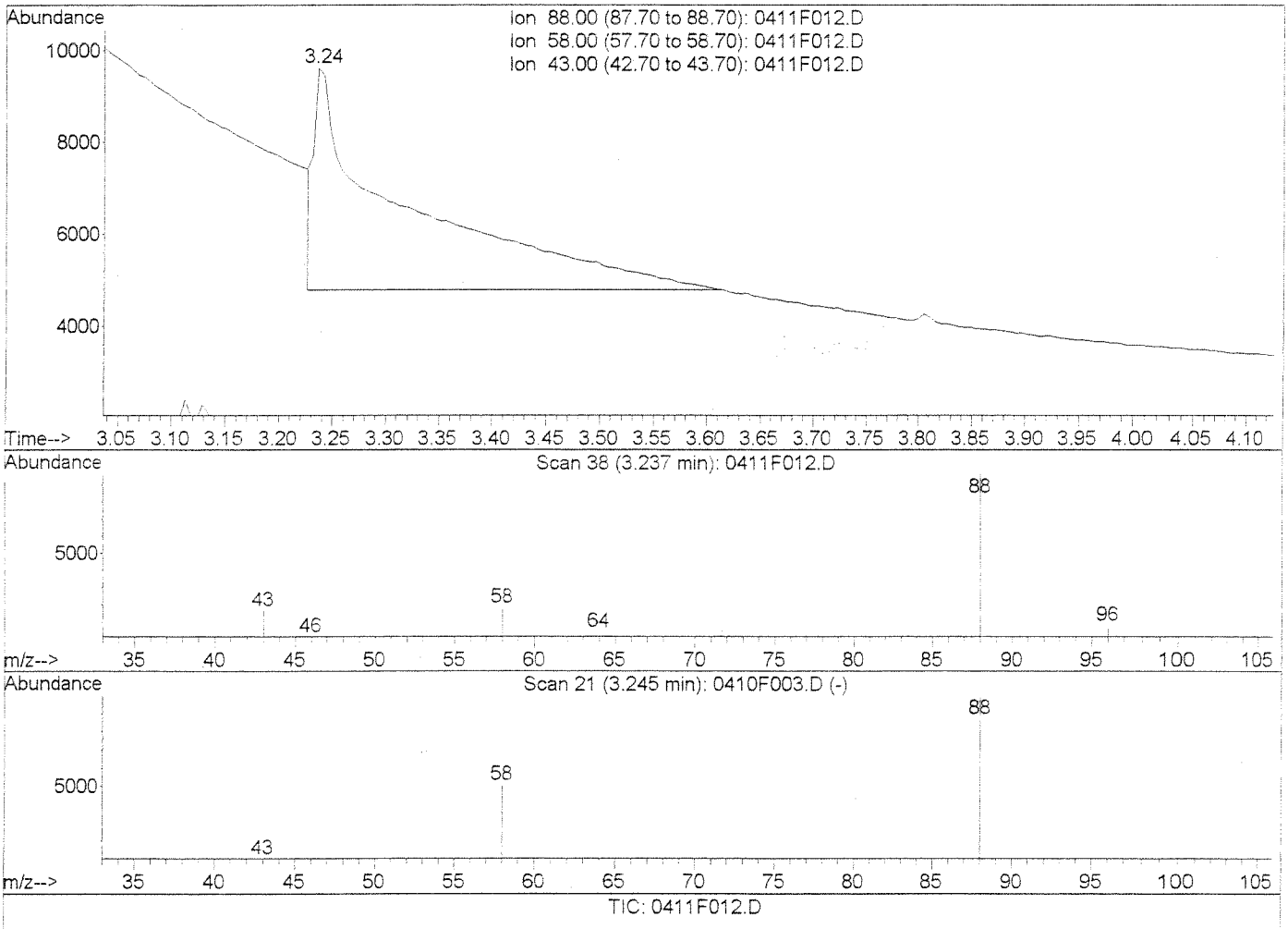
APR 20 2012

APR 23 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F012.D

(3) 1,4-Dioxane (T)

3.24min 244.22ng/ml

response 28266

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	32.06
43.00	15.90	16.64
0.00	0.00	0.00

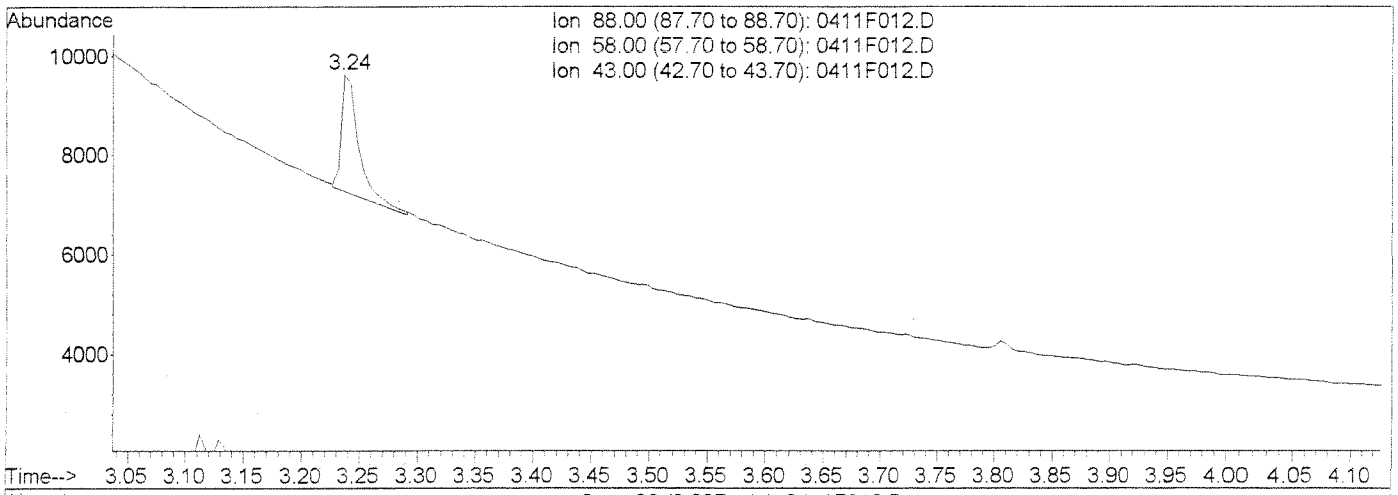
Manual Integration:

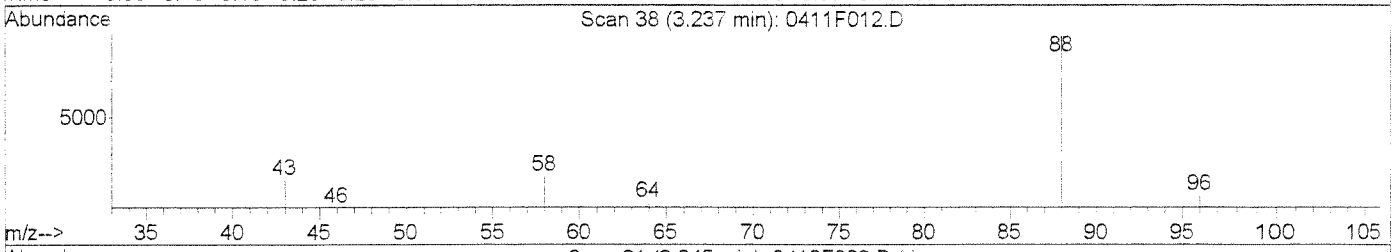
Before

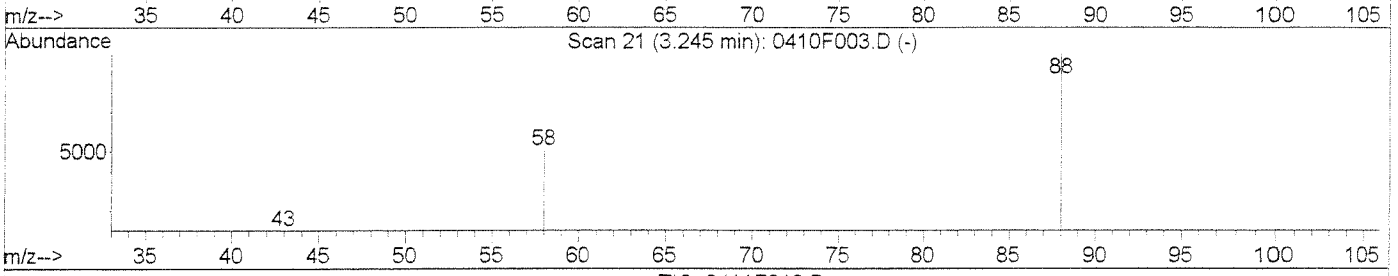
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F012.D

(3) 1,4-Dioxane (T)

3.24min 20.48ng/ml m

response 2370

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	18.82
43.00	15.90	16.96
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F012.D 041112_DX.M Thu Apr 19 19:38:26 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14927	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	5680	52.55	ng/ml	0.00
Spiked Amount 50.000			Recovery = 105.10%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.24	88	6061m	55.27	ng/ml	

APR 20 2012

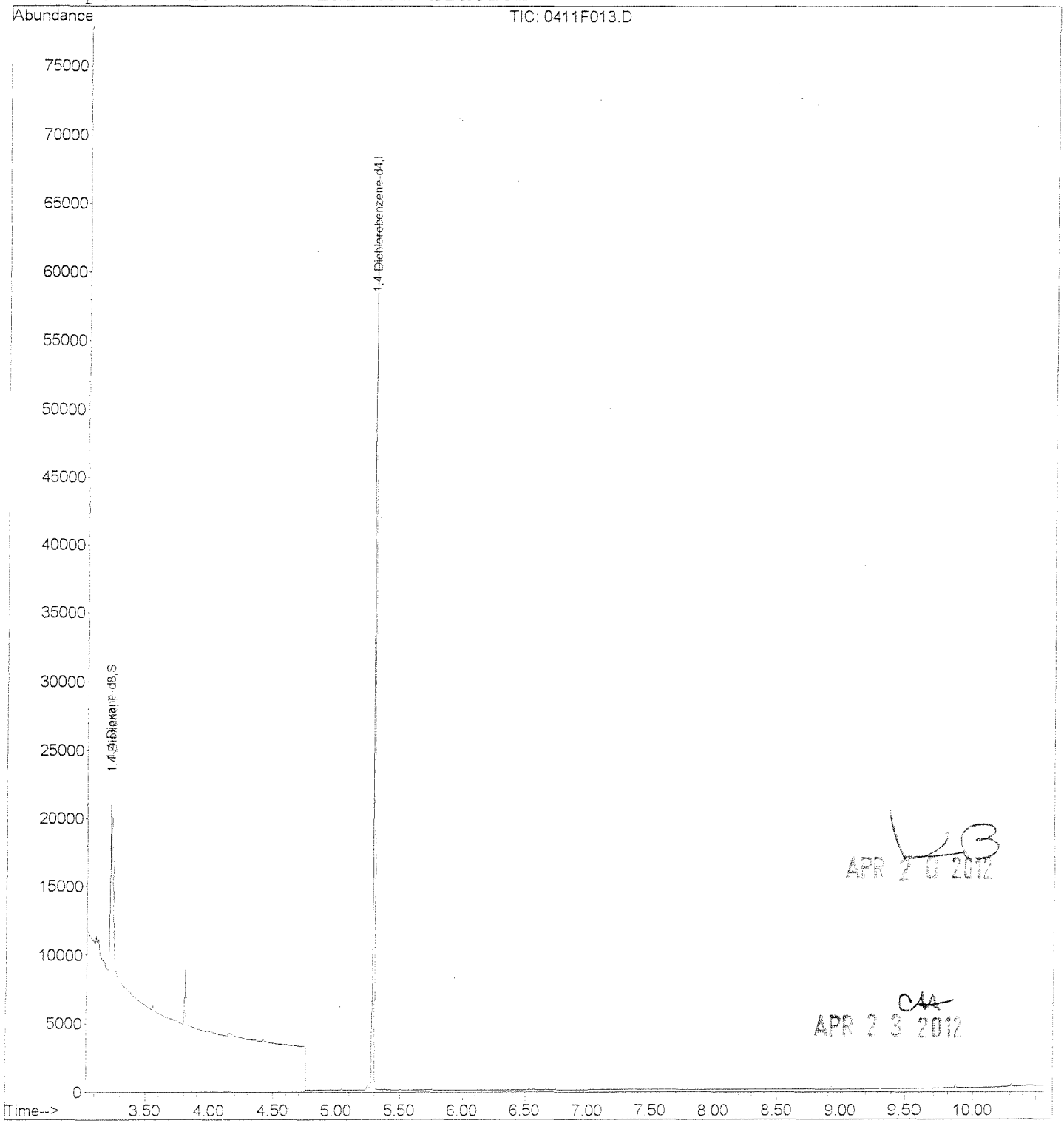
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F013.D 041112_DX.M Fri Apr 20 15:55:06 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



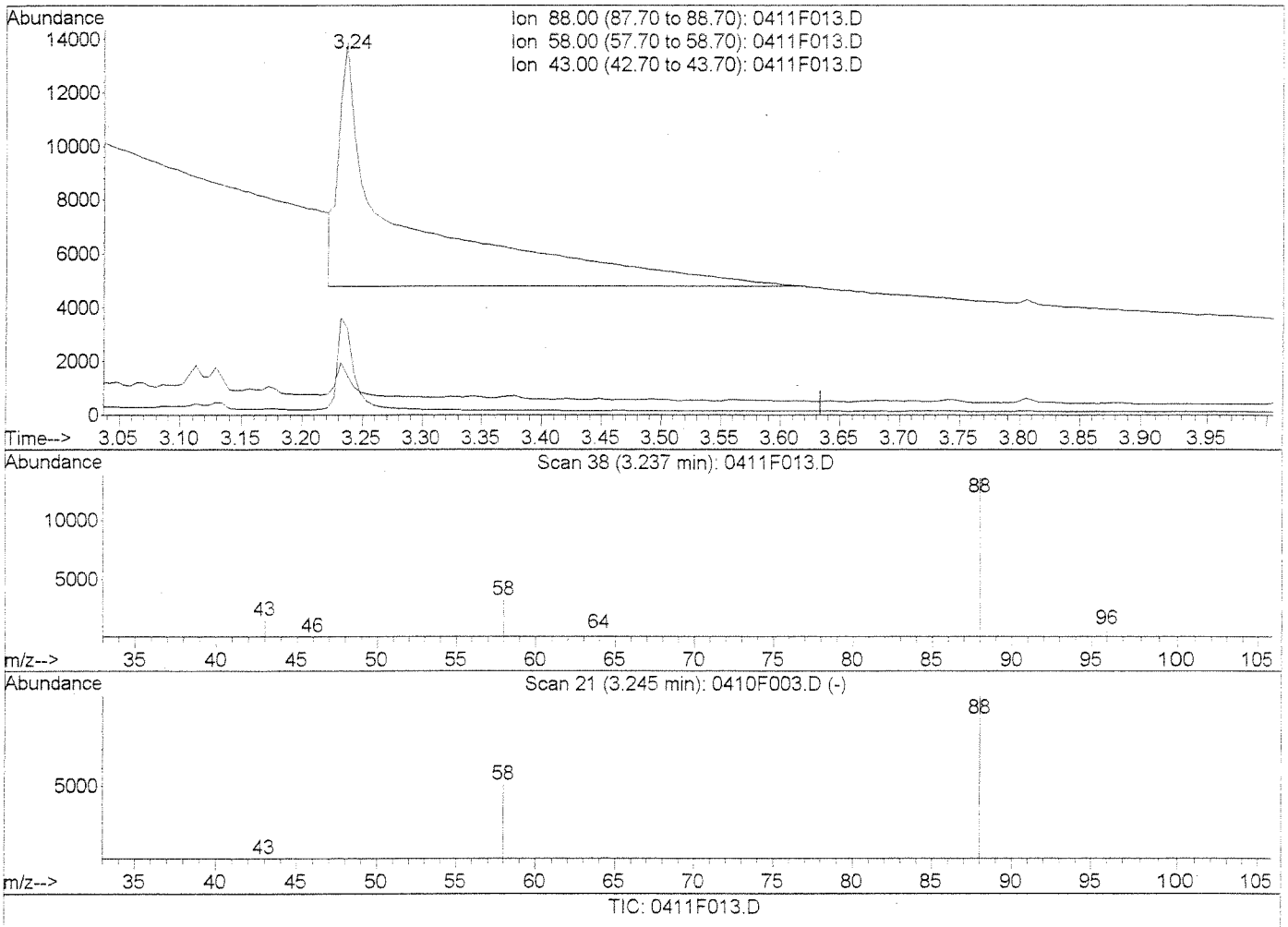
APR 2 0 2012

APR 2 3 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F013.D

(3) 1,4-Dioxane (T)

3.24min 302.49ng/ml

response 33172

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	33.96
43.00	15.90	10.53
0.00	0.00	0.00

Manual Integration:

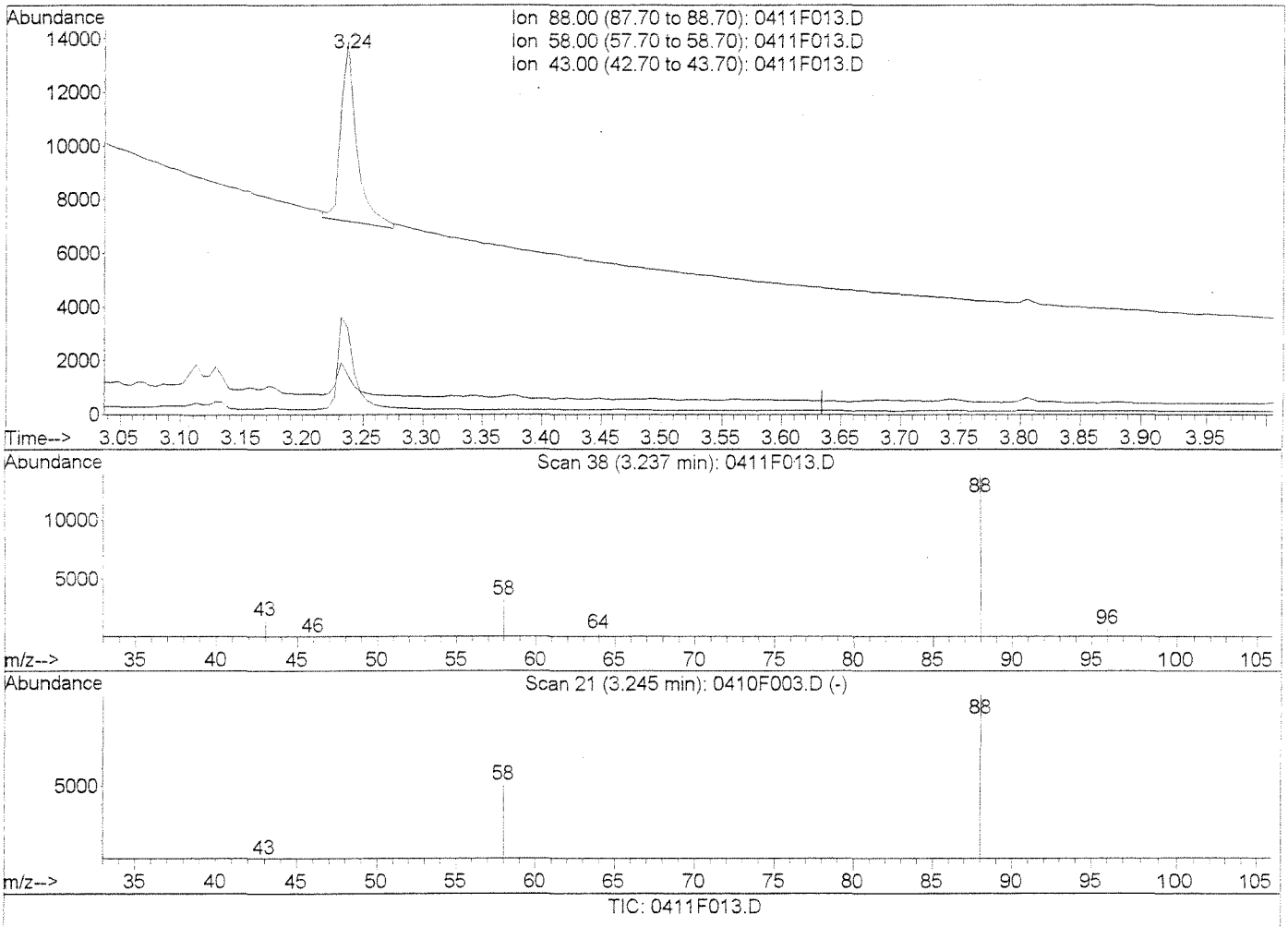
Before

0411F013.D 041112_DX.M Thu Apr 19 19:38:33 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F013.D

(3) 1,4-Dioxane (T)

3.24min 55.27ng/ml m

response 6061

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	23.28
43.00	15.90	10.69
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F013.D 041112_DX.M Thu Apr 19 19:38:38 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:15 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	15153	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	12332	112.38	ng/ml	0.00
Spiked Amount 50.000			Recovery =	224.76%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	12635m	113.50	ng/ml	

APR 20 2012

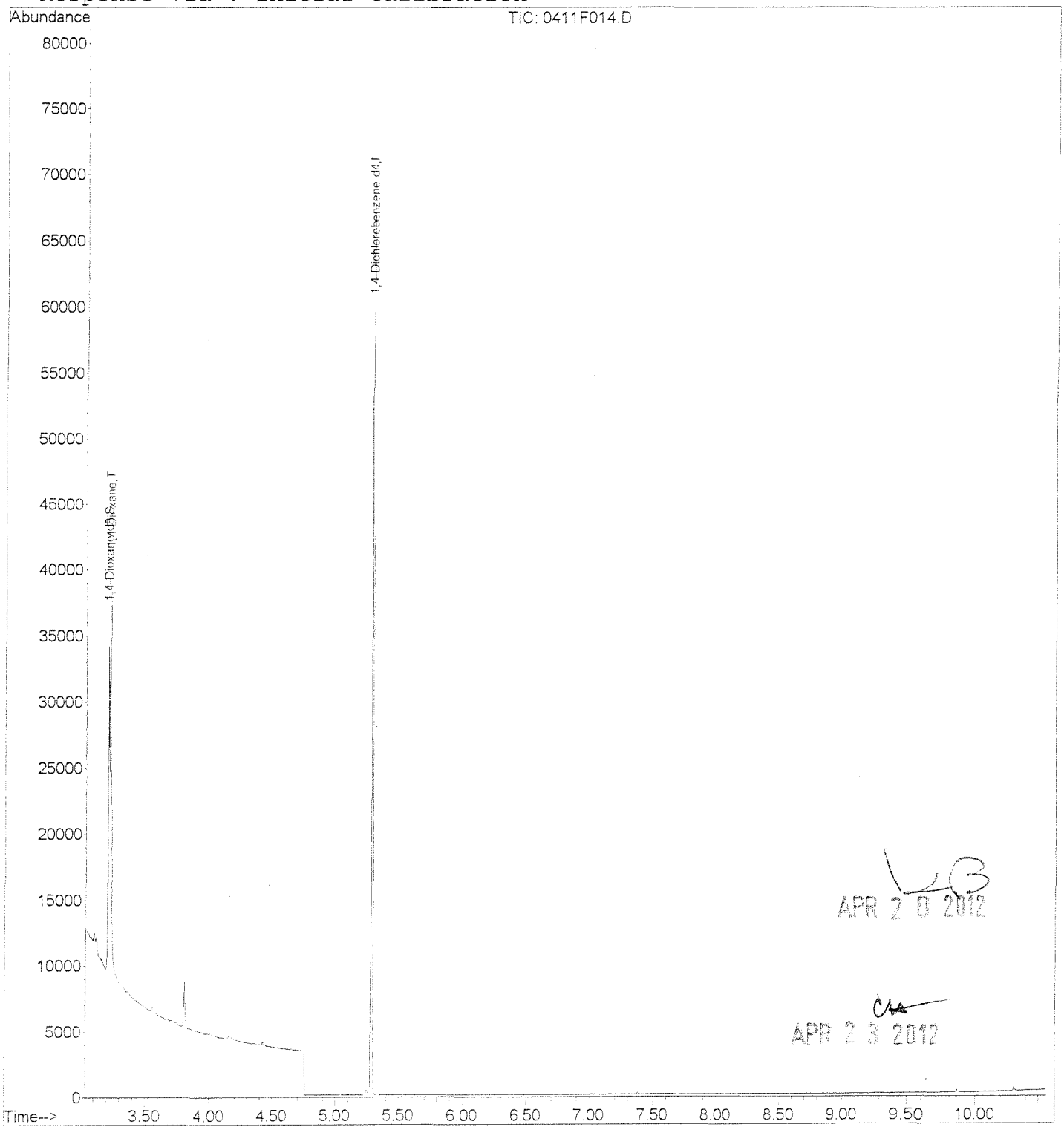
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F014.D 041112_DX.M Fri Apr 20 15:55:07 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



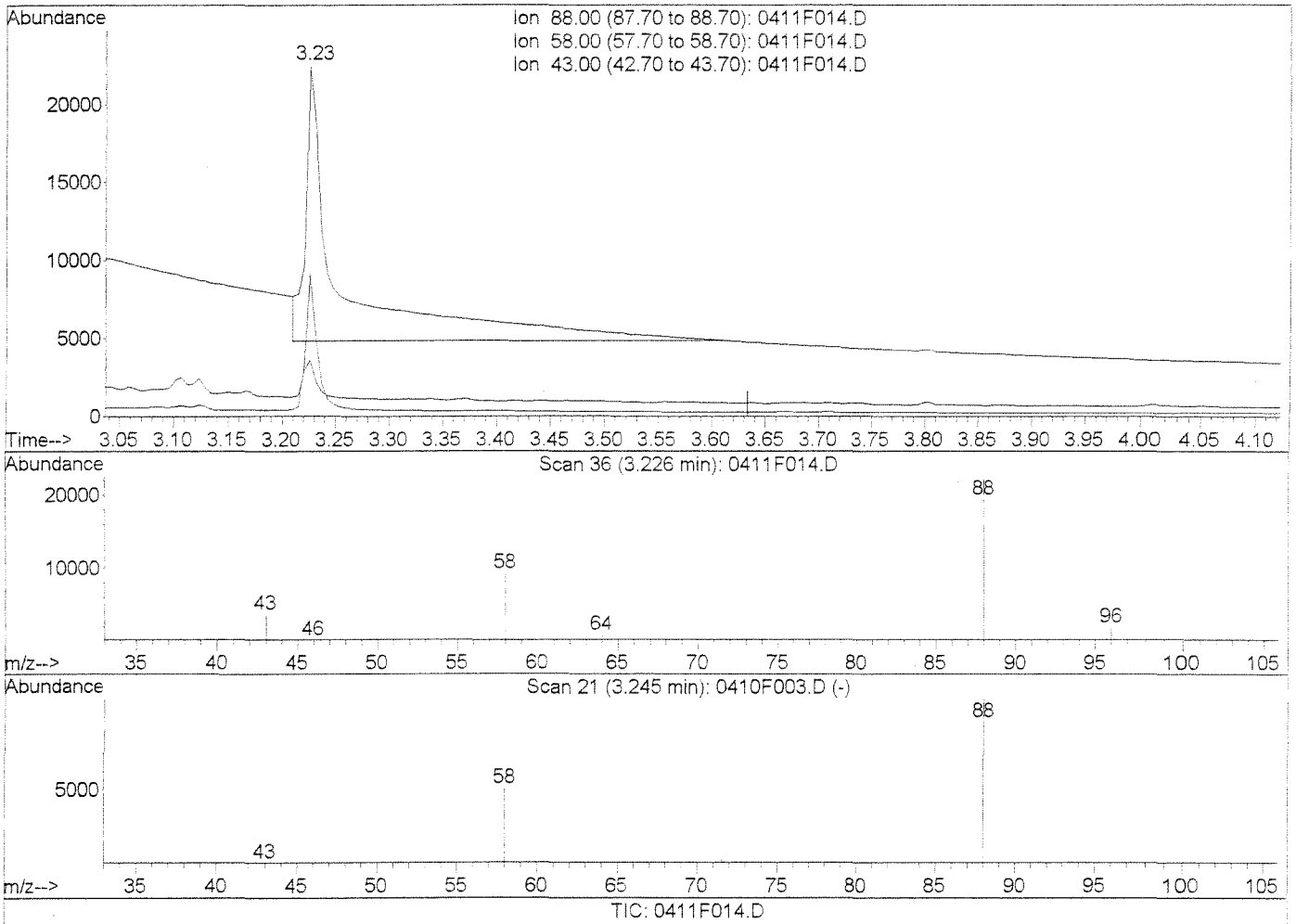
APR 2 0 2012

APR 2 3 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F014.D

(3) 1,4-Dioxane (T)

3.23min 371.62ng/ml

response 41370

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	50.15#
43.00	15.90	15.75
0.00	0.00	0.00

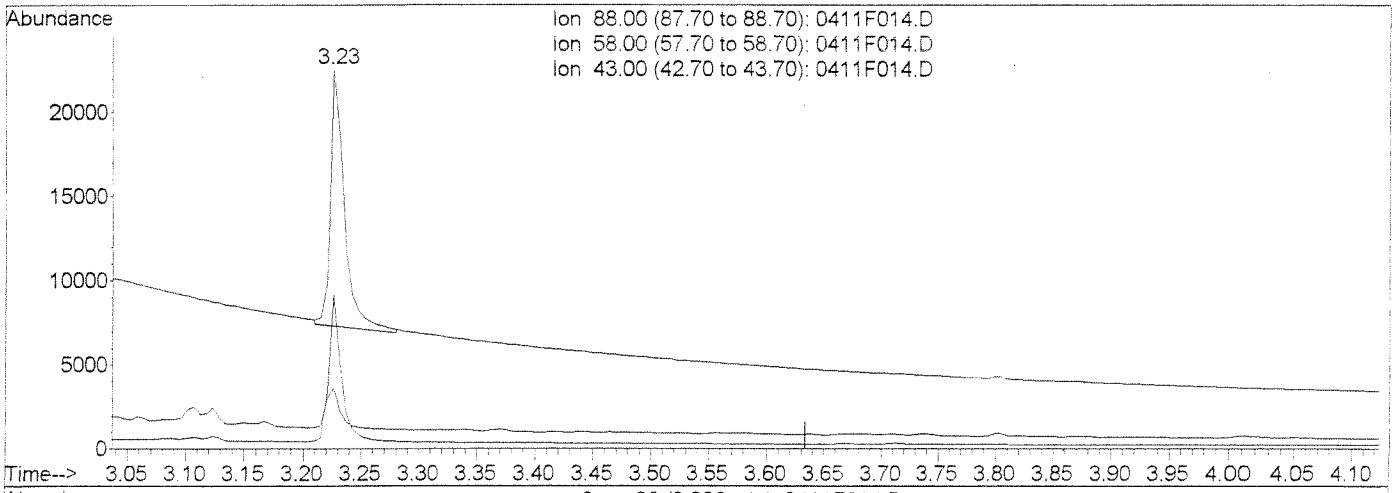
Manual Integration:

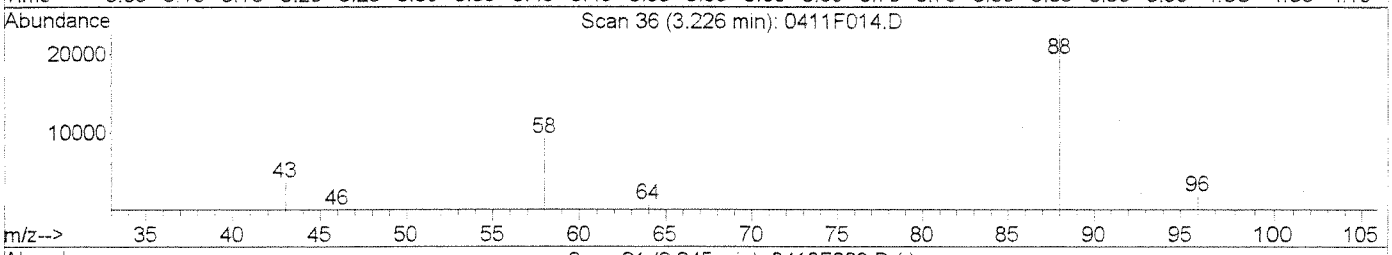
Before

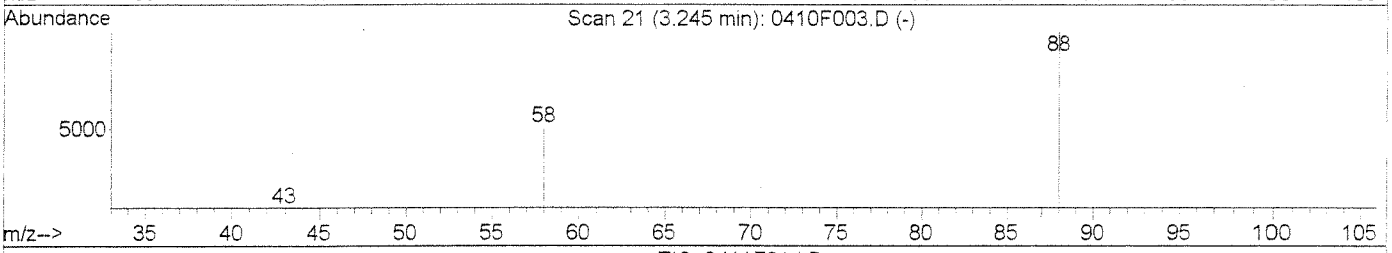
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F014.D

(3) 1,4-Dioxane (T)

3.23min 113.50ng/ml m

response 12635

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	40.65#
43.00	15.90	16.18
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

LB

APR 2 3 2012

0411F014.D 041112_DX.M Thu Apr 19 19:39:00 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:15 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	16838	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.21	96	26537	217.63	ng/ml	-0.01
Spiked Amount 50.000			Recovery =	435.26%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	26999m	218.26	ng/ml	

APR 20 2012

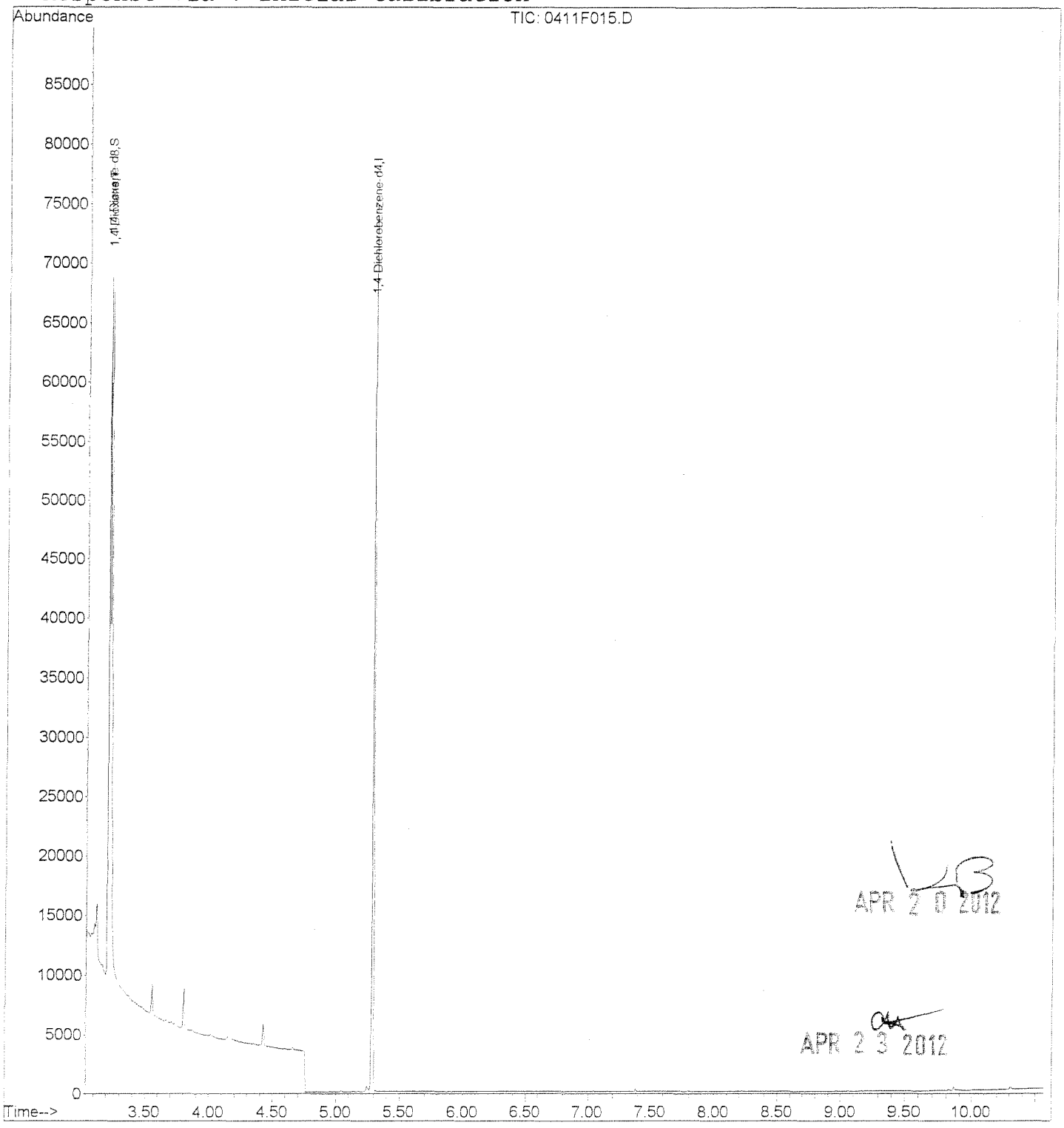
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F015.D 041112_DX.M Fri Apr 20 15:55:07 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:39 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



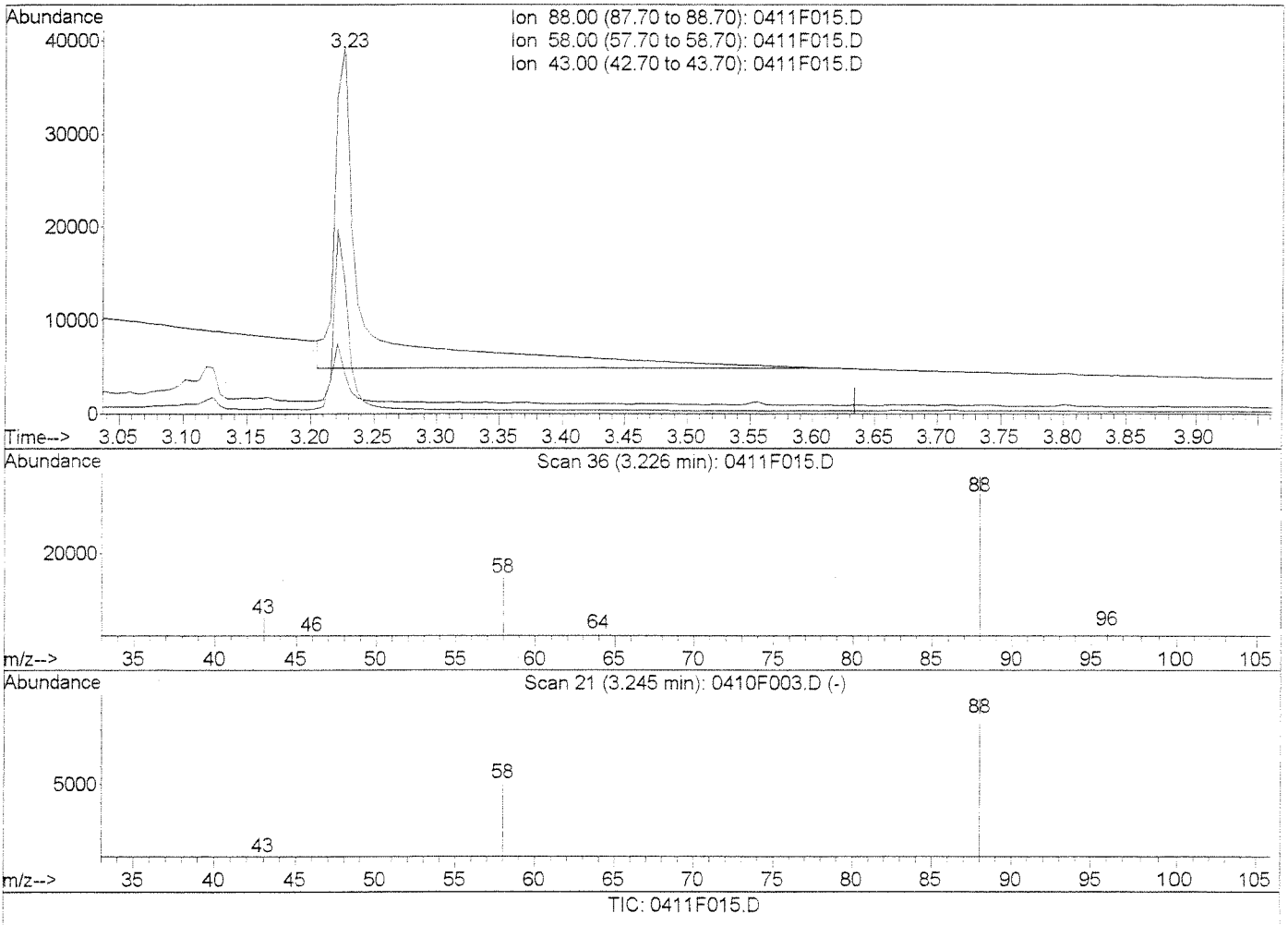
APR 2 0 2012

APR 2 3 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F015.D

(3) 1,4-Dioxane (T)

3.23min 462.03ng/ml

response 57154

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	39.94#
43.00	15.90	10.01
0.00	0.00	0.00

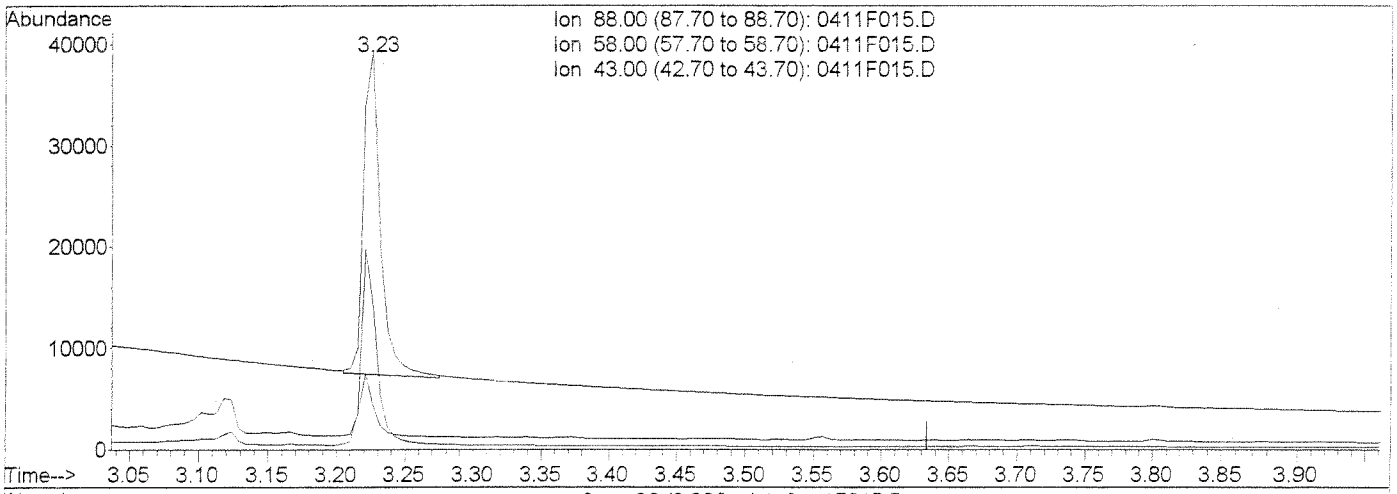
Manual Integration:

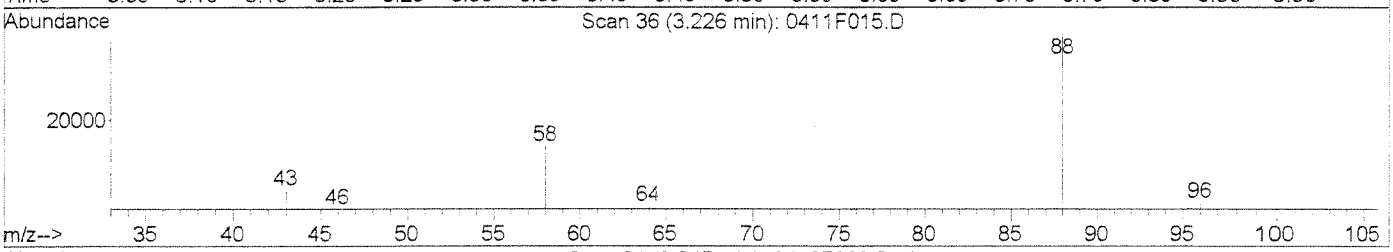
Before

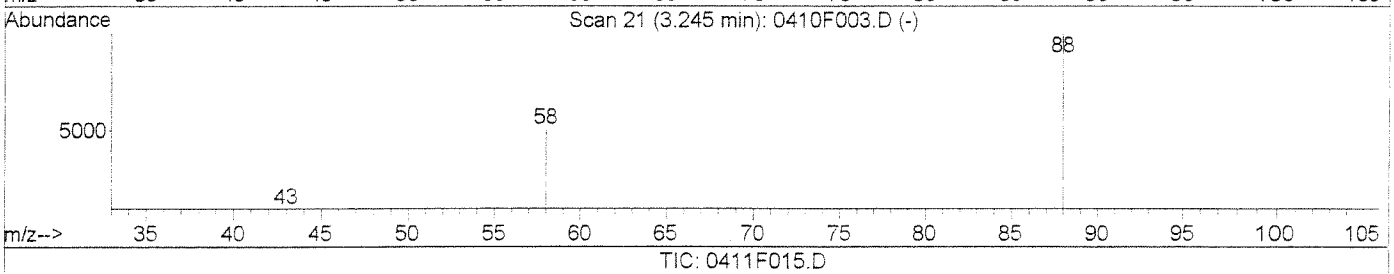
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:39 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F015.D

(3) 1,4-Dioxane (T)

3.23min 218.26ng/ml m

response 26999

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	35.79#
43.00	15.90	11.12
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F015.D 041112_DX.M Thu Apr 19 19:39:14 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:41:00 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14739	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	2243	20.01	ng/ml	-0.01
Spiked Amount 50.000			Recovery =	40.02%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	2384m	21.33	ng/ml	

APR 20 2012

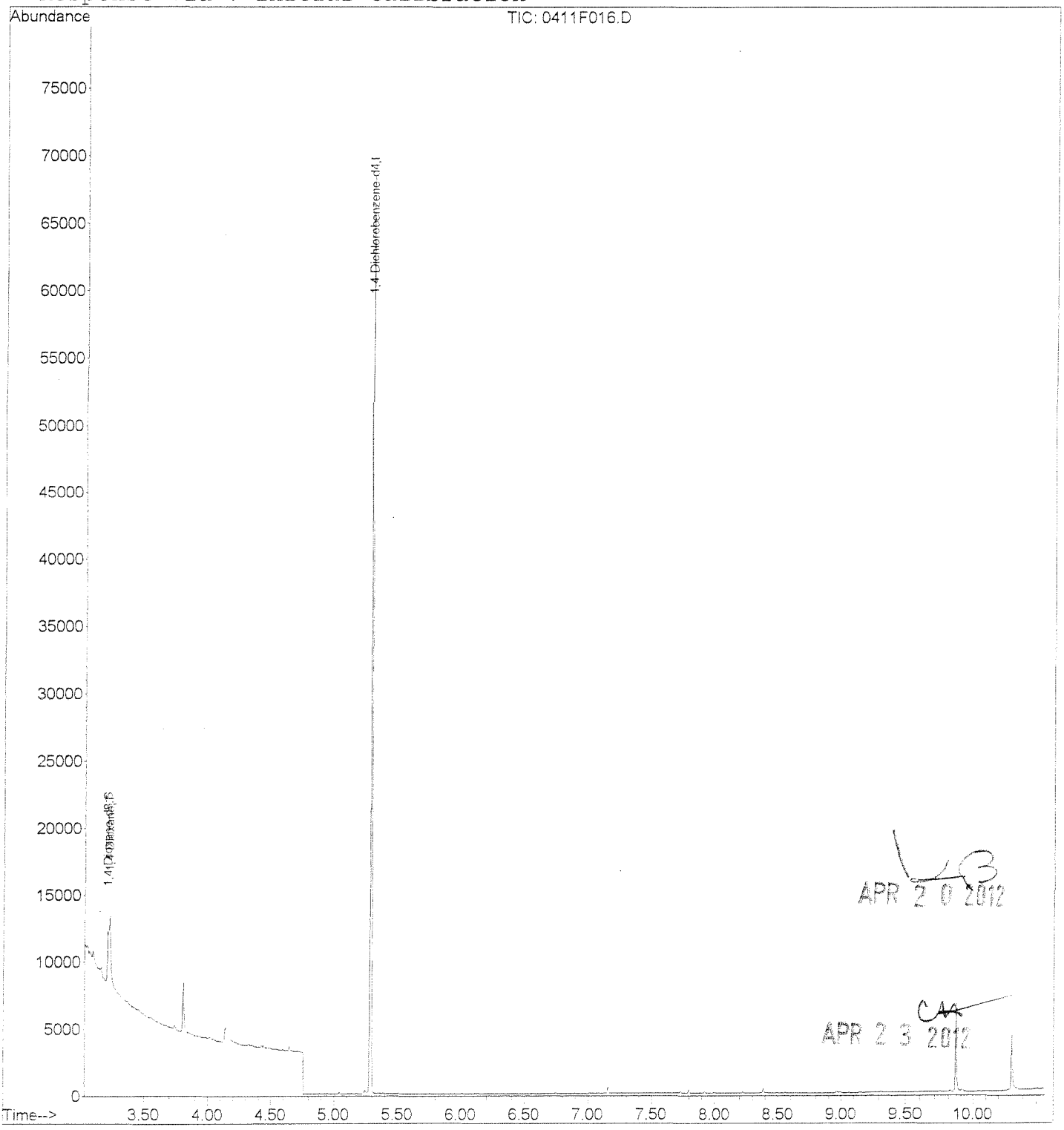
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F016.D 041112_DX.M Fri Apr 20 15:55:08 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:41 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



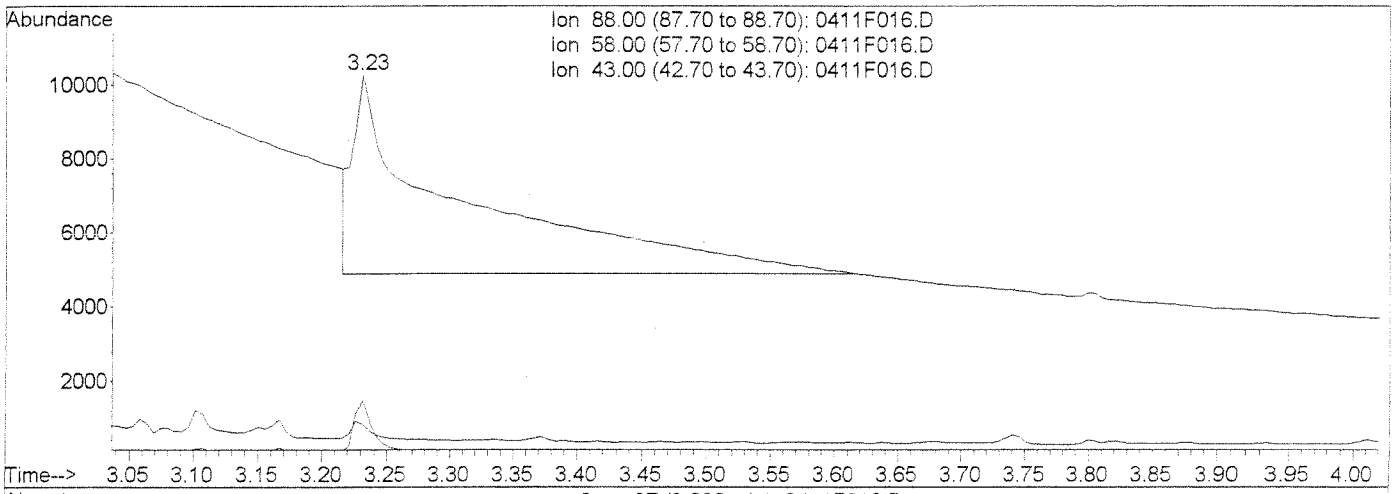
APR 2 0 2012

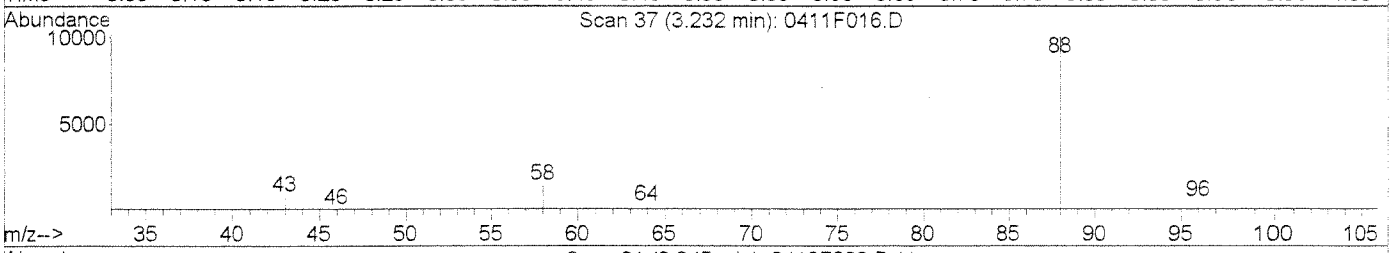
APR 2 3 2012

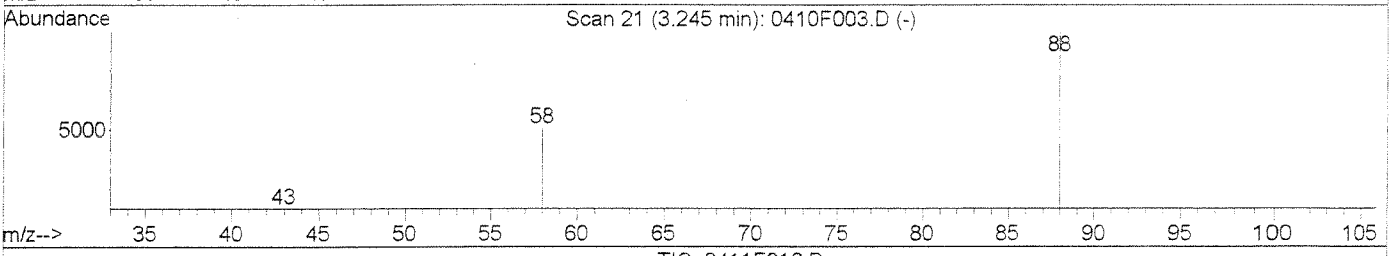
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:40 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0411F016.D

(3) 1,4-Dioxane (T)

3.23min 281.47ng/ml

response 31461

Manual Integration:

Before

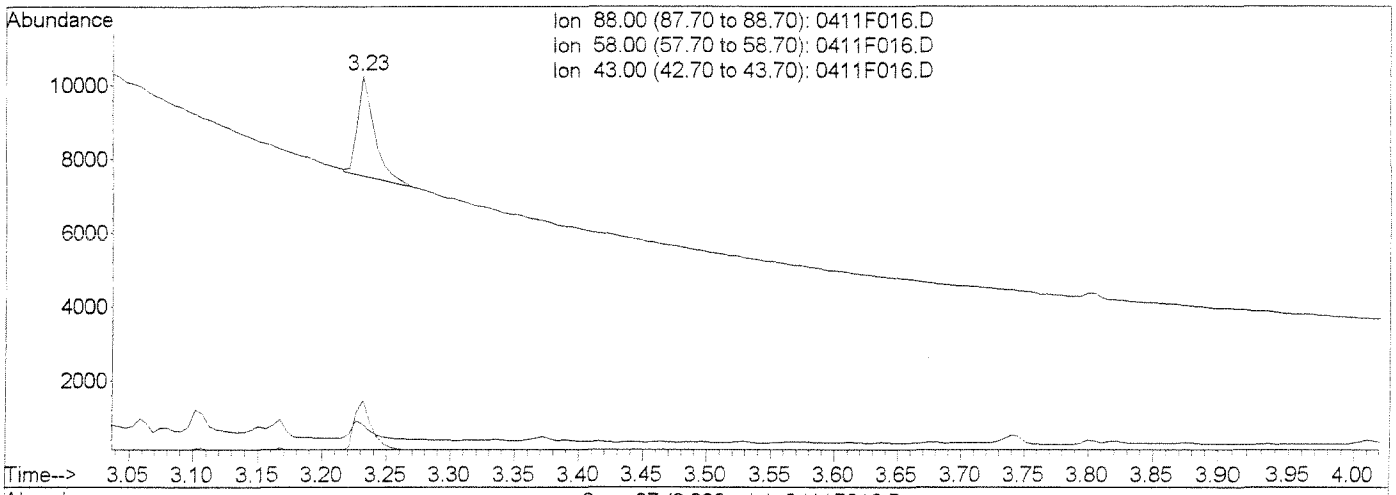
Ion	Exp%	Act%
88.00	100	100
58.00	15.50	26.09
43.00	15.90	9.16
0.00	0.00	0.00

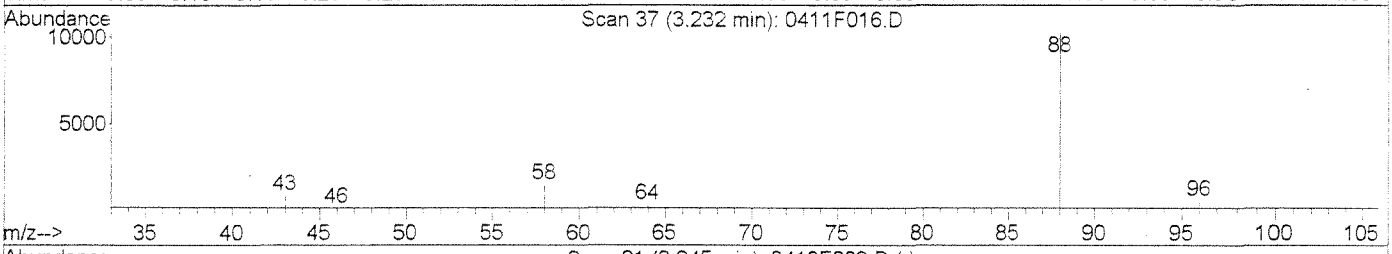
0411F016.D 041112_DX.M Thu Apr 19 19:41:12 2012

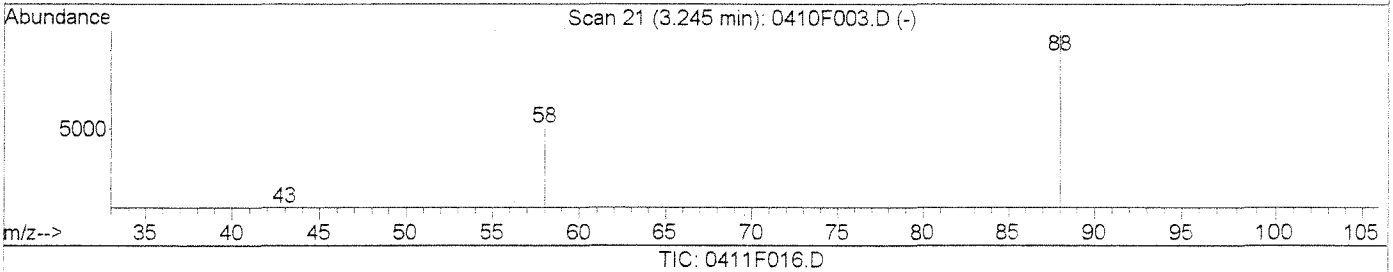
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:41 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0411F016.D

(3) 1,4-Dioxane (T)

3.23min 21.33ng/ml m

response 2384

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	14.30
43.00	15.90	8.05
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F016.D 041112_DX.M Thu Apr 19 19:41:44 2012

Client: Battelle
Project: JPL-GW-2Q12/100006114

Service Request: P1201588
Date Analyzed: 05/03/2012

Continuing Calibration Verification Summary
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 04/11/2012
Calibration ID: CAL11446
Analysis Lot: KWG1204586
Units: ng/ml

File ID: J:\MS26\DATA\050312\0503F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	20	0.01	0.379	0.376	-1	NA	± 20 %	AverageRF
1,4-Dioxane-d8	20	17	0.01	0.380	0.314	-17	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Exception Report

Data File:	J:\MS26\DATA\050312\0503F003.D	**Date Acquired:**	05/03/2012 16:29
Lab ID:	KWG1204586-2	**Date Quantitated:**	05/04/2012 08:45
RunType:	CCV	**Batch ID:**	KWG1204586
Matrix:	WATER	**Analysis Method:**	8270D SIM
		MethodJoinID:	MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: MAY 04 2012

Secondary Review: 05.23.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F003.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 16:29	**Quant Date:**	05/04/2012 08:45	**Vial:**	3
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204586-2			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-DIOXA	**Collect Date:**		**Receive Date:**	05/04/2012

Analysis Lot:	KWG1204586	**Prep Lot:**		**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M			**Calibration ID:**	CAL11446
Title:					
Tune Ref:	J:\MS26\DATA\050312\0503F002.D			**Method ID:**	MJ402
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	-0.01?	152	14092	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.19			96	1771	16.53		48-118	NA

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.21			88	2122m	19.86			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:45:24 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

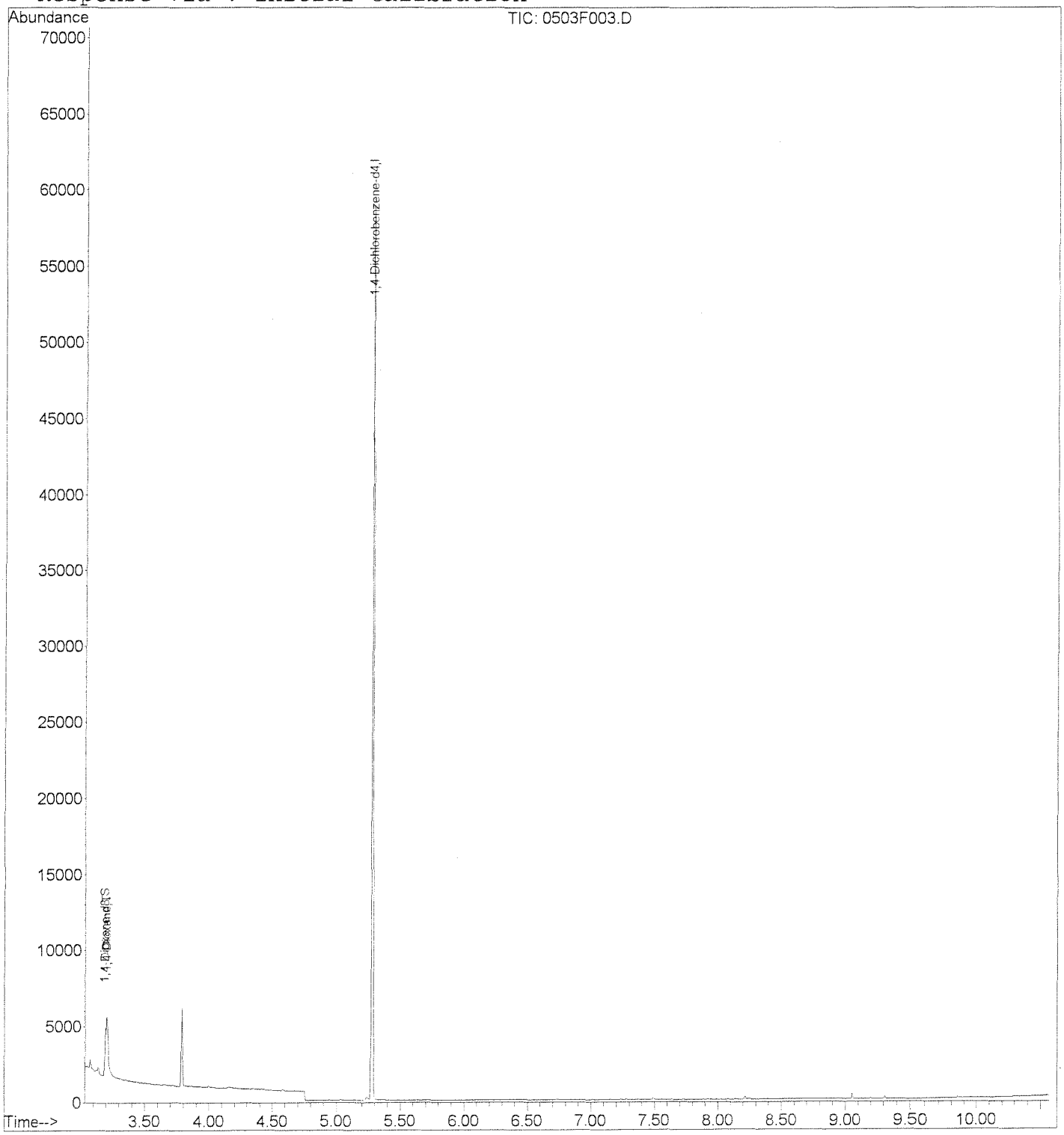
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	14092	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.19	96	1771	16.53	ng/ml	-0.03
Spiked Amount 50.000			Recovery = 33.06%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.21	88	2122m	19.86	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F003.D 041112_DX.M Fri May 04 08:45:51 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:45 2012 Quant Results File: 041112_DX.RE

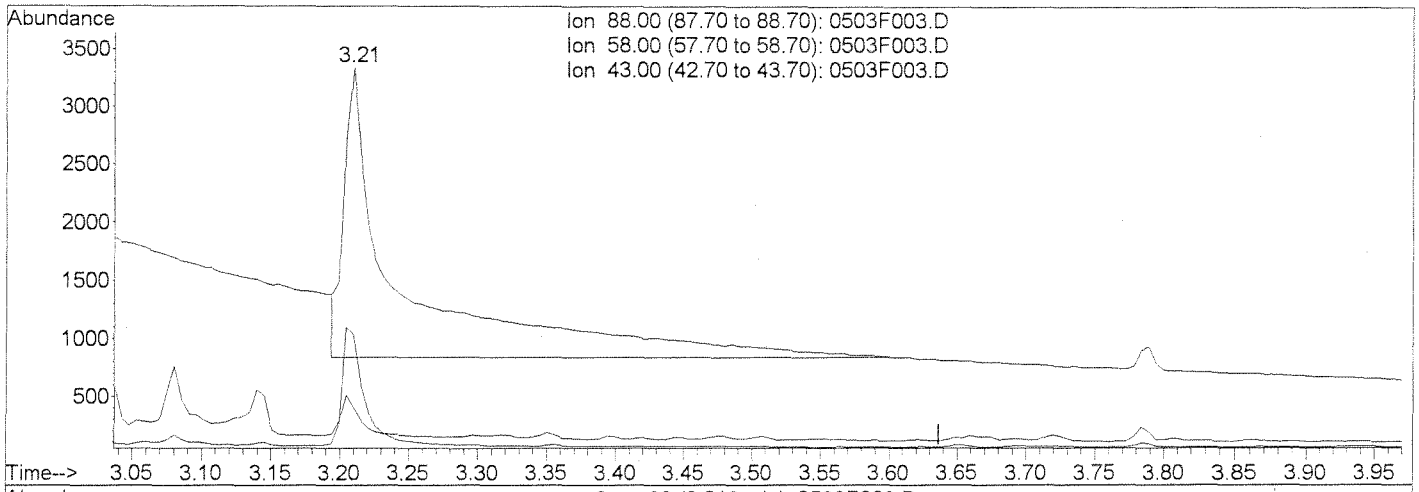
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration

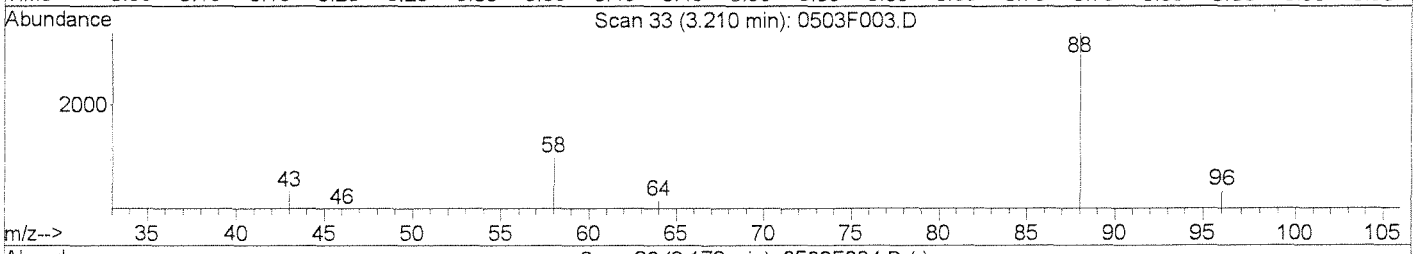


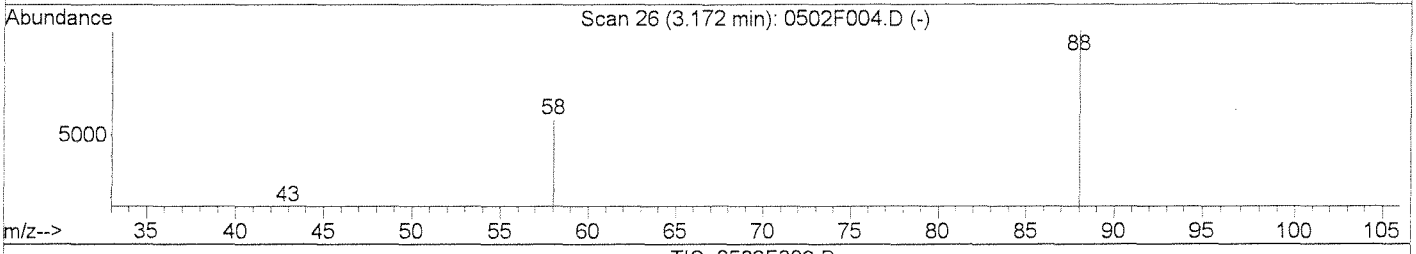
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:45 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0503F003.D

(3) 1,4-Dioxane (T)

3.21min 70.70ng/ml

response 7556

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	38.79#
43.00	15.90	11.57
0.00	0.00	0.00

Manual Integration:

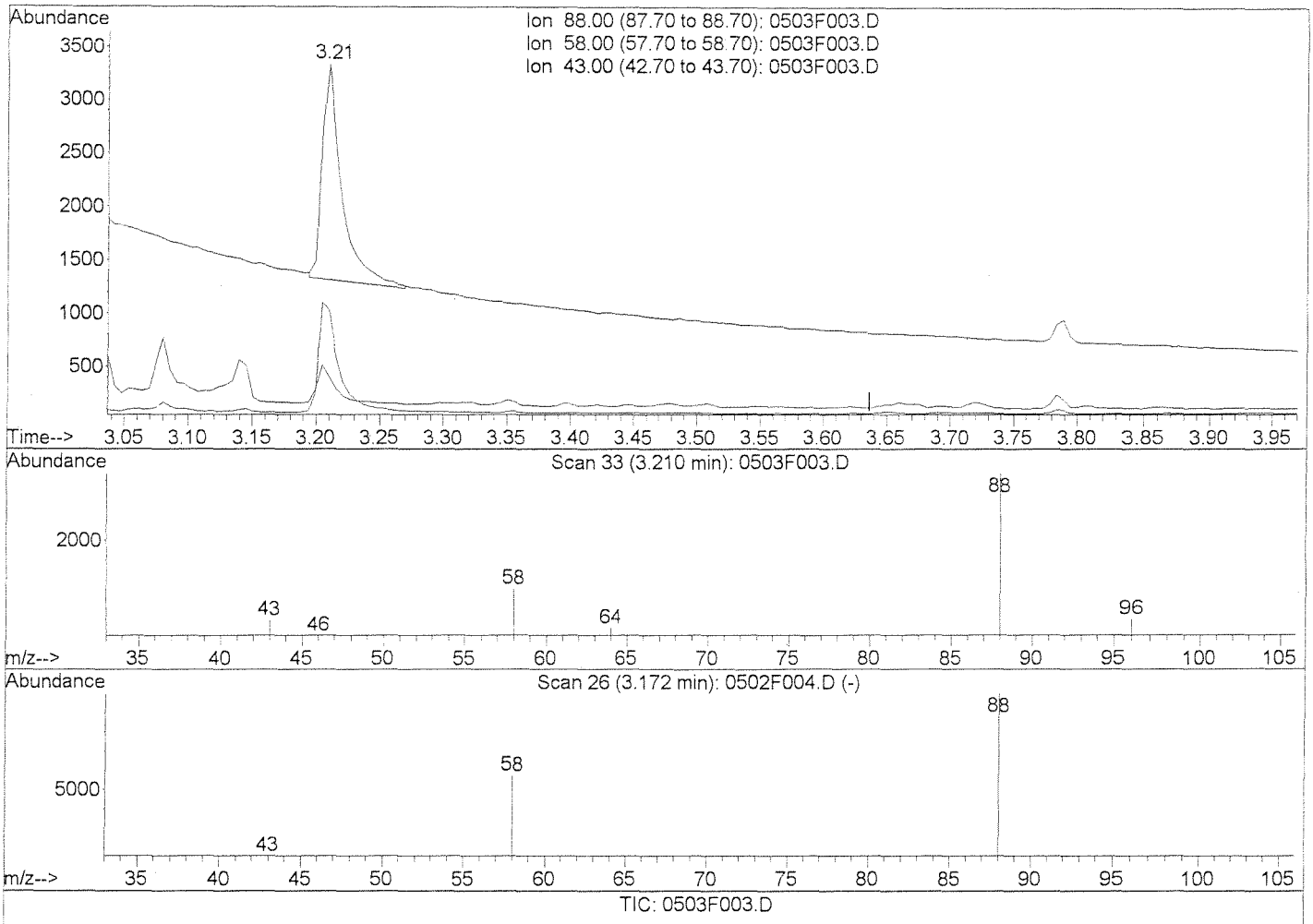
Before

0503F003.D 041112_DX.M Fri May 04 08:45:35 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:45 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration



TIC: 0503F003.D

(3) 1,4-Dioxane (T)

3.21min 19.86ng/ml m

response 2122

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	30.80
43.00	15.90	11.97
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F003.D 041112_DX.M Fri May 04 08:45:44 2012

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Sample Prep and Screen Data

Preparation Information

Group ID:	KWG1204380	**Prep Method:**	EPA 3510C	**Prep Date:**	04/30/12 00:00
Department:	Semivoa GCMS				

Lab Code	Client ID	Product	Matrix	Amt. Ext.	Final Vol.
K1203834-001	MW-1	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-002	MW-2	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-003	MW-3	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-004	EB-2	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-005	DUP-04	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203902-001	L571685-01	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-1	Matrix Spike	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-2	Duplicate Matrix Spike	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-3	Lab Control Sample	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-4	Duplicate Lab Control Sampl	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-5	Method Blank	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201573-002	MW-16	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201573-003	DUPE-8-2Q12	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201588-002	MW-13	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201604-005	MW-24-1	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201630-005	MW-4-1	8270D 1,4-Dioxane	WATER	100ml	50ml

Lab Code	Parent Lab Code	Comments
KWG1204380-1	K1203834-003	
KWG1204380-2	K1203834-003	

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
K1203834-001	1121253	SVM38-29C	50uL			HBailey
K1203834-002	1121254	SVM38-29C	50uL			HBailey
K1203834-003	1121255	SVM38-29C	50uL			HBailey
K1203834-004	1121256	SVM38-29C	50uL			HBailey
K1203834-005	1121257	SVM38-29C	50uL			HBailey
K1203902-001	1121252	SVM38-29C	50uL			HBailey
KWG1204380-1	1121263	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-2	1121264	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-3	1121265	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-4	1121266	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-5	1121267	SVM38-29C	50uL			HBailey
P1201573-002	1121259	SVM38-29C	50uL			HBailey
P1201573-003	1121260	SVM38-29C	50uL			HBailey

Comments:

IS: SVM37-41A

Started By: DHongel Assisted By: ~~~

Completed By: LBerg Assisted By: ~~~

Training: Yes / No

Yes / No

Reviewed By: HBailey Date: 5/3/12 Storage: SVM LAB / HS2L

Chain of Custody

Relinquished By: [signature] Date: 5.2.12

Received By: LB Date: 5/3/12

Extracts Examined: Yes / No

Group ID:	KWG1204380	**Prep Method:**	EPA 3510C	**Prep Date:**	04/30/12 00:00
Department:	Semivoa GCMS				

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
P1201588-002	1121261	SVM38-29C	50uL			HBailey
P1201604-005	1121262	SVM38-29C	50uL			HBailey
P1201630-005	1121258	SVM38-29C	50uL			HBailey

Comments:

IS: SVM37-L1A

Started By: DHongel Assisted By: ——— Training: Yes / No

Completed By: LBerg Assisted By: ——— Yes / No

Reviewed By: HBailey Date: 5/3/12 Storage: SVM LAB/ HS2L

Chain of Custody

Relinquished By: [signature] Date: 5.2.12

Received By: LB Date: 5/3/12 Extracts Examined: Yes / No

Preparation Information

Due: 5/1/12

Group ID: KWG1204380 **Prep Method:** EPA 3510C **Prep Date:** 04/30/12 00:00
Department: Semivoa GCMS

#	Lab Code	Client ID	B#	√	Product	Matrix	Amt. Ext. mL	pH	Int. Vol.	Final Vol. ml	Surr. Added	Spike Added
1	K1203834-001	MW-1	.01	✓	8270D 1,4-Dioxane	WATER	100	-	NA	50	50µL	N/A
2	K1203834-002	MW-2	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		
3	K1203834-003	MW-3 4-30-12 DH EE	.13 ~~.01~~	✓	8270D 1,4-Dioxane	WATER	100	-		50		
4	K1203834-004	EB-2	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		
5	K1203834-005	DUP-04	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		
6	K1203902-001	L571685-01	.02	✓	8270D 1,4-Dioxane	WATER	100	-		50		↓
7	KWG1204380-1	Matrix Spike 3834-3MS	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		50µL
8	KWG1204380-2	Duplicate Matrix Spike 3834-3DMS	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		
9	KWG1204380-3	Lab Control Sample			8270D 1,4-Dioxane	WATER	100	-		50		
10	KWG1204380-4	Duplicate Lab Control Sample			8270D 1,4-Dioxane	WATER	100	-		50		↓
11	KWG1204380-5	Method Blank			8270D 1,4-Dioxane	WATER	100	-		50		N/A
12	P1201573-002	MW-16	.04	✓	8270D 1,4-Dioxane	WATER	100	-		50		
13	P1201573-003	DUPE-8-2Q12	.04	✓	8270D 1,4-Dioxane	WATER	100	-		50		
14	P1201588-002	MW-13	.04	✓	8270D 1,4-Dioxane	WATER	100	-		50		
15	P1201604-005	MW-24-1	.04	✓	8270D 1,4-Dioxane	WATER	100	-		50		
16	P1201630-005	MW-4-1	.04	✓	8270D 1,4-Dioxane	WATER	100	-	↓	50	↓	↓

Comments: Prep #156768

Surrogate ID: SVM38-29C, 50µg/mL, Exp: 10/4/12, 50µL (spp)

Spike ID: SVM37-SD 50µg/mL, Exp: 6/21/12, 50µL (spp)

Witness: [signature] 4/30/12

Started By: DHongel Assisted By: LB

Completed By: [signature] Assisted By:

Additional Prep Information For 1,4 Dioxane by EPA 3510

RE D 4.30.12

Service Request K03834, K03902 ~~K1350~~ **Workgroup** 04380
P01573, P01568, P01609, P01630

Pre-Prep Information:

DCM Lot DFS97

Batch Start (Time/Date/Initial): 18:30/4.30.12/DH

Batch Stop (Time/Date/Initial): 21:10/4.30.12/DH

Sulfate Lot # 112858 Salt Lot # G38343 ~~Glass Wool Lot # 19714999~~ +lot 5/2/10 FE

Extract Storage: As You Wish

Completed (Time/Date/Initial): 1045 5.2.12 gb

Comments/Observations:

Bench Sheet Review Check List	
☑	Hold Times Met (if no, Reason:)
☑	Prep date, dept, method, product code correct in stealth
☑	Spike Information correct
☑	Weights/Volumes and units correct on raw and final bench sheets
☑	Sample IDs have been checked—Bottle numbers appended if required
☑	Names present for: Started by, Completed by, relinquished by, and witnessed by.
☑	Training has been circled
☑	Extract Storage recorded
☑	Additional Prep Sheet completely filled out (NA or line out Blanks)
☑	All clean-ups have been noted on additional prep sheet
☑	Signed service request with Form V, if applicable, has been attached

Injection Log

Directory: J:\MS26\DATA\050312

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0503F001.d	1.	PR		3 May 2012 15:5
2	2	0503F002.d	1.	3.0ug/mL DFTPP | SVM38-66A		3 May 2012 16:1
3	3	0503F003.d	1.	20ng/mL CCV 1,4-Dioxane | SVM38-66B		3 May 2012 16:2
4	4	0503F004.d	1.	KWG1204380-5 | MB		3 May 2012 16:4
5	5	0503F005.d	1.	KWG1204380-3 | LCS		3 May 2012 17:0
6	6	0503F006.d	1.	KWG1204380-4 | DLCS		3 May 2012 17:2
7	7	0503F007.d	1.	KWG1204380-1 | MS K1203834-003MS		3 May 2012 17:4
8	8	0503F008.d	1.	KWG1204380-2 | DMS K1203834-003DMS		3 May 2012 18:0
9	9	0503F009.d	1.	K1203834-003		3 May 2012 18:2
10	10	0503F010.d	1.	K1203834-001		3 May 2012 18:4
11	11	0503F011.d	1.	K1203834-002		3 May 2012 19:0
12	12	0503F012.d	1.	K1203834-004		3 May 2012 19:2
13	13	0503F013.d	1.	K1203834-005		3 May 2012 19:4
14	14	0503F014.d	1.	K1203902-001		3 May 2012 20:0
15	15	0503F015.d	1.	P1201573-002		3 May 2012 20:1
16	16	0503F016.d	1.	P1201573-003		3 May 2012 20:3
17	17	0503F017.d	1.	P1201588-002		3 May 2012 20:5
18	18	0503F018.d	1.	P1201604-005		3 May 2012 21:1
19	19	0503F019.d	1.	P1201630-005		3 May 2012 21:3

Run # 290206

CAL114AL

LB

MAY 04 2012

CK

LABORATORY REPORT

May 16, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon. 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on April 25, 2012. One of the samples was sent out for partial analysis to our Kelso facility. Please find their report attached. For your reference, these analyses have been assigned our service request number P1201604.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 11:49 am, May 16, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon. 2Q12 / 100006114
Service Request No: P1201604

CASE NARRATIVE

The samples were received intact under chain of custody on April 25, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon. 2Q12 / 100006114
Service Request: P1201604

Date Received: 4/25/2012
Time Received: 14:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6	521 - Nitrosamines - KLAB	8270D - 1,4-Dioxane - KLAB
MW-24-5	P1201604-001	Water	4/25/2012	08:40	X		
MW-24-4	P1201604-002	Water	4/25/2012	09:20	X		
MW-24-3	P1201604-003	Water	4/25/2012	09:56	X		
MW-24-2	P1201604-004	Water	4/25/2012	11:00	X		
MW-24-1	P1201604-005	Water	4/25/2012	12:32	X	X	X
DUPE-2-2Q12	P1201604-006	Water	4/25/2012	00:00	X		
EB-3-4/25/12	P1201604-007	Water	4/25/2012	12:20	X		

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No.: P1201604

CAS Contact:

Company Name & Address (Reporting Information)	Project Name	Project Number	Project Manager	P.O. # / Billing Information	Phone	Fax	Email Address for Result Reporting	Sampler (Print & Sign)
BATTELLE 3990 OLD TOWN AVE., C-205 SAN DIEGO, CA 92110	JPL GW MON. 2Q12	100006114	DAVID CONNER	#285651 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS, OH 43201	(619) 726-7311	(619) 458-6641	Connerd@battelle.org	CHASE BROGDON

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	Cr VI (7196A) [0]	1,4-Dioxane (8270 SIM) [0]	NDMA (521) [7]	Remarks
MW-24-5	1	4/25/12	0840	GW	1							X			QC IV
MW-24-4	2	"	0920	"	1							X			
MW-24-3	3	"	0956	"	1							X			
MW-24-2	4	"	1100	"	1							X			
MW-24-1	5	4/25/12	1232	GW	4							X	X	X	
DUPE-2-2012	6	4/25/12	—	GW	1							X			DUPLICATE
EB-3-4/25/12	7	4/25/12	1220	GW	1							X			EQUIP. BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
				4/25/12	1344
Relinquished by: (Signature)	Date: 4/25/12	Time: 1430	Received by: (Signature)	4/25/12	1430
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 3 °C

5 of 329

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Chain of Custody Report

Client: Battelle **Service Request:** P1201604
Project: JPL GW Mon. 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201604-001.01					
	7196A				
		4/25/12	1436	SMO / MZAMORA	
		4/25/12	1437	P-37 / MZAMORA	
		4/25/12	1508	In Lab / EIBARRA	
		4/25/12	1929	P-37 / EIBARRA	
P1201604-002.01					
	7196A				
		4/25/12	1436	SMO / MZAMORA	
		4/25/12	1437	P-37 / MZAMORA	
		4/25/12	1507	In Lab / EIBARRA	
		4/25/12	1929	P-37 / EIBARRA	
P1201604-003.01					
	7196A				
		4/25/12	1436	SMO / MZAMORA	
		4/25/12	1437	P-37 / MZAMORA	
		4/25/12	1507	In Lab / EIBARRA	
		4/25/12	1929	P-37 / EIBARRA	
P1201604-004.01					
	7196A				
		4/25/12	1436	SMO / MZAMORA	
		4/25/12	1437	P-37 / MZAMORA	
		4/25/12	1507	In Lab / EIBARRA	
		4/25/12	1929	P-37 / EIBARRA	
P1201604-005.01					
	521				
		4/25/12	1436	SMO / MZAMORA	
		4/25/12	1437	SUBBED / MZAMORA	
		4/27/12	1152	K-Delilah-75 / SWOLF	
		4/30/12	0907	Custodian / SDAVIS	
		4/30/12	0907	In Lab / RHAYES	
		4/30/12	1626	K-Delilah-75 / DMOORE	
P1201604-005.02					
		4/25/12	1436	SMO / MZAMORA	
		4/25/12	1437	SUBBED / MZAMORA	
		4/27/12	1152	K-Delilah-75 / SWOLF	
P1201604-005.03					
	7196A				
		4/25/12	1436	SMO / MZAMORA	
		4/25/12	1437	P-37 / MZAMORA	
		4/25/12	1507	In Lab / EIBARRA	
		4/25/12	1929	P-37 / EIBARRA	
P1201604-005.04					

Chain of Custody Report

Client: Battelle **Service Request:** P1201604
Project: JPL GW Mon. 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
	8270D				
		4/25/12	1436	SMO / MZAMORA	
		4/25/12	1437	SUBBED / MZAMORA	
		4/27/12	1152	K-Delilah-75 / SWOLF	
		4/30/12	1507	Custodian / DMOORE	
		4/30/12	1507	In Lab / DHONGEL	
		4/30/12	1853	K-Delilah-75 / KSMITH	
P1201604-006.01					
	7196A				
		4/25/12	1436	SMO / MZAMORA	
		4/25/12	1437	P-37 / MZAMORA	
		4/25/12	1507	In Lab / EIBARRA	
		4/25/12	1929	P-37 / EIBARRA	
P1201604-007.01					
	7196A				
		4/25/12	1436	SMO / MZAMORA	
		4/25/12	1437	P-37 / MZAMORA	
		4/25/12	1507	In Lab / EIBARRA	
		4/25/12	1929	P-37 / EIBARRA	

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Sample Acceptance Check Form

Client: Battelle Work order: P1201604

Project: JPL GW Mon. 2Q12 / 100006114

Sample(s) received on: 4/25/12 Date opened: 4/25/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201604-001.01	125mL Plastic NP					
P1201604-002.01	125mL Plastic NP					
P1201604-003.01	125mL Plastic NP					
P1201604-004.01	125mL Plastic NP					
P1201604-005.01	1000ml AG NP					
P1201604-005.02	1000ml AG NP					
P1201604-005.03	125mL Plastic NP					
P1201604-005.04	500mL AG NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

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Sample Acceptance Check Form

Client: Battelle Work order: P1201604

Project: JPL GW Mon. 2Q12 / 100006114

Sample(s) received on: 4/25/12 Date opened: 4/25/12 by: MZAMORA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201604-006.01	125mL Plastic NP					
P1201604-007.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon. 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201604
Date Collected : 04/25/12
Date Received : 04/25/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-24-5	P1201604-001	0.010	0.003	1	NA	04/25/12 18:20	ND	
MW-24-4	P1201604-002	0.010	0.003	1	NA	04/25/12 18:20	ND	
MW-24-3	P1201604-003	0.010	0.003	1	NA	04/25/12 18:20	ND	
MW-24-2	P1201604-004	0.010	0.003	1	NA	04/25/12 18:20	ND	
MW-24-1	P1201604-005	0.010	0.003	1	NA	04/25/12 18:20	ND	
DUPE-2-2Q12	P1201604-006	0.010	0.003	1	NA	04/25/12 18:20	ND	
EB-3-4/25/12	P1201604-007	0.010	0.003	1	NA	04/25/12 18:20	ND	
Method Blank	P1201604-MB	0.010	0.003	1	NA	04/25/12 18:20	ND	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon. 2Q12 / 100006114

Service Request: P1201604
Date Analyzed: 04/25/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 5/9/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12 / 100006114	**Date Analyzed:**	04/25/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0504	101	90-110
CCV1	0.0500	0.0513	103	90-110
CCV2	0.0500	0.0504	101	90-110

Approved By: Karen Rya Date: 5/9/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201604
Project Name :	JPL GW Mon. 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	04/25/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201604-LCS	Basis :	NA

Test Notes :

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0398	100	92-110	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201604
Project Name :	JPL GW Mon. 2Q12	**Date Collected :**	04/25/12
Project Number :	100006114	**Date Received :**	04/25/12
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	04/25/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name :	MW-24-1		Units :	mg/L (ppm)
Lab Code :	P1201604-005MS	P1201604-005DMS	Basis :	NA
Test Notes :				

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0424	0.0442	85	88	69-119	4	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P1201604 ; P1201605

Time: 1530

Sample	VWR lot #	Exp.
pH 2 Buffer	S24-05201101	Dec 2012
pH 4 Buffer	S24-10241101	2/28/13
pH 7 Buffer	S24-10211101	Jul 2013
pH 10 Buffer	S24-10241103	2/28/13

Slope	Prep.Run #
98.8%	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C	Sample	#	pH	Temp. °C
pH 2.000	3	2.003	22.6				
pH 4.000		4.005	23.1				
pH 7.000		7.007	22.9				
pH 10.000		10.001	22.9				
Ref#: pH 7.38 Exp 8/13 S24-10241102		7.389 100%	23.1				
DI		2.031	22.9			SPACE NOT	USED
P1201604-1.01		2.185	16.7				
-2.01		2.103	16.6				
-3.01		2.080	16.4				
-4.01		2.210	16.9				
-5.01		2.190	16.6				
pH 2.000		2.023	22.5				
P1201604-6.01		2.251	16.9				
-7.01		1.997	17.6				
P1201605-1.01		2.240	17.8				
-2.01		2.195	18.3				
pH 2.000	↓	2.026	22.5				

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 49284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 4/23/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: EI Date: 4/25/12

Reviewer: KR Date: 4/26/12

pH

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

48

Service Request#(s): P1201604 ; P1201605 Run#: 78948 6

Stock#: 524-0223120 1 TV=10PPM Exp 8/23/12 Prep Run#:

ICV/CCV#: 524-0327120 1 TV=100PPM Exp 7/2013 Conc. H_2SO_4 Lot#: EMD 44284 Exp 11/20/14

Coloring Reagent Ref#: 524-0411611 03 EXP: 5/16/12

Working Curve:

Prep Dilution		*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L		*0.00*	*0.01*	*0.05*	*0.1*	0.999998123
Absorbance @ 540 nm		0.000	0.011	0.057	0.113	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10mL	—	✓	0.000	0.000	0.000	0.0000356	<0.003
2	ICV 0.05 PPM		—	✓	0.000	0.057	0.057	0.0504	101%
3	MB		—	✓	0.000	0.000	0.000	0.0000356	<0.003
4	LCS 0.04 PPM		—	✓	0.000	0.045	0.045	0.0398	100%
5	P1201604-1.01		—	✓	0.000	0.001	0.001	0.0000356	<0.003
6	-1.01 VS 0.03 PPM		—	✓	0.000	0.035	0.035	0.0309	103%
7	-2.01		—	✓	0.002	0.004	0.002	0.00180	<0.003
8	-3.01		—	✓	0.002	0.002	0.000	0.0000356	<0.003
9	-4.01		—	✓	0.001	0.002	0.001	0.000914	<0.003
10	-5.03		—	✓	0.000	0.000	0.000	0.0000356	<0.003
11	-5.03 MS 0.05 PPM		—	✓	0.000	0.048	0.048	0.0424	85% RPD
12	-5.03 MSD		—	✓	0.000	0.050	0.050	0.0442	88% 4%
13	CCV1 0.05 PPM		—	✓	0.000	0.058	0.058	0.0513	103%
14	CCB1		—	✓	0.000	0.000	0.000	0.0000356	<0.003
15	P1201604-6.01		—	✓	0.003	0.004	0.001	0.000919	<0.003
16	-7.01		—	✓	0.000	0.000	0.000	0.0000356	<0.003
17	P1201605-1.01		—	✓	0.001	0.002	0.001	0.000919	<0.003

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of 524-0327120 1 @1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-0223120 1 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: EI Date/Time: 4/25/12 @ 1800

Analyzed By: EI Date/Time: 4/25/12 @ 1820

Reviewed By: KL Date: 4/28/12

Cr6LIQ.xls

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201604 ; P1201605 Run#: 289486

Stock#: S24-0223120 1 TV=10PPM Exp 8/13/12 Prep Run#: —

ICV/CCV#: S24-0327120 1 TV=100PPM Exp 7/2013 Conc. H_2SO_4 Lot#: EMD 442184 Exp 11/20/14

Coloring Reagent Ref#: S24-04161203 EXP: 5/16/12

Working Curve:

Prep Dilution	*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L	*0.00*	*0.01*	*0.05*	*0.1*	0.99998123
Absorbance @ 540 nm	0.000	0.011	0.057	0.113	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	P1201605-1.01 MS 0.05 PPM	10mL	—	✓	0.001	0.056	0.055	0.0486	97% RPD
2	-1.01 MSD		—	✓	0.001	0.055	0.054	0.0477	95% 2%
3	-2.01		—	✓	0.000	0.000	0.000	0.0000356	<0.003
4	-2.01 VS 0.03 PPM		—	✓	0.000	0.034	0.034	0.0301	100%
5	CCV 2 0.05 PPM		—	✓	0.000	0.057	0.057	0.0504	101%
6	CCB 2		—	✓	0.000	0.000	0.000	0.0000356	<0.003
7									
8									
9									
10						SPACE NOT USED			
11									
12									
13									
14									
15									
16									
17									

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of S24-0327120 1 @ 1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-0223120 1 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of _____ ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @ 1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments: _____

Prepared By: EI Date/Time: 4/25/12 @ 1800

Analyzed By: EI Date/Time: 4/25/12 @ 1870

Reviewed By: [signature] Date: 4/26/12

5/19/11 JR

S24-05191103 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JT5044 exp: 6/15/16) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 449184 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JR

S24-05201101 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT # 110225
EXP: 12/2013

5/20/11 JR

S24-05201103 pH 4.000 BUFFER
Purchased
JT Baker CAT # 5657-01 500mL
LOT # J36503
EXP: 9/30/13

5/20/11 JR

S24-05201103 pH 7.00 BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT # 1103361
EXP: 3/2013

10/17/11 SR

S24-10171102 1000PPM NH3

0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL

w/ S24-10171101 (0.1N H_2SO_4 EXP. 10/17/12)

EXP: 4/17/12

10/17/11 SR

S24-10171103 IC Eluent

100 mL of S24-09201103 (10x conc Eluent; EXP: 9/20/12)

↑ 1L w/ DI. DEGASSED.

EXP. 10/31/11

10/21/11 SR

S24-10211101 pH 7.000 Buffer

Purchased

BDH Cat NO: BDH5046-500mL

LOT # 1107491

EXP: 7/2013

10/24/11 SR

S24-10241101 pH 4.000 Buffer

Purchased

JT Baker Cat No: 5657-01 500ml

LOT # K04505

EXP: 2/28/13

10/24/11 SR

S24-10241102 pH 7.38 Buffer

Purchased

BDH Cat No BDH5058-500ml

LOT # 1109034

EXP: 8/2013

10/24/11 SR

524-10241103 pH 10.000 Buffer
Purchased
JT Baker Cat no: 5655-01
Lot # K07507
EXP: 2/28/13

10/25/11 SR

524-10251101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 951211 475mL
Lot # PN1 P/N 210475-A01
EXP: 10/25/12

10/25/11 SR

524-10251102 A,B,C,D,E pH Filling Sln
Purchased
Thermo Scientific Orion 810007 5/pkg
Lot: PS1
EXP: 10/25/12

11/1/11 SR

524-11011101 IC02 Eluent
100 mL 524-09201103 (10x conc eluent EXP: 9/20/13) T/L W/ DI H2O DEGASSED
EXP: 11/15/11

11/1/11 SR

524-11011102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J0564) exp: 6/15/19 in 100 mL Methanol (B&J AC 322 exp: 10/12/16
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H2SO4 (EMD [illegible] exp: [illegible]). Bring

2/9/12 SR 524-0209/202 Nitrite Soln
0.250g N-1-Naphthylethylenediamine Dihydrochloride (JT Baker; lot IT22587 EXP 10/19/14) ↑ 250mL w/ DI
EXP: 8/9/12

2/9/12 SR 524-0209/203 ICO2 Eluent
100mL 524-0920 1103 (for Con Eluent, exp 9/20/12) ↑ 8/9/12 1 L w/ DI H2O. Degassed
2/23/12

2/9/12 SR 524-0209/204 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JC5641 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 10/10/16) Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49284 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 2/14/12

2/10/12 SR 524-0210/201 995 ~~1000~~ ppm Cr6+
Purchased
INORGANIC VENTURES CGCR(6)1-1
LOT: 62-CR03049
EXP: 3/1/13

2/13/12 SR 524-0213/201
5.6mL Conc H_2SO_4 (EMD 49184, EXP: 11/20/14) ↑
dil to 1 L H_2O
EXP: 2/13/13

2/14/12 SA — 524-02141203 pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 111214G
EXP: 11/2013

2/20/12 SA — 524-02201201 500PPM NO_2 STOCK
Purchased
RICCA CHEMICAL CO Cat# 5444.5-4 120ml Amber Gl
LOT# 1262290
EXP: 8/12

2/22/12 SA — 524-02221201 Alkaline DIGESTION Sol
30.0g $NaOH$ (EMD 4632715; EXP: 10/14/12) + 20.0g Na_2O_2 (EMD 4702713C; EXP: 10/4/12) ↑ 1L W/ DI
EXP: 3/22/12

2/23/12 SA — 524-02231201 10PPM Cr6+ Std
1.0ml 524-02101201 (1000PPM Cr6+; EXP: 3/1/13)
↑ 100ml W/ DI H2O
EXP: 8/23/12

2/27/12 SA — 524-02271201 0.1N H_2SO_4
5.6ml Conc H_2SO_4 (EMD 4928-4; EXP: 11/20/1
↑ 2L W/ DI H2O
EXP: 2/27/13

3/23/12 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 110934
EXP: 8/2013

3/27/12 524-0327/201 100 PPM Cr6+ ICV
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
LOT # 1201701
EXP: 7/2013

3/28/12 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # 104514 500ml plastic
EXP: 1/31/14

3/28/12 524-0328/202 Methylene Blue 1% Aq Sol
100ml Purchased
Alfa Aesar Stock # 42771
LOT # H04X026
EXP: 3/28/13

4/16/12 S24-0416/201 IC02 Eluent

100mL S24-0314/201 (10x Conc eluent, EXP: 10/11)
↑ 1L w/ DI H2O. Degassed
EXP: 4/30/12

4/16/12 S24-0416/202 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ J.T. Baker JC5641 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 2/27/17). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4621284 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 4/21/12

4/16/12 S24-0416/203 Cr6+ Coloring Reagent

0.2500g 1,5-Diphenylcarbohydrazide Powder (JT Baker JC5641; EXP: 6/15/15) ↑ 50mL w/ Acetone (EMD lot 47154; EXP 9/24/12)
EXP: 5/16/12

4/16/12 S24-0416/204 12.5 N NaOH

100g NaOH (EMD 47022713; EXP 10/1/12
+100mL DI H2O.
EXP: 10/11/12

0430 4/30/12

4/30/12 S24-~~0314~~/201 IC02 Eluent

100mL S24-0314/201 (10x conc eluent; EXP: 10/11/12) ↑ 1L w/ DI H2O. Degassed.
EXP: 5/14/12

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

May 11, 2012 Analytical Report for Service Request No: P1201604

Sue Anderson
Columbia Analytical Services
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

RE: JPL GW Mon. 2Q12/100006114

Dear Sue:

Enclosed are the results of the samples submitted to our laboratory on April 25, 2012. For your reference, these analyses have been assigned our service request number P1201604.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3364. You may also contact me via Email at Howard.Holmes@alsglobal.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Howard Holmes
Project Chemist

HH/ln

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc. - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Louisiana DHH	Not available	LA110003
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
New Mexico ED	http://www.nmenv.state.nm.us/dwb/Index.htm	-
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.caslab.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	ALS/CAS Simi Valley, CA	**Service Request No.:**	K1201604
Project:	Battelle/JPL GW Mon 2Q12	**Date Received:**	4/25/12
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water sample was received for analysis at Columbia Analytical Services on 4/25/12. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Nitrosamines by EPA 521

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for NDMA in the replicate matrix spike analyses of sample MW-16 was outside control criteria. In general, the RPD was relatively high for all spiked compounds, which indicates a low bias in the Matrix Spike (MS)/Matrix Spike Duplicate (MSD). All spike recoveries in the MS, DMS, and associated Laboratory Control Sample (LCS) were within acceptance limits, indicating the analytical batch was in control. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

1,4-Dioxane by EPA Method 8270 SIM

No anomalies associated with the analysis of these samples were observed.

Approved by _____ **Date** 5-11-12

Chain of Custody

Intra-Network Chain of Custody

2655 Park Center Drive, Suite A • Simi Valley, CA 93065 • 805-526-7161 • FAX 805-526-7270

CAS Contact: Sue Anderson

Project Name: JPL GW Mon. 2Q12
Project Number: 100006114
Project Manager: David Conner
Company: Battelle

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	14_DIOXANE 8270C SIM	Nitrosamines 521
P1201604-005	MW-24-1		Water	4/25/12	1232	4/25/12	KELSO	IV	IV

Test Comments

Nitrosamines - 521 P1201604-005 NDMA

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Special Instructions/Comments	Turnaround Requirements	Report Requirements	Invoice Information
	____**RUSH** (Surcharges Apply) **PLEASE CIRCLE WORK DAYS** 1 2 3 4 5 ____ **STANDARD** Requested FAX Date: _____ Requested Report Date: 05/11/12	____ I. Results Only ____ II. Results + QC Summaries ____ III. Results + QC and Calibration Summaries ____ IV. Data Validation Report with Raw Data PQL/MDL/J Y EDD Y	PO# P1201604 Bill to

Relinquished By: [signature] 1525 Received By: [signature] 4/27/12 0920 Airbill Number:

PC H2

Cooler Receipt and Preservation Form

ient / Project: Simi Valley Service Request K12 P1604

ceived: 4/27/12 Opened: 4/27/12 By: AJ Unloaded: 4/27/12 By: AJ

Samples were received via? *Mail* *Fed Ex* (*UPS*) *DHL* *PDX* *Courier* *Hand Delivered*

Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other*_____ *NA*

Were custody seals on coolers? NA Y (N) If yes, how many and where?_____

If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID (NA)	Tracking Number	NA	Filed
-0.5	✓	297		1Z78905X0142081168		

Packing material: *Inserts* *Baggies* (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____

Were custody papers properly filled out (ink, signed, etc.)?	NA	(Y)	N
Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.*	NA	(Y)	N
. Were all sample labels complete (i.e analysis, preservation, etc.)?	NA	(Y)	N
. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.*	NA	(Y)	N
. Were appropriate bottles/containers and volumes received for the tests indicated?	NA	(Y)	N
. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below*	(NA)	Y	N
. Were VOA vials received without headspace? *Indicate in the table below.*	(NA)	Y	N
. Was C12/Res negative?	(NA)	Y	N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

*otes, Discrepancies, & Resolutions:*_____

Nitrosamines

Organic Analysis:
Nitrosamines by EPA 521

Summary Package

Sample and QC Results

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604

Cover Page - Organic Analysis Data Package
Nitrosamines by EPA 521

Sample Name	Lab Code	Date Collected	Date Received
MW-24-1	P1201604-005	04/25/2012	04/25/2012

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Christina Cotnam

Date: 5/11/12 Title: Scientist

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Collected: 04/25/2012
Date Received: 04/25/2012

Nitrosamines by EPA 521

Sample Name: MW-24-1
Lab Code: P1201604-005

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	77	70-130	05/01/12	Acceptable

Comments:

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Collected: NA
Date Received: NA

Nitrosamines by EPA 521

Sample Name: Method Blank
Lab Code: KWG1204391-4

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	102	70-130	05/02/12	Acceptable

Comments:

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604

Surrogate Recovery Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	P1201573-002	98
MW-24-1	P1201604-005	77
Method Blank	KWG1204391-4	102
Batch QCMS	KWG1204391-1	93
Batch QCDMS	KWG1204391-2	96
Lab Control Sample	KWG1204391-3	87

Surrogate Recovery Control Limits (%)

Sur1 = N-Nitrosodimethylamine-d6 70-130

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/01/2012
Time Analyzed: 17:04

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-2
Analysis Lot: KWG1204793

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	32,908	20.53
	Upper Limit ==>	42,780	20.93
	Lower Limit ==>	23,036	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	28,060	20.52
Batch QCDMS	KWG1204391-2	26,255	20.53
MW-24-1	P1201604-005	27,731	20.53

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/02/2012
Time Analyzed: 01:33

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501013.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-3
Analysis Lot: KWG1204793

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	32,882	20.53
Upper Limit ==>	42,747	20.93
Lower Limit ==>	23,017	20.13
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/02/2012
Time Analyzed: 17:19

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050212-521\0502001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204794-2
Analysis Lot: KWG1204794

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	30,450	20.53
	Upper Limit ==>	39,585	20.93
	Lower Limit ==>	21,315	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Method Blank	KWG1204391-4	24,438	20.55
Batch QC	P1201573-002	29,832	20.55
Batch QCMS	KWG1204391-1	25,407	20.55

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/02/2012
Time Analyzed: 22:16

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050212-521\0502008.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204794-3
Analysis Lot: KWG1204794

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	27,043	20.55
Upper Limit ==>	35,156	20.95
Lower Limit ==>	18,930	20.15
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/08/2012
Time Analyzed: 21:22

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050812-521\0508013.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204795-2
Analysis Lot: KWG1204795

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	28,678	20.51
	Upper Limit ==>	37,281	20.91
	Lower Limit ==>	20,075	20.11
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	32,827	20.50
Batch QCDMS	KWG1204391-2	31,082	20.51

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/09/2012
Time Analyzed: 08:53

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050812-521\0508024.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204795-3
Analysis Lot: KWG1204795

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	27,403	20.51
Upper Limit ==>	35,624	20.91
Lower Limit ==>	19,182	20.11
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Extracted: 04/30/2012
Date Analyzed: 05/01/2012 - 05/02/2012

Matrix Spike/Duplicate Matrix Spike Summary
Nitrosamines by EPA 521

Sample Name: Batch QC
Lab Code: P1201573-002

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low
Extraction Lot: KWG1204391

Analyte Name	Sample Result	Batch QCMS KWG1204391-1 Matrix Spike Result	Matrix Spike Expected	Matrix Spike %Rec	Batch QCDMS KWG1204391-2 Duplicate Matrix Spike Result	Duplicate Matrix Spike Expected	Duplicate Matrix Spike %Rec	%Rec Limits	RPD	RPD Limit
N-Nitrosodimethylamine	0.96	24.2	20.0	116	17.5	20.0	83	70-130	32 *	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Extracted: 04/30/2012
Date Analyzed: 05/01/2012

Lab Control Spike Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG1204391

Analyte Name	Lab Control Sample KWG1204391-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
N-Nitrosodimethylamine	15.6	20.0	78	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Extracted: 04/30/2012
Date Analyzed: 05/02/2012
Time Analyzed: 18:02

Method Blank Summary
Nitrosamines by EPA 521

Sample Name: Method Blank
Lab Code: KWG1204391-4

Instrument ID: MS16
File ID: J:\MS16\DATA\050212-521\0502002.D

Extraction Method: METHOD
Analysis Method: 521

Level: Low
Extraction Lot: KWG1204391

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050112-521\0501004.D	05/01/12	19:12
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-24-1	P1201604-005	J:\MS16\DATA\050112-521\0501010.D	05/01/12	23:26
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050812-521\0508016.D	05/08/12	23:29
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012
		Time Analyzed:	19:12

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050112-521\0501004.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-24-1	P1201604-005	J:\MS16\DATA\050112-521\0501010.D	05/01/12	23:26
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Extracted: 04/30/2012
Date Analyzed: 05/08/2012
Time Analyzed: 23:29

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name: Lab Control Sample
Lab Code: KWG1204391-3

Extraction Method: METHOD
Analysis Method: 521

Instrument ID: MS16
File ID: J:\MS16\DATA\050812-521\0508016.D

Level: Low
Extraction Lot: KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-24-1	P1201604-005	J:\MS16\DATA\050112-521\0501010.D	05/01/12	23:26
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201604
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16
Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS16\DATA\031112-521\0311005.D	F	J:\MS16\DATA\031112-521\0311010.D
B	J:\MS16\DATA\031112-521\0311006.D	G	J:\MS16\DATA\031112-521\0311011.D
C	J:\MS16\DATA\031112-521\0311007.D	H	J:\MS16\DATA\031112-521\0311012.D
D	J:\MS16\DATA\031112-521\0311008.D	I	J:\MS16\DATA\031112-521\0311013.D
E	J:\MS16\DATA\031112-521\0311009.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
N-Nitrosodimethylamine-d6							C	1.0	1.28	D	2.0	2.08	E	5.0	2.86
	F	7.0	3.66	G	10	4.73	H	15	4.42	I	20	5.18			
N-Nitrosodimethylamine				B	0.50	1.18	C	1.0	1.63	D	2.0	2.42	E	5.0	2.51
	F	7.0	3.11	G	10	3.75	H	15	3.50	I	20	3.88			

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201604
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16
Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
N-Nitrosodimethylamine-d6	SURR	Quadratic	COD	0.992		≥ 0.99	3.46		
N-Nitrosodimethylamine	MS	Quadratic	COD	0.994		≥ 0.99	2.75		

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Calibration Date: 03/11/2012
Date Analyzed: 03/12/2012

Second Source Calibration Verification
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration ID: CAL11326
Units: ug/L

File ID: J:\MS16\DATA\031112-521\0311014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine	10	7.7	2.75	2.42	NA	-23	± 30 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/01/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	0.98		3.46	0.816	NA	-2	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	0.89		2.75	1.53	NA	-11	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	4.3		3.46	2.75	NA	-15	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	5.4		2.75	3.21	NA	8	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.3		3.46	1.80	NA	25	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.3		2.75	2.78	NA	30	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502008.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.1		3.46	3.43	NA	1	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.3		2.75	3.88	NA	27	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/08/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.2		3.46	1.72	NA	23	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.2		2.75	2.36	NA	16	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/09/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508024.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.5		3.46	3.84	NA	10	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.6		2.75	4.04	NA	31	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201604

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1204793
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
521\0501.D	GC/MS Tuning - Decafluorotriphenylp	KWG1204793-1	5/1/2012	16:22		5/1/2012	16:48
\0501001.D	Continuing Calibration Verification	KWG1204793-2	5/1/2012	17:04		5/1/2012	17:30
\0501004.D	Lab Control Sample	KWG1204391-3	5/1/2012	19:12		5/1/2012	19:38
\0501007.D	Batch QCDMS	KWG1204391-2	5/1/2012	21:19		5/1/2012	21:45
\0501008.D	ZZZZZZ	ZZZZZZ	5/1/2012	22:01		5/1/2012	22:27
\0501009.D	ZZZZZZ	ZZZZZZ	5/1/2012	22:44		5/1/2012	23:10
\0501010.D	MW-24-1	P1201604-005	5/1/2012	23:26		5/1/2012	23:52
\0501011.D	ZZZZZZ	ZZZZZZ	5/2/2012	00:09		5/2/2012	00:35
\0501013.D	Continuing Calibration Verification	KWG1204793-3	5/2/2012	01:33		5/2/2012	01:59

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201604

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1204794
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
521\0502.D	GC/MS Tuning - Decafluorotriphenylp	KWG1204794-1	5/2/2012	16:37		5/2/2012	17:03
\0502001.D	Continuing Calibration Verification	KWG1204794-2	5/2/2012	17:19		5/2/2012	17:45
\0502002.D	Method Blank	KWG1204391-4	5/2/2012	18:02		5/2/2012	18:28
\0502004.D	Batch QC	P1201573-002	5/2/2012	19:26		5/2/2012	19:52
\0502005.D	Batch QCMS	KWG1204391-1	5/2/2012	20:09		5/2/2012	20:35
\0502008.D	Continuing Calibration Verification	KWG1204794-3	5/2/2012	22:16		5/2/2012	22:42

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201604

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1204795
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
\0508012.D	GC/MS Tuning - Decafluorotriphenylp	KWG1204795-1	5/8/2012	20:39		5/8/2012	21:05
\0508013.D	Continuing Calibration Verification	KWG1204795-2	5/8/2012	21:22		5/8/2012	21:48
\0508016.D	Lab Control Sample	KWG1204391-3	5/8/2012	23:29		5/8/2012	23:55
\0508019.D	Batch QCDMS	KWG1204391-2	5/9/2012	01:36		5/9/2012	02:02
\0508024.D	Continuing Calibration Verification	KWG1204795-3	5/9/2012	08:53		5/9/2012	09:19

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Extracted: 04/30/2012

Extraction Prep Log
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Extraction Lot: KWG1204391
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MW-24-1	P1201604-005	04/25/12	04/25/12	500ml	1ml	NA	
Method Blank	KWG1204391-4	NA	NA	500ml	1ml	NA	
Batch QCMS	KWG1204391-1	NA	NA	500ml	1ml	NA	
Batch QCDMS	KWG1204391-2	NA	NA	500ml	1ml	NA	
Batch QC	P1201573-002	NA	NA	500ml	1ml	NA	
Lab Control Sample	KWG1204391-3	NA	NA	500ml	1ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

QC Reports

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604

Surrogate Recovery Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	P1201573-002	98
MW-24-1	P1201604-005	77
Method Blank	KWG1204391-4	102
Batch QCMS	KWG1204391-1	93
Batch QCDMS	KWG1204391-2	96
Lab Control Sample	KWG1204391-3	87

Surrogate Recovery Control Limits (%)

Sur1 = N-Nitrosodimethylamine-d6 70-130

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/01/2012
Time Analyzed: 17:04

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-2
Analysis Lot: KWG1204793

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	32,908	20.53
	Upper Limit ==>	42,780	20.93
	Lower Limit ==>	23,036	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	28,060	20.52
Batch QCDMS	KWG1204391-2	26,255	20.53
MW-24-1	P1201604-005	27,731	20.53

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/02/2012
Time Analyzed: 01:33

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501013.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-3
Analysis Lot: KWG1204793

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	32,882	20.53
Upper Limit ==>	42,747	20.93
Lower Limit ==>	23,017	20.13
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/02/2012
Time Analyzed: 17:19

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050212-521\0502001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204794-2
Analysis Lot: KWG1204794

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	30,450	20.53
	Upper Limit ==>	39,585	20.93
	Lower Limit ==>	21,315	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Method Blank	KWG1204391-4	24,438	20.55
Batch QC	P1201573-002	29,832	20.55
Batch QCMS	KWG1204391-1	25,407	20.55

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/02/2012
Time Analyzed: 22:16

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050212-521\0502008.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204794-3
Analysis Lot: KWG1204794

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	27,043	20.55
Upper Limit ==>	35,156	20.95
Lower Limit ==>	18,930	20.15
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/08/2012
Time Analyzed: 21:22

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050812-521\0508013.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204795-2
Analysis Lot: KWG1204795

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	28,678	20.51
	Upper Limit ==>	37,281	20.91
	Lower Limit ==>	20,075	20.11
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	32,827	20.50
Batch QCDMS	KWG1204391-2	31,082	20.51

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/09/2012
Time Analyzed: 08:53

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050812-521\0508024.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204795-3
Analysis Lot: KWG1204795

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	27,403	20.51
Upper Limit ==>	35,624	20.91
Lower Limit ==>	19,182	20.11
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012 - 05/02/2012

Matrix Spike/Duplicate Matrix Spike Summary
Nitrosamines by EPA 521

Sample Name:	Batch QC	**Units:**	ng/L
Lab Code:	P1201573-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

Analyte Name	Sample Result	Batch QCMS KWG1204391-1 Matrix Spike Result	Matrix Spike Expected	Matrix Spike %Rec	Batch QCDMS KWG1204391-2 Duplicate Matrix Spike Result	Duplicate Matrix Spike Expected	Duplicate Matrix Spike %Rec	%Rec Limits	RPD	RPD Limit
N-Nitrosodimethylamine	0.96	24.2	20.0	116	17.5	20.0	83	70-130	32 *	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012

Lab Control Spike Summary
Nitrosamines by EPA 521

Extraction Method:	METHOD	**Units:**	ng/L
Analysis Method:	521	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1204391

	Lab Control Sample KWG1204391-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
N-Nitrosodimethylamine	15.6	20.0	78	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/02/2012
		Time Analyzed:	18:02

Method Blank Summary
Nitrosamines by EPA 521

Sample Name:	Method Blank	**Instrument ID:**	MS16
Lab Code:	KWG1204391-4	**File ID:**	J:\MS16\DATA\050212-521\0502002.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050112-521\0501004.D	05/01/12	19:12
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-24-1	P1201604-005	J:\MS16\DATA\050112-521\0501010.D	05/01/12	23:26
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050812-521\0508016.D	05/08/12	23:29
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012
		Time Analyzed:	19:12

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050112-521\0501004.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-24-1	P1201604-005	J:\MS16\DATA\050112-521\0501010.D	05/01/12	23:26
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/08/2012
		Time Analyzed:	23:29

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050812-521\0508016.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-24-1	P1201604-005	J:\MS16\DATA\050112-521\0501010.D	05/01/12	23:26
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Raw Data

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Collected: 04/25/2012
Date Received: 04/25/2012

Nitrosamines by EPA 521

Sample Name: MW-24-1
Lab Code: P1201604-005

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	77	70-130	05/01/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050112-521\0501010.D
Lab ID: P1201604-005
RunType: SMPL
Matrix: WATER

Date Acquired: 05/01/2012 23:26
Date Quantitated: 05/02/2012 16:17
Batch ID: KWG1204793
Analysis Method: 521
ListJoinID: LJ11419

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501010.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 23:26	**Quant Date:**	05/02/2012 16:17	**Vial:**	11
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201604-005			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**	04/25/2012	**Receive Date:**	04/25/2012

Analysis Lot:	KWG1204793	**Prep Lot:**	KWG1204391	**Report Group:**	P1201604
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121341	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:	Nitrosamines by EPA 521	**Report List ID:**	LJ11419
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	0.00	97	27731	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.83	-0.02	0.00	50	16298	7.70	77	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine				47	0		0.32	U	

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501010.D Vial: 11
Acq On : 01 May 12 23:26 Operator: SVO-DW
Sample : P1201604-005 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:16:59 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

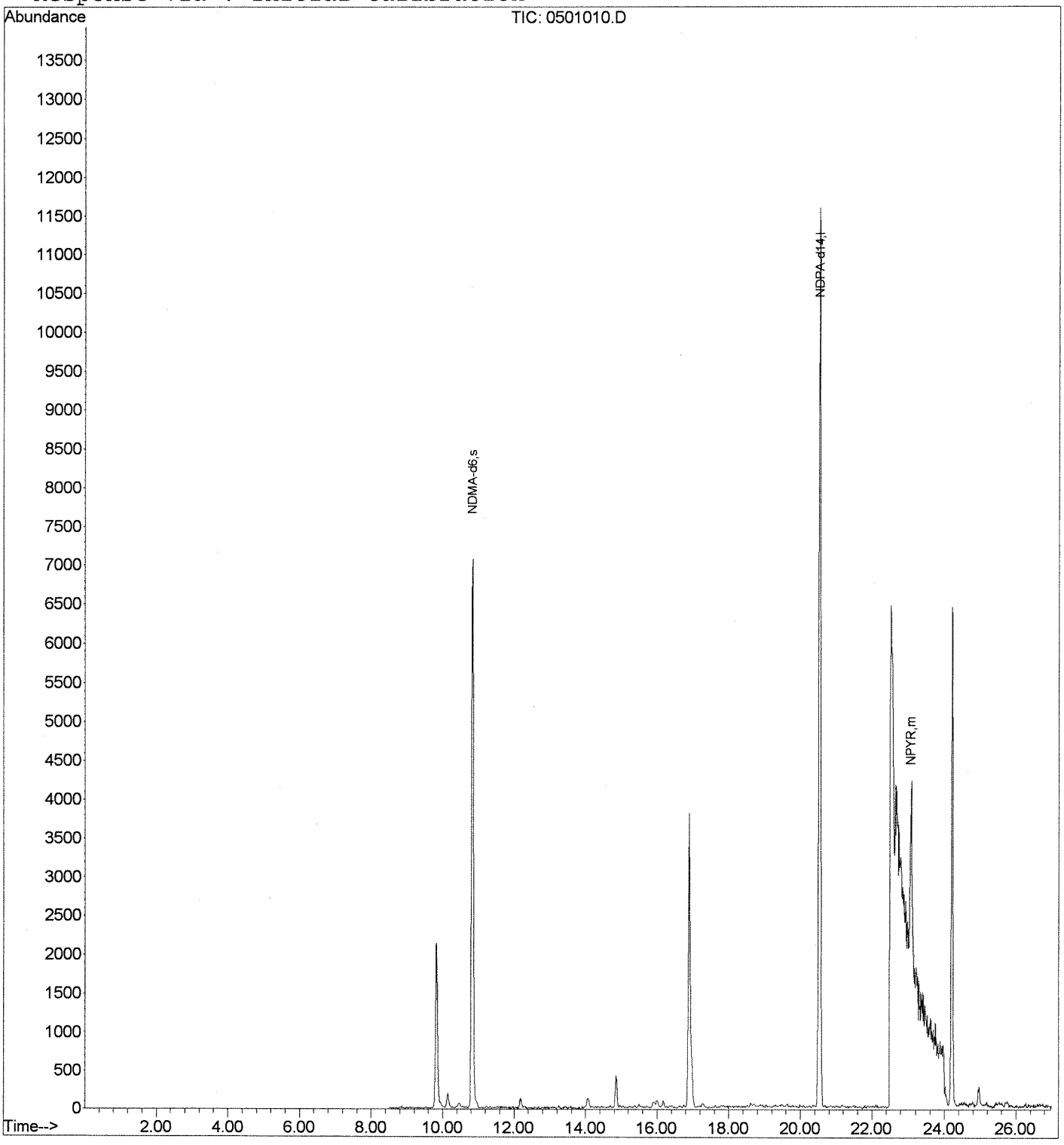
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	27731	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.83	50	16298	7.70	ug/L	-0.12
Target Compounds						Qvalue
8) NPYR	23.08	55	1861	1.09	ug/L	94

(#) = qualifier out of range (m) = manual integration
0501010.D 031112_D14.M Wed May 09 11:58:49 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501010.D Vial: 11
Acq On : 01 May 12 23:26 Operator: SVO-DW
Sample : P1201604-005 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 2 16:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Collected: NA
Date Received: NA

Nitrosamines by EPA 521

Sample Name: Method Blank
Lab Code: KWG1204391-4

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	102	70-130	05/02/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050212-521\0502002.D
Lab ID: KWG1204391-4
RunType: MB
Matrix: WATER

Date Acquired: 05/02/2012 18:02
Date Quantitated: 05/09/2012 12:02
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502002.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 18:02	**Quant Date:**	05/09/2012 12:02	**Vial:**	4
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1204391-4			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204794	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121345	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050212-521\0502.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	0.02	97	24438	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.85	0.02	0.00	50	20604	10.20	102	70-130	OK

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine				47	0**d**		0.32	U	
1	N-Nitrosomethylethylamine				61	0		0.50	U	
1	N-Nitrosodiethylamine				75	0		0.76	U	
1	N-Nitrosodi-n-propylamine				89	0		0.76	U	
1	N-Nitrosopyrrolidine	23.09	-0.13	-0.01	55	225	0.6700	1.34	J	
1	N-Nitrosopiperidine				69	0		0.55	U	
1	N-Nitrosodi-n-butylamine				57	0		0.77	U	

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File : J:\MS16\DATA\050212-521\0502002.D Vial: 4
Acq On : 02 May 12 18:02 Operator: SVO-DW
Sample : 043012-MB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:49:03 2012 Quant Results File: 031112_D14.RES

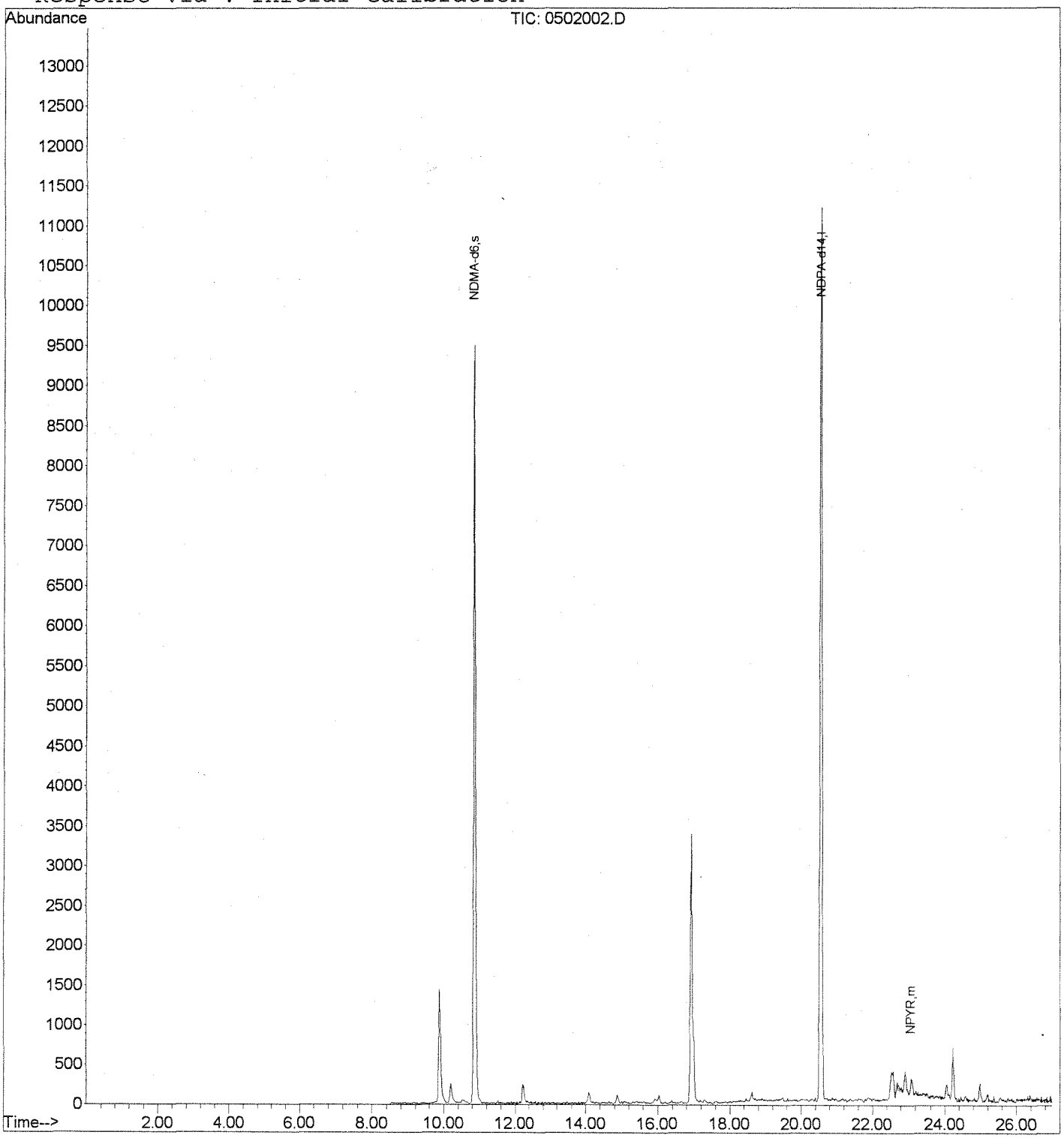
Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	24438	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.85	50	20604	10.20	ug/L	-0.10
Target Compounds						Qvalue
8) NPYR	23.09	55	225	0.67	ug/L	94

(#) = qualifier out of range (m) = manual integration
0502002.D 031112_D14.M Wed May 09 12:11:55 2012 Page 1

Data File : J:\MS16\DATA\050212-521\0502002.D Vial: 4
Acq On : 02 May 12 18:02 Operator: SVO-DW
Sample : 043012-MB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:02 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Collected: NA
Date Received: NA

Nitrosamines by EPA 521

Sample Name: Batch QCMS
Lab Code: KWG1204391-1

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**24.2**		2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	93	70-130	05/02/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050212-521\0502005.D
Lab ID: KWG1204391-1 -- P1201573-002MS
RunType: MS
Matrix: WATER

Date Acquired: 05/02/2012 20:09
Date Quantitated: 05/03/2012 13:49
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosopiperidine	52.8	NA	50	NR
	N-Nitrosodi-n-butylamine	54.8	NA	50	b

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502005.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 20:09	**Quant Date:**	05/03/2012 13:49	**Vial:**	7
Run Type:	MS			**Dilution:**	1.0
Lab ID:	KWG1204391-1 -- P1201573-002MS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204794	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121342	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	0.02	97	25407	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.86	0.03	0.00	50	19029	9.31	93	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.98	0.01	0.00	47	21217	12.12	24.2		
1	N-Nitrosomethylethylamine	13.56	-0.01	0.00	61	21018	8.25	16.5		
1	N-Nitrosodiethylamine	15.67	0.02	0.00	75	3521	9.92	19.8		
1	N-Nitrosodi-n-propylamine	20.85	-0.02	0.00	89	2335	7.85	15.7		
1	N-Nitrosopyrrolidine	23.23	0.01	0.00	55	39637	10.76	21.5		
1	N-Nitrosopiperidine	24.15	0.01	0.00	69	91334	13.57	27.1		
1	N-Nitrosodi-n-butylamine	26.40	0.02	0.00	57	25373	11.61	23.2		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E. Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Data File : J:\MS16\DATA\050212-521\0502005.D Vial: 7
Acq On : 02 May 12 20:09 Operator: SVO-DW
Sample : P1201573-002 MS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:49:43 2012 Quant Results File: 031112_D14.RES

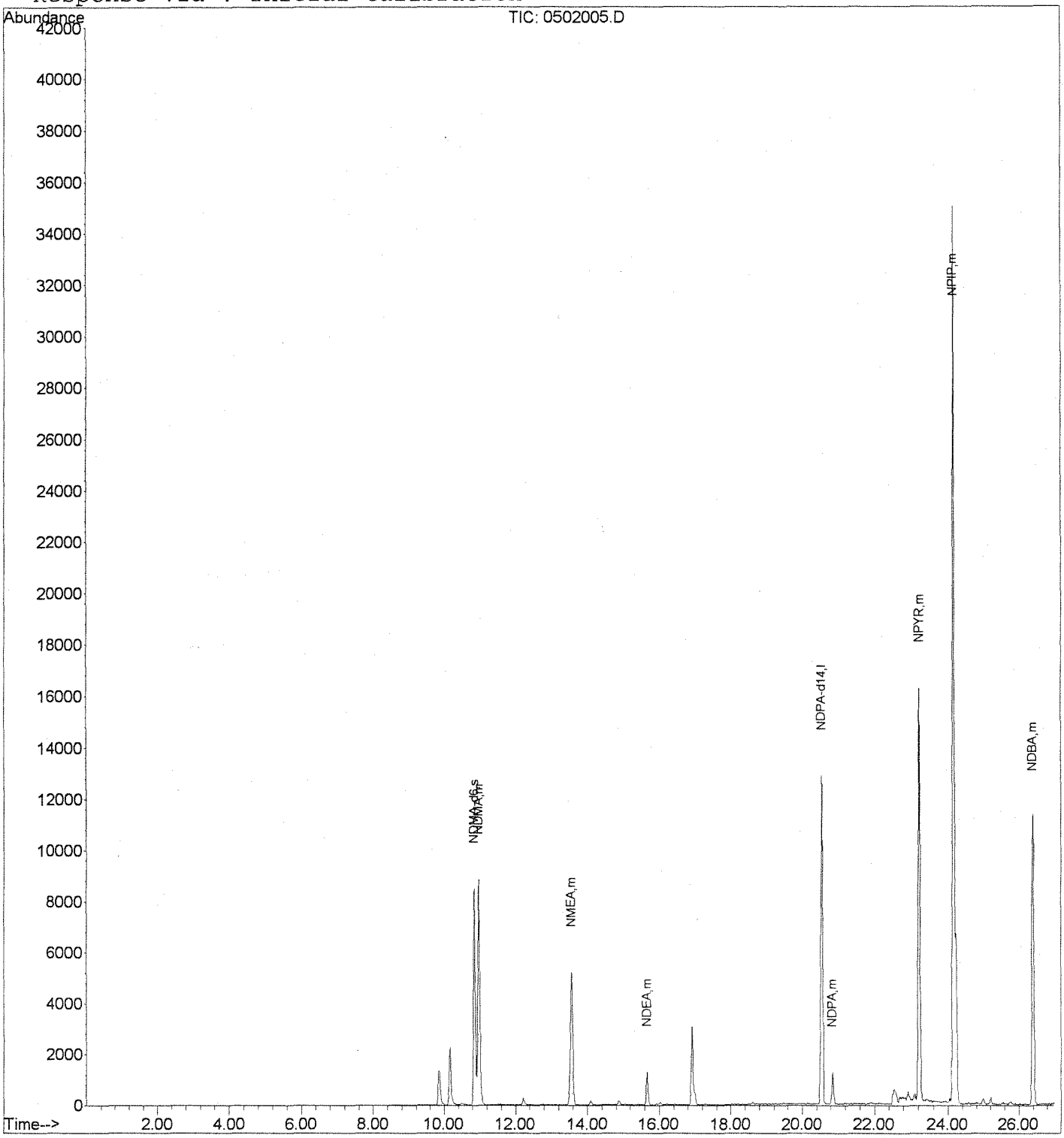
Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	25407	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.86	50	19029	9.31	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.98	47	21217	12.12	ug/L	95
5) NMEA	13.56	61	21018	8.25	ug/L	100
6) NDEA	15.67	75	3521	9.92	ug/L	100
7) NDPA	20.85	89	2335	7.85	ug/L	100
8) NPYR	23.23	55	39637	10.76	ug/L	95
9) NPIP	24.15	69	91334	13.57	ug/L	100
10) NDBA	26.40	57	25373	11.61	ug/L	100

(#) = qualifier out of range (m) = manual integration
0502005.D 031112_D14.M Wed May 09 12:11:56 2012 Page 1

Data File : J:\MS16\DATA\050212-521\0502005.D Vial: 7
Acq On : 02 May 12 20:09 Operator: SVO-DW
Sample : P1201573-002 MS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:49 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Batch QCDMS	**Units:**	ng/L
Lab Code:	KWG1204391-2	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**17.5**		2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	96	70-130	05/09/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050112-521\0501007.D
Lab ID: KWG1204391-2 -- P1201573-002DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/01/2012 21:19
Date Quantitated: 05/02/2012 16:16
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA		x
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosodi-n-butylamine	50.6	NA	50	NRL
Surrogates	N-Nitrosodimethylamine-d6	67	70	130	b

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501007.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 21:19	**Quant Date:**	05/02/2012 16:16	**Vial:**	8
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1204391-2 -- P1201573-002DMS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204793	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121343	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	0.00	97	26255	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.85	0.00	0.00	50	12818	6.66	67	70-130	*	NR

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97		0.00	47	14833	8.74	17.5		
1	N-Nitrosomethylethylamine	13.55	0.02	0.00	61	14416	6.05	12.1		
1	N-Nitrosodiethylamine	15.65	0.01	0.00	75	2466	7.38	14.8		
1	N-Nitrosodi-n-propylamine	20.83		0.00	89	3075	9.48	19.0		
1	N-Nitrosopyrrolidine	23.20	-0.01	0.00	55	39232	10.37	20.7		
1	N-Nitrosopiperidine	24.12	-0.01	0.00	69	75431	11.25	22.5		
1	N-Nitrosodi-n-butylamine	26.36	-0.02	0.00	57	21808	10.21	20.4		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501007.D Vial: 8
Acq On : 01 May 12 21:19 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:16:58 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

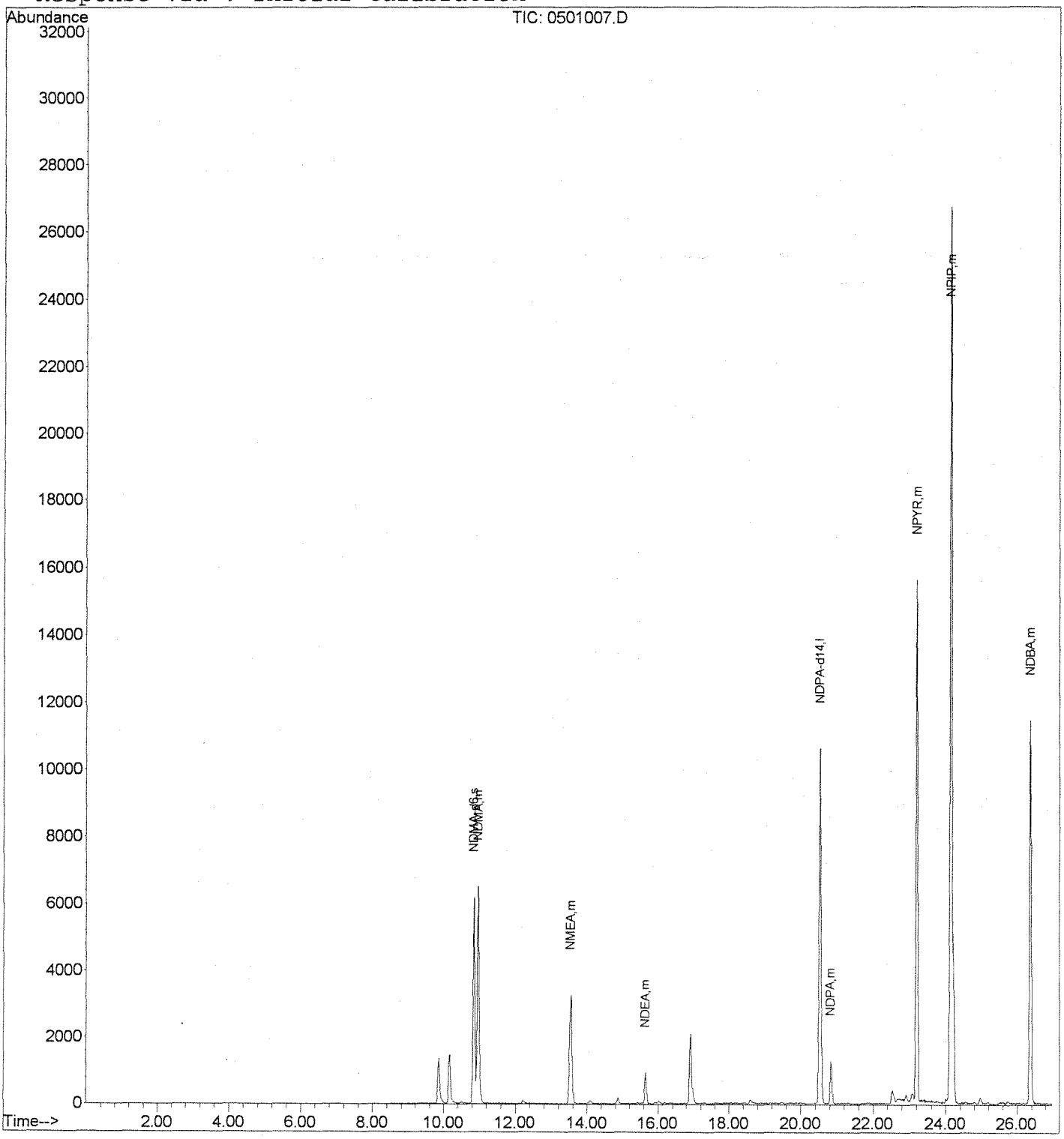
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	26255	50.00	ug/L	-0.04
System Monitoring Compounds						
3) NDMA-d6	10.85	50	12818	6.66	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.97	47	14833	8.74	ug/L	96
5) NMEA	13.55	61	14416	6.05	ug/L	100
6) NDEA	15.65	75	2466	7.38	ug/L	100
7) NDPA	20.83	89	3075	9.48	ug/L	100
8) NPYR	23.20	55	39232	10.37	ug/L	94
9) NPIP	24.12	69	75431	11.25	ug/L	100
10) NDBA	26.36	57	21808	10.21	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501007.D 031112_D14.M Wed May 09 12:06:37 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501007.D Vial: 8
Acq On : 01 May 12 21:19 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 2 16:16 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Exception Report

Data File: J:\MS16\DATA\050812-521\0508019.D
Lab ID: KWG1204391-2 -- P1201573-002DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/09/2012 01:36
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosopiperidine	53.6	NA	50	NR
	N-Nitrosodi-n-butylamine	69.4	NA	50	↓

Primary Review: 5/9/12

Secondary Review:

Printed: 05/09/2012 12:42:40
u:\Stealth\Crystal.rpt\except2.rpt

Page 1 of 1

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508019.D			**Instrument:**	MS16
Acqu Date:	05/09/2012 01:36	**Quant Date:**	05/09/2012 12:13	**Vial:**	16
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1204391-2 -- P1201573-002DMS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204795	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121343	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.51	0.00	97	31082	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.86	-0.02	0.00	50	24170	9.58	96	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97	-0.02	0.00	47	25741	12.04	24.1		NR
1	N-Nitrosomethylethylamine	13.53	-0.04	0.00	61	24709	8.01	16.0		
1	N-Nitrosodiethylamine	15.65	0.01	0.00	75	4409	10.10	20.2		
1	N-Nitrosodi-n-propylamine	20.81	-0.02	0.00	89	4250	10.69	21.4		
1	N-Nitrosopyrrolidine	23.19		0.00	55	50529	11.14	22.3		
1	N-Nitrosopiperidine	24.11		0.00	69	97644	12.12	24.2		
1	N-Nitrosodi-n-butylamine	26.34		0.00	57	27954	10.79	21.6		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508019.D Vial: 16
Acq On : 09 May 2012 01:36 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:32 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

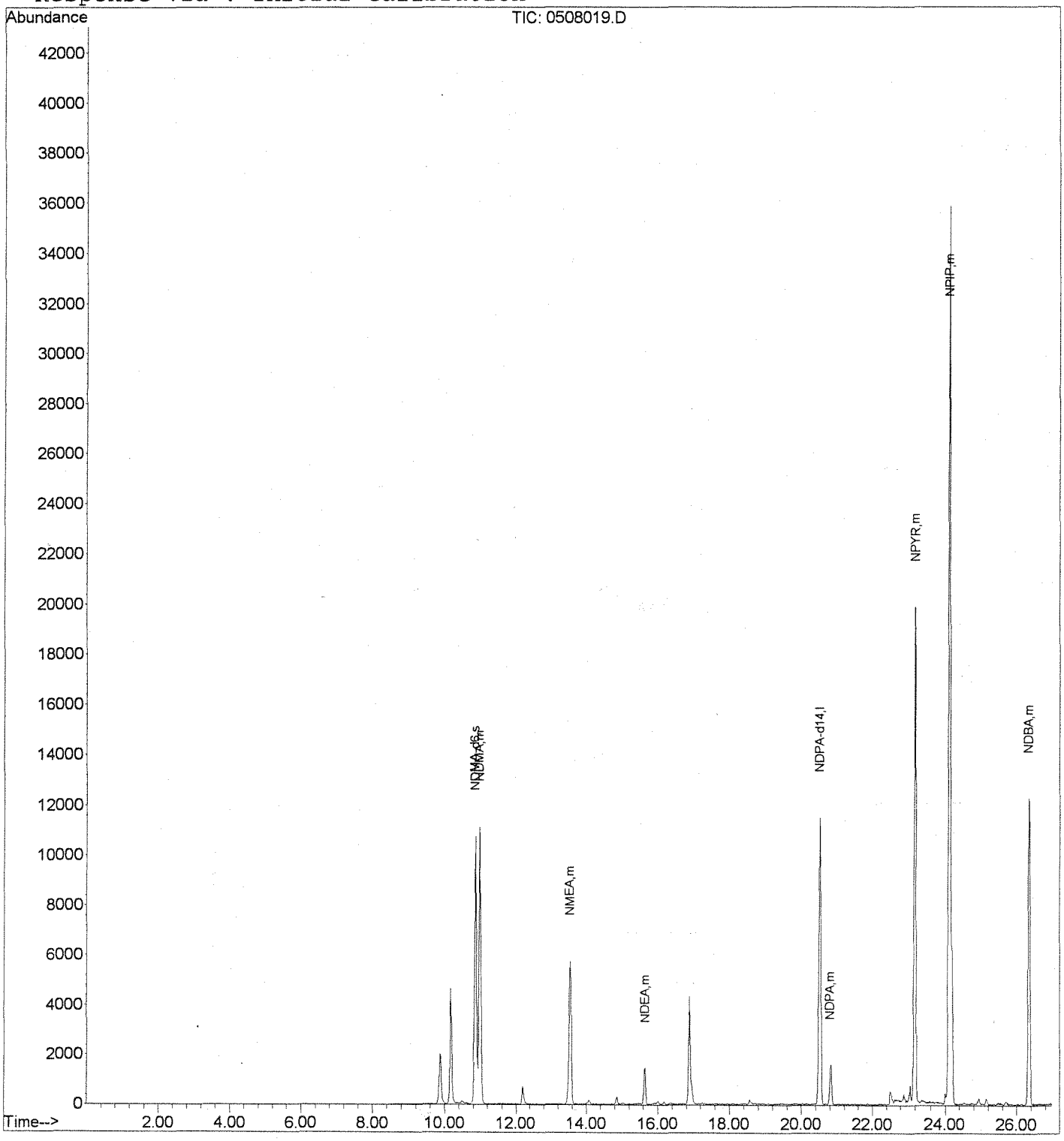
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.51	97	31082	50.00	ug/L	-0.06
System Monitoring Compounds						
3) NDMA-d6	10.86	50	24170	9.58	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.97	47	25741	12.04	ug/L	97
5) NMEA	13.53	61	24709	8.01	ug/L	100
6) NDEA	15.65	75	4409	10.10	ug/L	100
7) NDPA	20.81	89	4250	10.69	ug/L	100
8) NPYR	23.19	55	50529	11.14	ug/L	94
9) NPIP	24.11	69	97644	12.12	ug/L	100
10) NDBA	26.34	57	27954	10.79	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508019.D 031112_D14.M Wed May 09 12:16:21 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508019.D Vial: 16
Acq On : 09 May 2012 01:36 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Batch QC	**Units:**	ng/L
Lab Code:	P1201573-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**0.96**	J	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	98	70-130	05/02/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050212-521\0502004.D
Lab ID: P1201573-002
RunType: SMPL
Matrix: WATER

Date Acquired: 05/02/2012 19:26
Date Quantitated: 05/03/2012 13:49
Batch ID: KWG1204794
Analysis Method: 521
ListJoinID: LJ11419

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502004.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 19:26	**Quant Date:**	05/03/2012 13:49	**Vial:**	6
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201573-002			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**	04/23/2012	**Receive Date:**	04/23/2012

Analysis Lot:	KWG1204794	**Prep Lot:**	KWG1204391	**Report Group:**	P1201573
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121338	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:	Nitrosamines by EPA 521	**Report List ID:**	LJ11419
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	0.02	97	29832	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.84	0.01	0.00	50	23994	9.84	98	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.98	0.01	0.00	47	192	0.4800	0.96	J	

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502004.D Vial: 6
Acq On : 02 May 12 19:26 Operator: SVO-DW
Sample : P1201573-002 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:49:34 2012 Quant Results File: 031112_D14.RES

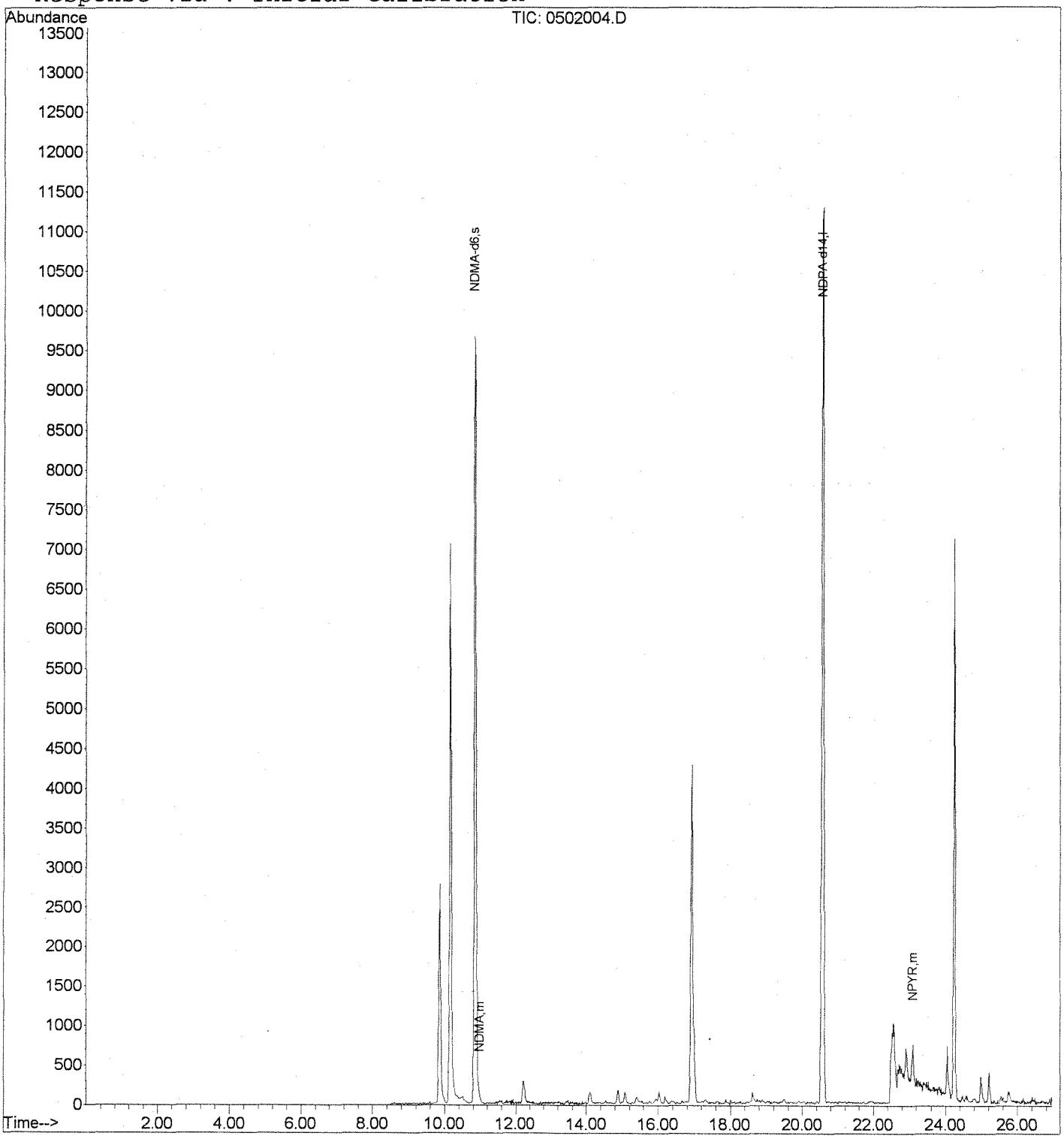
Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	29832	50.00	ug/L	-0.03
System Monitoring Compounds						
3) NDMA-d6	10.84	50	23994	9.84	ug/L	-0.11
Target Compounds						Qvalue
4) NDMA	10.98	47	192	0.48	ug/L	72
8) NPYR	23.11	55	575	0.74	ug/L	94

(#) = qualifier out of range (m) = manual integration
0502004.D 031112_D14.M Wed May 09 12:11:56 2012 Page 1

Data File : J:\MS16\DATA\050212-521\0502004.D Vial: 6
Acq On : 02 May 12 19:26 Operator: SVO-DW
Sample : P1201573-002 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:49 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Units:**	ng/L
Lab Code:	KWG1204391-3	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**15.6**		2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	87	70-130	05/08/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050112-521\0501004.D
Lab ID: KWG1204391-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/01/2012 19:12
Date Quantitated: 05/02/2012 16:16
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA		x
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosodi-n-butylamine	50.6	NA	50	NR
Surrogates	N-Nitrosodimethylamine-d6	63	70	130	b

Primary Review: 5/9/12

Secondary Review:

Printed: 05/09/2012 12:36:46
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501004.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 19:12	**Quant Date:**	05/02/2012 16:16	**Vial:**	5
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1204391-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204793	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121344	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.52	-0.01	97	28060	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.86	0.01	0.00	50	12644	6.25	63	70-130	*	NR

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.98	0.01	0.00	47	13900	7.82	15.6		
1	N-Nitrosomethylethylamine	13.56	0.03	0.00	61	13998	5.63	11.3		
1	N-Nitrosodiethylamine	15.65	0.01	0.00	75	2927	8.00	16.0		
1	N-Nitrosodi-n-propylamine	20.84	0.01	0.00	89	3561	10.09	20.2		
1	N-Nitrosopyrrolidine	23.21		0.00	55	41753	10.33	20.7		
1	N-Nitrosopiperidine	24.12	-0.01	0.00	69	81430	11.34	22.7		
1	N-Nitrosodi-n-butylamine	26.37	-0.01	0.00	57	22662	10.01	20.0		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501004.D Vial: 5
Acq On : 01 May 12 19:12 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:16:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

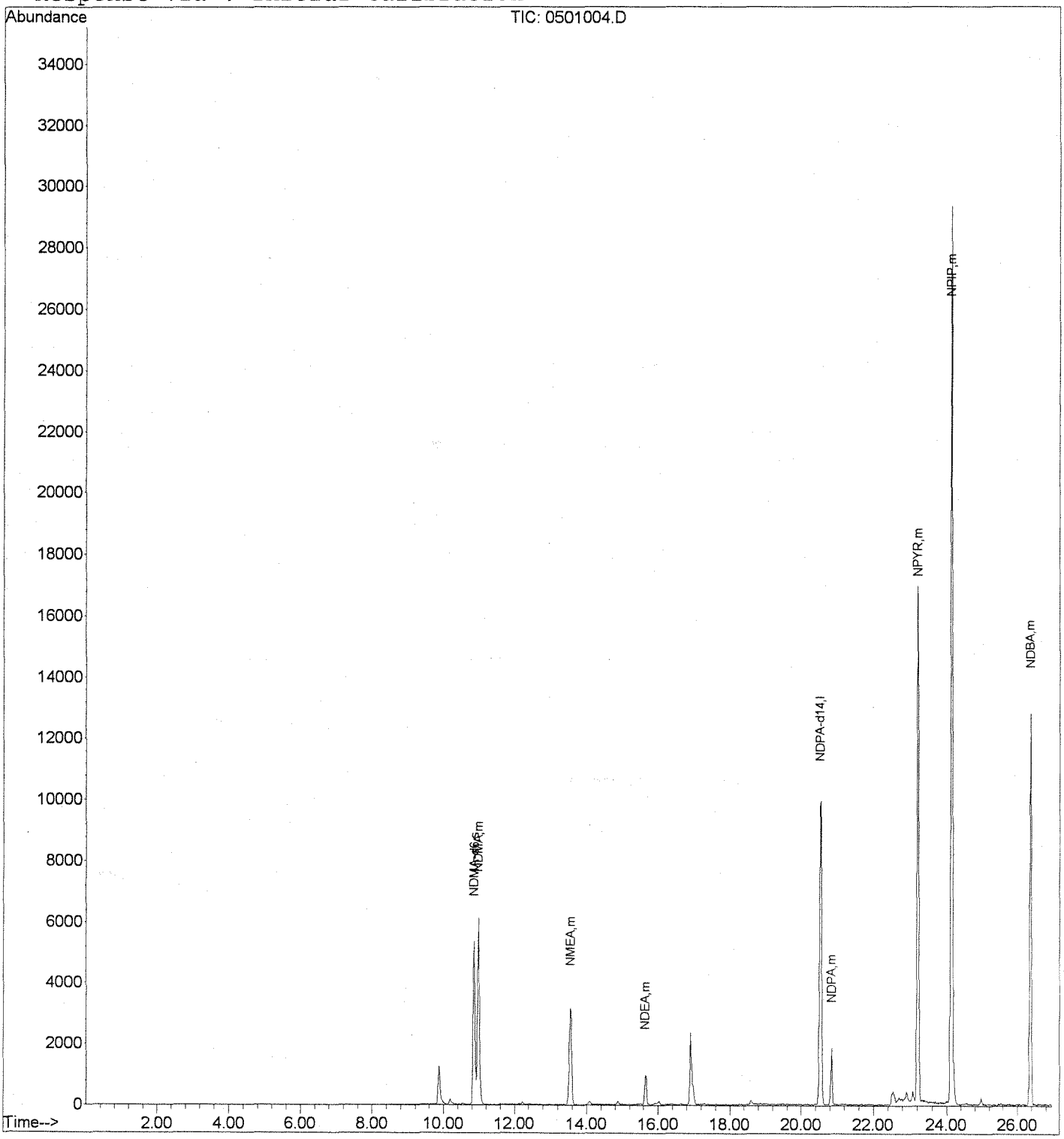
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.52	97	28060	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.86	50	12644	6.25	ug/L	-0.09
Target Compounds						Qvalue
4) NDMA	10.98	47	13900	7.82	ug/L	99
5) NMEA	13.56	61	13998	5.63	ug/L	100
6) NDEA	15.65	75	2927	8.00	ug/L	100
7) NDPA	20.84	89	3561	10.09	ug/L	100
8) NPYR	23.21	55	41753	10.33	ug/L	96
9) NPIP	24.12	69	81430	11.34	ug/L	100
10) NDBA	26.37	57	22662	10.01	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501004.D 031112_D14.M Wed May 09 12:06:36 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501004.D Vial: 5
Acq On : 01 May 12 19:12 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 2 16:16 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Exception Report

Data File: J:\MS16\DATA\050812-521\0508016.D
Lab ID: KWG1204391-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/08/2012 23:29
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosopiperidine	53.6	NA	50	NC
	N-Nitrosodi-n-butylamine	69.4	NA	50	b

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508016.D			**Instrument:**	MS16
Acqu Date:	05/08/2012 23:29	**Quant Date:**	05/09/2012 12:13	**Vial:**	13
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1204391-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204795	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121344	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.50	-0.01	97	32827	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.83	-0.05	0.00	50	22524	8.69	87	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.95	-0.04	0.00	47	23011	10.48	21.0		NR
1	N-Nitrosomethylethylamine	13.52	-0.05	0.00	61	22498	7.16	14.3		
1	N-Nitrosodiethylamine	15.62	-0.02	0.00	75	4158	9.27	18.5		
1	N-Nitrosodi-n-propylamine	20.82	-0.01	0.00	89	3631	9.07	18.1		
1	N-Nitrosopyrrolidine	23.19		0.00	55	44044	9.46	18.9		
1	N-Nitrosopiperidine	24.11		0.00	69	91432	10.96	21.9		
1	N-Nitrosodi-n-butylamine	26.33	-0.01	0.00	57	26513	10.01	20.0		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508016.D Vial: 13
Acq On : 08 May 12 23:29 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:31 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

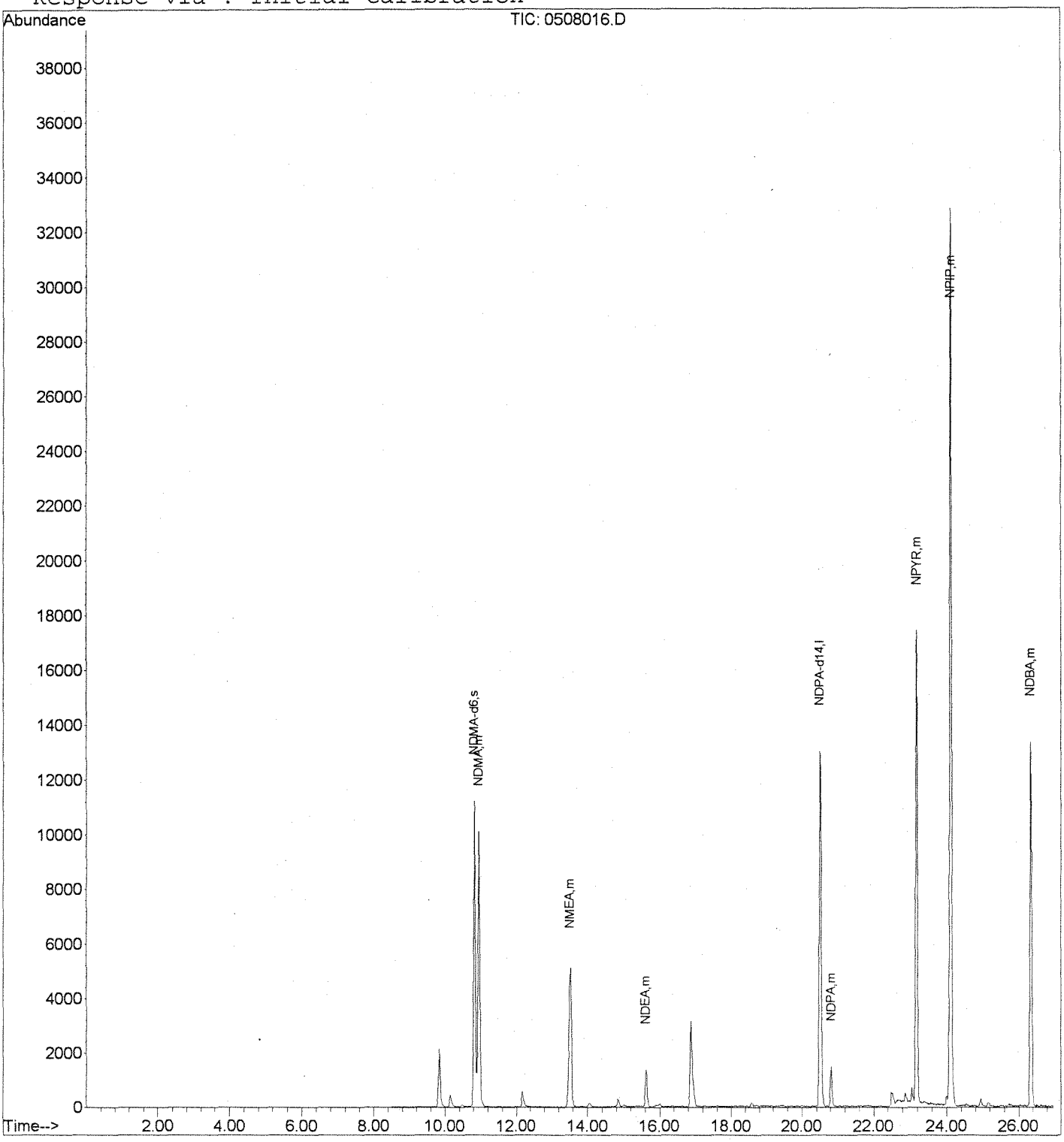
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.50	97	32827	50.00	ug/L	-0.07
System Monitoring Compounds						
3) NDMA-d6	10.83	50	22524	8.69	ug/L	-0.12
Target Compounds						Qvalue
4) NDMA	10.95	47	23011	10.48	ug/L	98
5) NMEA	13.52	61	22498	7.16	ug/L	100
6) NDEA	15.62	75	4158	9.27	ug/L	100
7) NDPA	20.82	89	3631	9.07	ug/L	100
8) NPYR	23.19	55	44044	9.46	ug/L	94
9) NPIP	24.11	69	91432	10.96	ug/L	100
10) NDBA	26.33	57	26513	10.01	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508016.D 031112_D14.M Wed May 09 12:16:20 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508016.D Vial: 13
Acq On : 08 May 12 23:29 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



0508016.D 031112_D14.M Wed May 09 12:16:20 2012 Page 2

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Standards Data

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Level ID	File ID
A	J:\MS16\DATA\031112-521\0311005.D
B	J:\MS16\DATA\031112-521\0311006.D
C	J:\MS16\DATA\031112-521\0311007.D
D	J:\MS16\DATA\031112-521\0311008.D
E	J:\MS16\DATA\031112-521\0311009.D
F	J:\MS16\DATA\031112-521\0311010.D
G	J:\MS16\DATA\031112-521\0311011.D
H	J:\MS16\DATA\031112-521\0311012.D
I	J:\MS16\DATA\031112-521\0311013.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
N-Nitrosodimethylamine-d6							C	1.0	1.28	D	2.0	2.08	E	5.0	2.86
	F	7.0	3.66	G	10	4.73	H	15	4.42	I	20	5.18			
N-Nitrosodimethylamine				B	0.50	1.18	C	1.0	1.63	D	2.0	2.42	E	5.0	2.51
	F	7.0	3.11	G	10	3.75	H	15	3.50	I	20	3.88			

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201604
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16
Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
N-Nitrosodimethylamine-d6	SURR	Quadratic	COD	0.992		≥ 0.99	3.46		
N-Nitrosodimethylamine	MS	Quadratic	COD	0.994		≥ 0.99	2.75		

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Calibration Date: 03/11/2012
Date Analyzed: 03/12/2012

Second Source Calibration Verification
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration ID: CAL11326
Units: ug/L

File ID: J:\MS16\DATA\031112-521\0311014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine	10	7.7	2.75	2.42	NA	-23	± 30 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Injection Log

ICAL 11326

Directory: J:\MS16\DATA\031112-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0311.D	1.	DCM		11 Mar 2012 29:0
2	1	0311001.D	1.	DWSTD5-49H 0.25 PPB		11 Mar 2012 29:4
3	2	0311002.D	1.	DWSTD5-49I 0.5 PPB		11 Mar 2012 30:2
4	13	0311003.D	1.	K1201175-002 MS		11 Mar 2012 31:1
5		0311004.D	1.	DCM		11 Mar 2012 31:5
6	1	0311005.D	1.	DWSTD5-42H 0.25 PPB		11 Mar 2012 32:3
7	2	0311006.D	1.	DWSTD5-51J 0.5 PPB		11 Mar 2012 33:2
8	3	0311007.D	1.	DWSTD5-50A 1 PPB		11 Mar 2012 34:0
9	4	0311008.D	1.	DWSTD5-42J 2 PPB		11 Mar 2012 34:4
10	5	0311009.D	1.	DWSTD5-48P 5 PPB		11 Mar 2012 35:2
11	6	0311010.D	1.	DWSTD5-43P 7 PPB		12 Mar 2012 12:1
12	7	0311011.D	1.	DWSTD5-42G 10 PPB		12 Mar 2012 12:5
13	8	0311012.D	1.	DWSTD5-42L 15 PPB		12 Mar 2012 13:3
14	9	0311013.D	1.	DWSTD5-42M 20 PPB		12 Mar 2012 14:1
15	10	0311014.D	1.	DWSTD5-50B ICV 10		12 Mar 2012 15:0
16		0311015.D	1.	DCM		12 Mar 2012 15:4
17	3	0311016.D	1.	DWSTD5-49J 1 PPB		12 Mar 2012 16:2
18	11	0311017.D	1.	K1201175-001		12 Mar 2012 17:0
19	12	0311018.D	1.	K1201175-002		12 Mar 2012 17:5
20	13	0311019.D	1.	K1201175-002 MS		12 Mar 2012 18:3
21	14	0311020.D	1.	K1201175-002 DMS		12 Mar 2012 19:1

3/12/14

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311005.D Vial: 1
Acq On : 11 Mar 12 20:38 Operator: SVO-DW
Sample : DWSTD5-42H 0.25 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:54 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	27591	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	162	0.43	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.11	47	496	0.34	ug/L	100
5) NMEA	13.63	61	240	0.38	ug/L	98

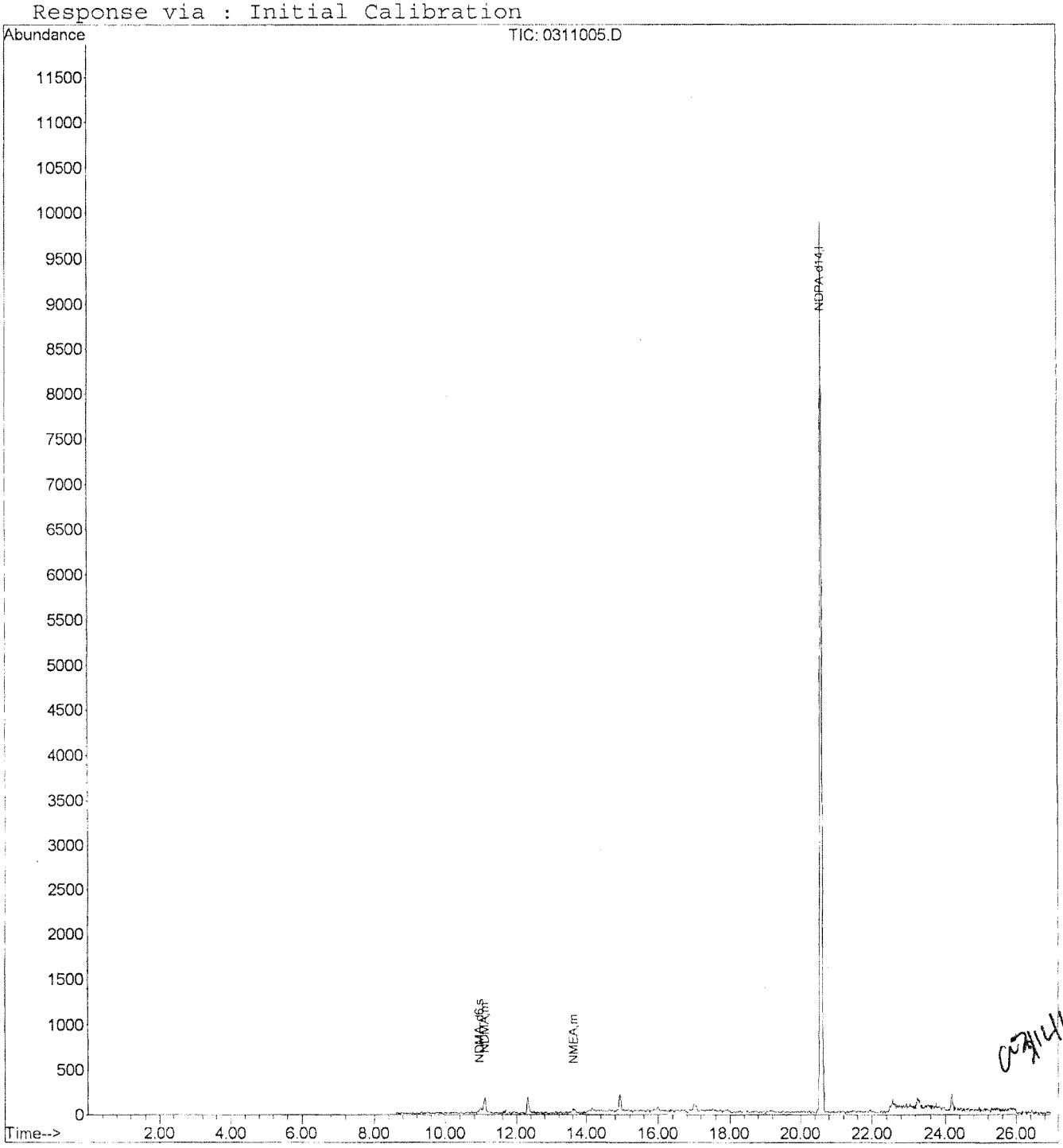
3/12/12

(#) = qualifier out of range (m) = manual integration
0311005.D 031112_D14.M Mon Mar 12 08:23:18 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311005.D Vial: 1
Acq On : 11 Mar 12 20:38 Operator: SVO-DW
Sample : DWSTD5-42H 0.25 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:18 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311005.D 031112_D14.M Mon Mar 12 08:23:19 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311006.D Vial: 2
Acq On : 11 Mar 12 21:21 Operator: SVO-DW
Sample : DWSTD5-51J 0.5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:54 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	28801	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	288	0.51	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	340	0.24	ug/L	99
5) NMEA	13.64	61	513	0.55	ug/L	98
8) NPYR	23.26	55	613	0.34	ug/L	100
9) NPIP	24.18	69	993	0.37	ug/L	99

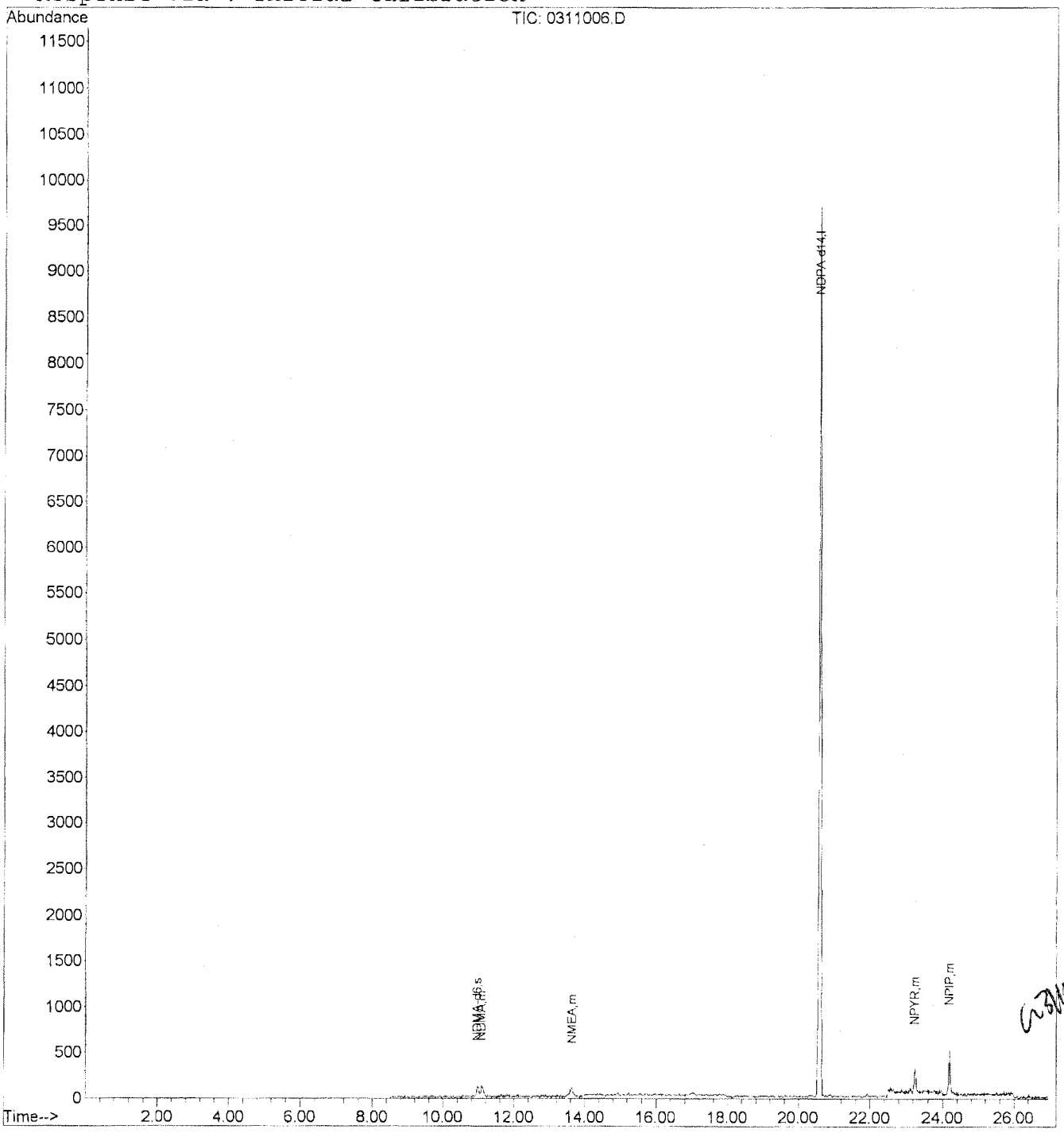
3/12/12

(#) = qualifier out of range (m) = manual integration
0311006.D 031112_D14.M Mon Mar 12 08:23:20 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311006.D Vial: 2
Acq On : 11 Mar 12 21:21 Operator: SVO-DW
Sample : DWSTD5-51J 0.5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



3/12/12

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311007.D Vial: 3
Acq On : 11 Mar 12 22:04 Operator: SVO-DW
Sample : DWSTD5-50A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

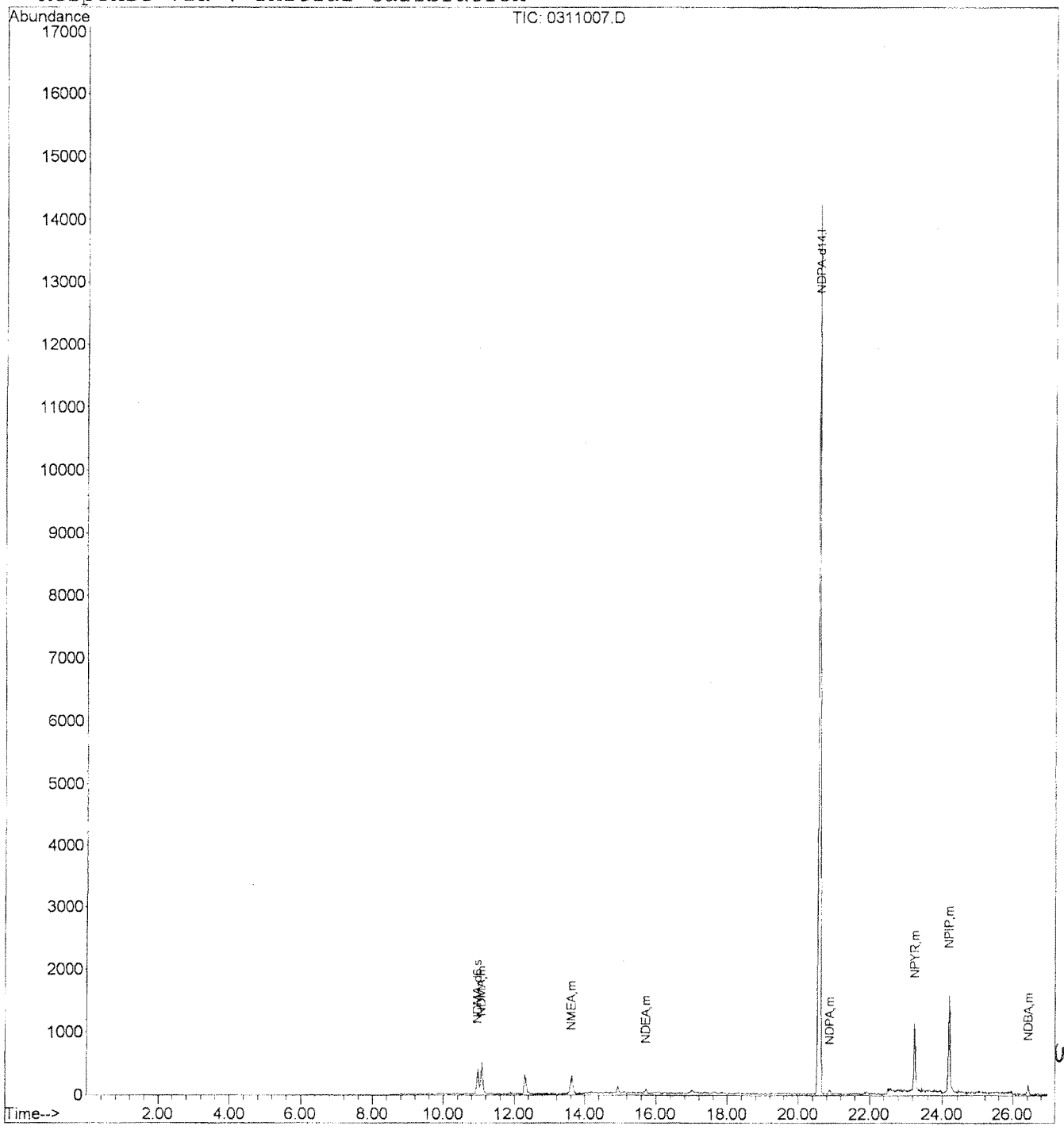
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	38374	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.97	50	981	0.83	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	1254	0.57	ug/L	98
5) NMEA	13.63	61	1290	0.84	ug/L	99
6) NDEA	15.73	75	176	1.02	ug/L	100
7) NDPA	20.89	89	119	0.47	ug/L	100
8) NPYR	23.25	55	2466	0.76	ug/L	100
9) NPIP	24.17	69	3591	0.68	ug/L	99
10) NDBA	26.43	57	181	0.76	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311007.D 031112_D14.M Mon Mar 12 08:23:22 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311007.D Vial: 3
Acq On : 11 Mar 12 22:04 Operator: SVO-DW
Sample : DWSTD5-50A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311007.D 031112_D14.M Mon Mar 12 08:23:22 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311008.D Vial: 4
Acq On : 11 Mar 12 22:46 Operator: SVO-DW
Sample : DWSTD5-42J 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.58	97	29381	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	2445	1.96	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	2840	1.57	ug/L	98
5) NMEA	13.63	61	2984	1.97	ug/L	99
6) NDEA	15.73	75	437	1.98	ug/L	100
7) NDPA	20.90	89	343	1.41	ug/L	100
8) NPYR	23.26	55	5523	1.89	ug/L	100
9) NPIP	24.18	69	8481	1.66	ug/L	99
10) NDBA	26.43	57	1130	1.19	ug/L	100

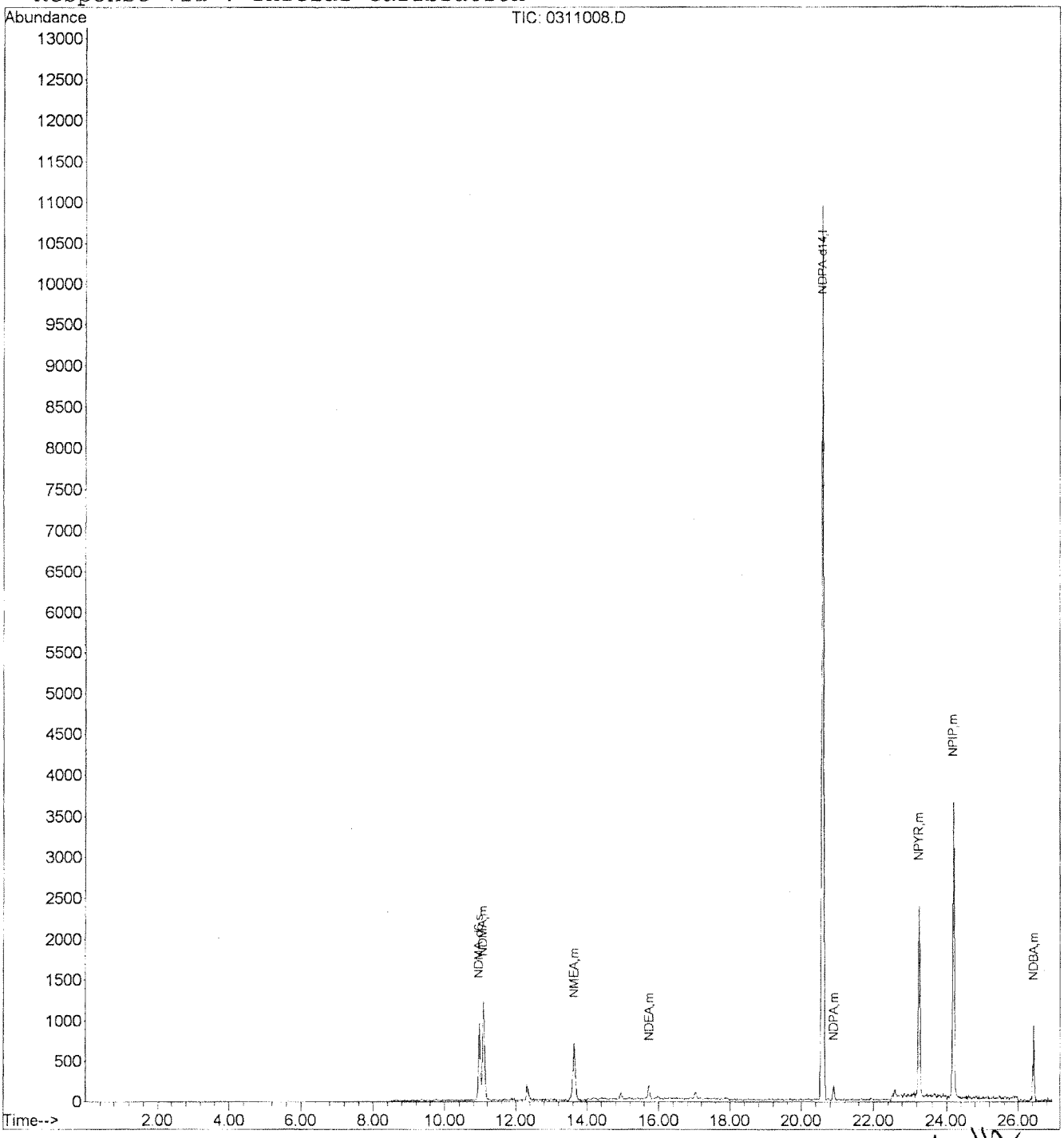
3/12/12

(#) = qualifier out of range (m) = manual integration
0311008.D 031112_D14.M Mon Mar 12 08:23:24 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311008.D Vial: 4
Acq On : 11 Mar 12 22:46 Operator: SVO-DW
Sample : DWSTD5-42J 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311009.D Vial: 5
Acq On : 11 Mar 12 23:28 Operator: SVO-DW
Sample : DWSTD5-48P 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	30053	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.95	50	8605	5.32	ug/L	0.06
Target Compounds						Qvalue
4) NDMA	11.07	47	7538	3.83	ug/L	98
5) NMEA	13.63	61	11231	5.57	ug/L	99
6) NDEA	15.73	75	1840	5.66	ug/L	100
7) NDPA	20.90	89	1496	4.59	ug/L	100
8) NPYR	23.26	55	17249	4.88	ug/L	99
9) NPIP	24.18	69	31523	4.94	ug/L	99
10) NDBA	26.43	57	8214	3.74	ug/L	100

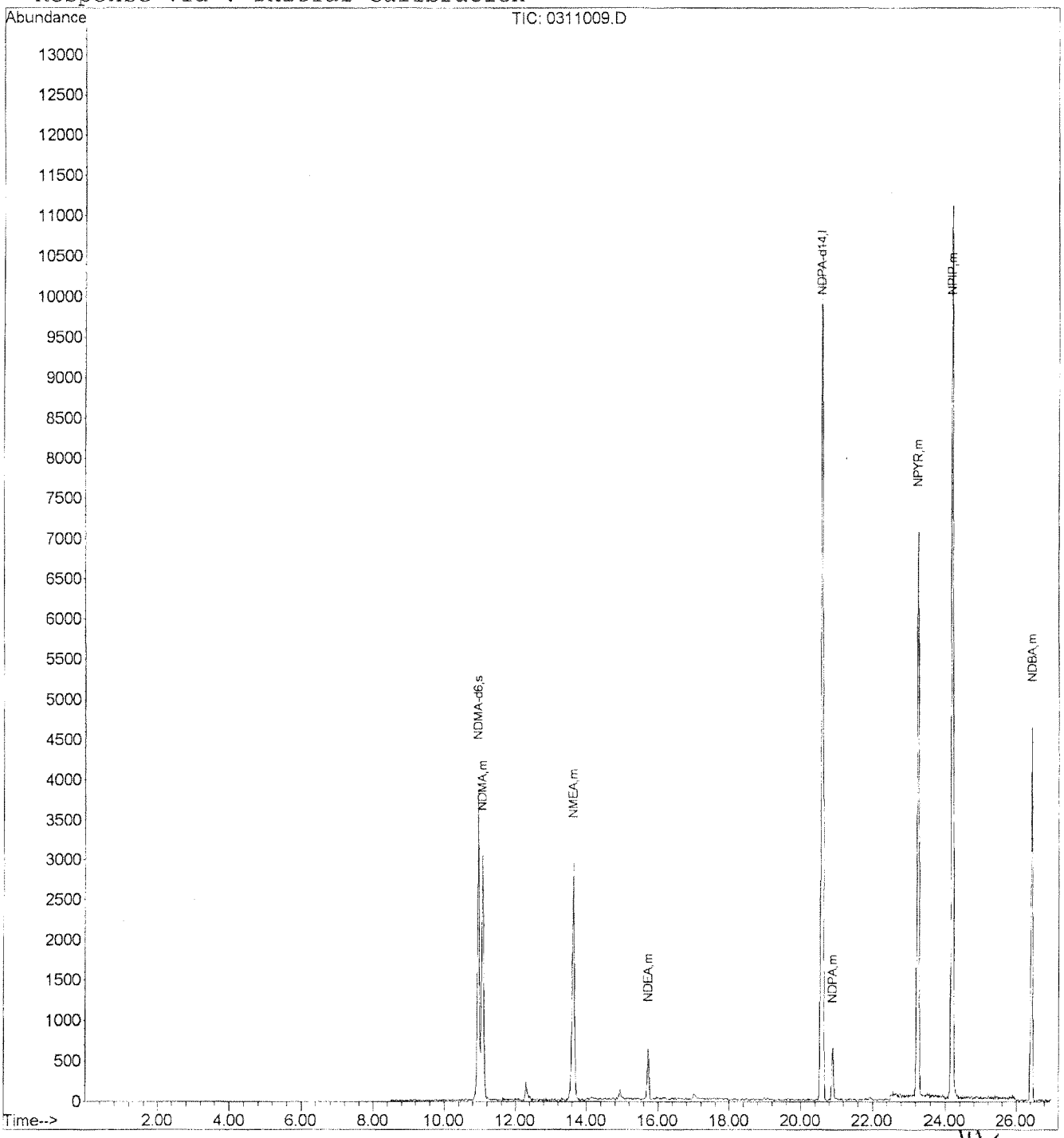
3/14/12

(#) = qualifier out of range (m) = manual integration
0311009.D 031112_D14.M Mon Mar 12 08:23:25 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311009.D Vial: 5
Acq On : 11 Mar 12 23:28 Operator: SVO-DW
Sample : DWSTD5-48P 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311009.D 031112_D14.M Mon Mar 12 08:23:26 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311010.D Vial: 6
Acq On : 12 Mar 2012 00:11 Operator: SVO-DW
Sample : DWSTD5-43P 7 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:56 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	24830	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.97	50	12740	8.40	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	10802	6.36	ug/L	100
5) NMEA	13.64	61	17148	8.81	ug/L	99
6) NDEA	15.71	75	2090	7.20	ug/L	100
7) NDPA	20.90	89	1908	6.34	ug/L	100
8) NPYR	23.26	55	22562	7.05	ug/L	100
9) NPIP	24.19	69	40716	7.10	ug/L	99
10) NDBA	26.43	57	12687	5.81	ug/L	100

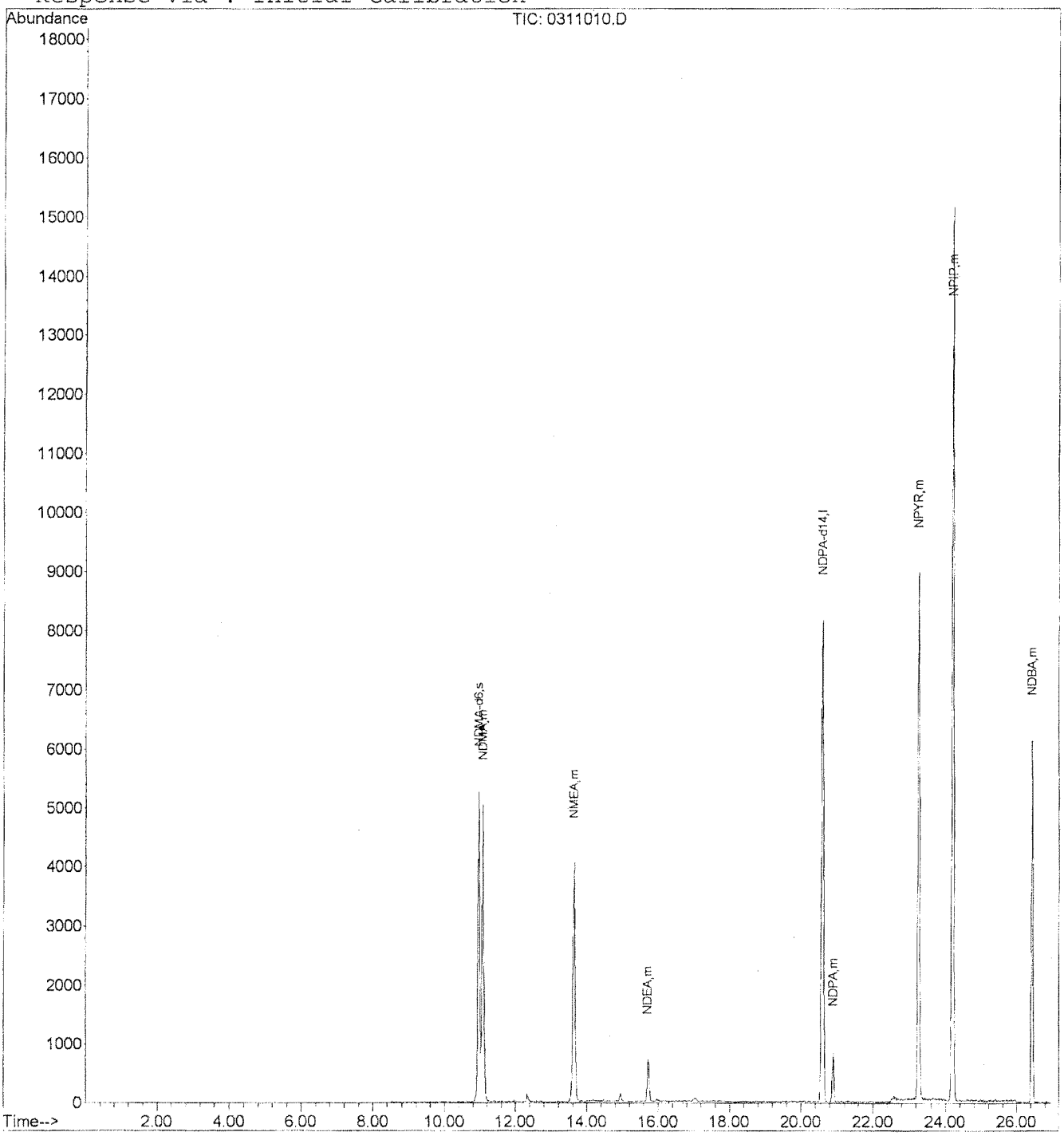
03/14/12

(#) = qualifier out of range (m) = manual integration
0311010.D 031112_D14.M Mon Mar 12 08:23:27 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311010.D Vial: 6
Acq On : 12 Mar 2012 00:11 Operator: SVO-DW
Sample : DWSTD5-43P 7 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311010.D 031112_D14.M Mon Mar 12 08:23:27 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311011.D Vial: 7
Acq On : 12 Mar 2012 00:53 Operator: SVO-DW
Sample : DWSTD5-42G 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:56 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	23331	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.96	50	22064	13.23	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	17491	10.29	ug/L	97
5) NMEA	13.63	61	27747	12.90	ug/L	99
6) NDEA	15.74	75	3394	10.82	ug/L	100
7) NDPA	20.89	89	3130	9.38	ug/L	100
8) NPYR	23.27	55	36060	10.55	ug/L	100
9) NPIP	24.18	69	61376	10.26	ug/L	99
10) NDBA	26.44	57	19158	8.10	ug/L	100

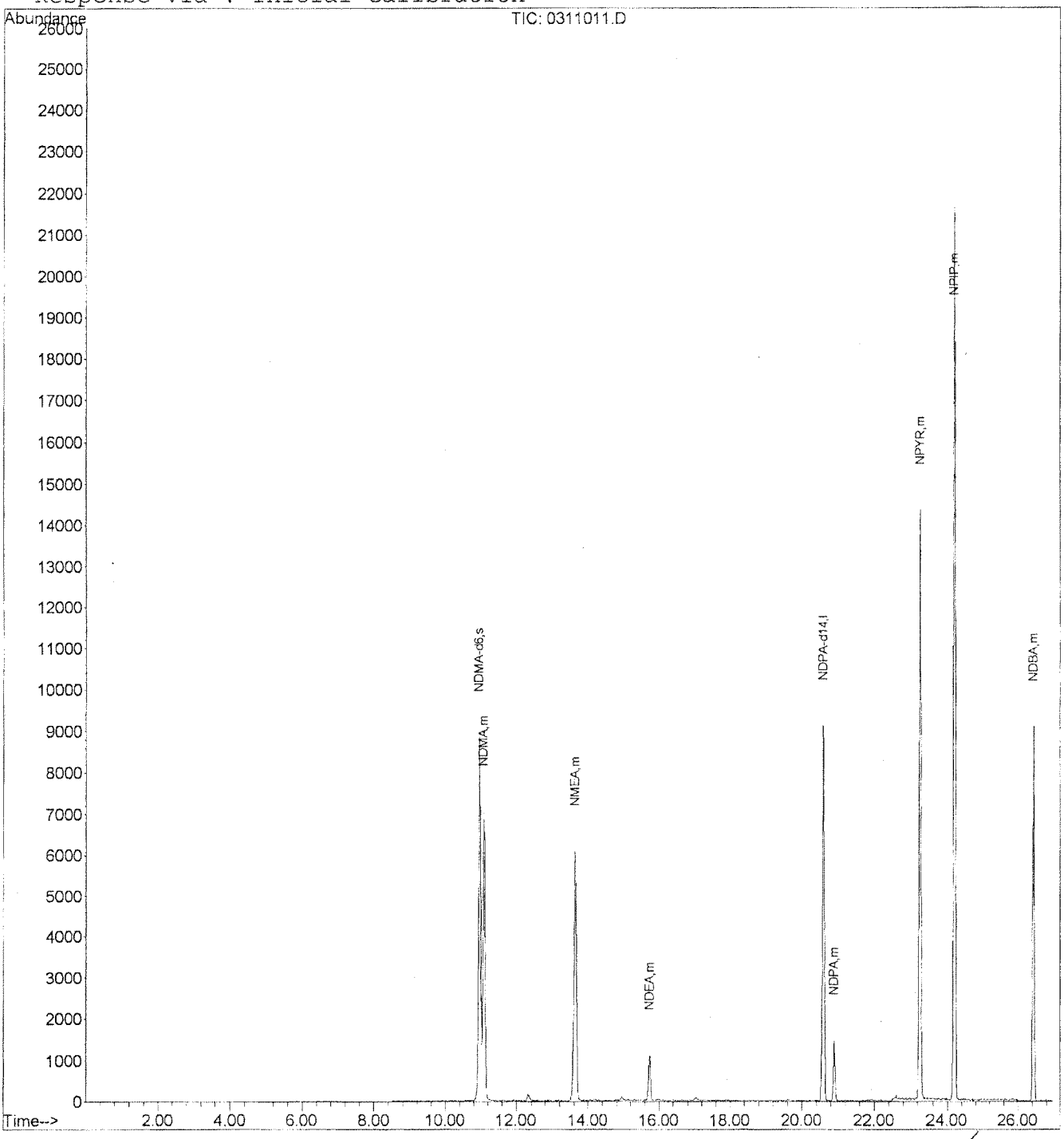
3/12/12

(#) = qualifier out of range (m) = manual integration
0311011.D 031112_D14.M Mon Mar 12 08:23:29 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311011.D Vial: 7
Acq On : 12 Mar 2012 00:53 Operator: SVO-DW
Sample : DWSTD5-42G 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311011.D 031112_D14.M Mon Mar 12 08:23:29 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311012.D Vial: 8
Acq On : 12 Mar 2012 01:36 Operator: SVO-DW
Sample : DWSTD5-42L 15 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.60	97	28601	50.00	ug/L	0.03
System Monitoring Compounds						
3) NDMA-d6	10.97	50	37928	16.79	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	29994	13.71	ug/L	100
5) NMEA	13.63	61	50017	16.69	ug/L	100
6) NDEA	15.71	75	6644	15.10	ug/L	100
7) NDPA	20.90	89	6020	12.66	ug/L	100
8) NPYR	23.26	55	67126	14.25	ug/L	100
9) NPIP	24.19	69	113622	13.93	ug/L	99
10) NDBA	26.43	57	42125	12.04	ug/L	100

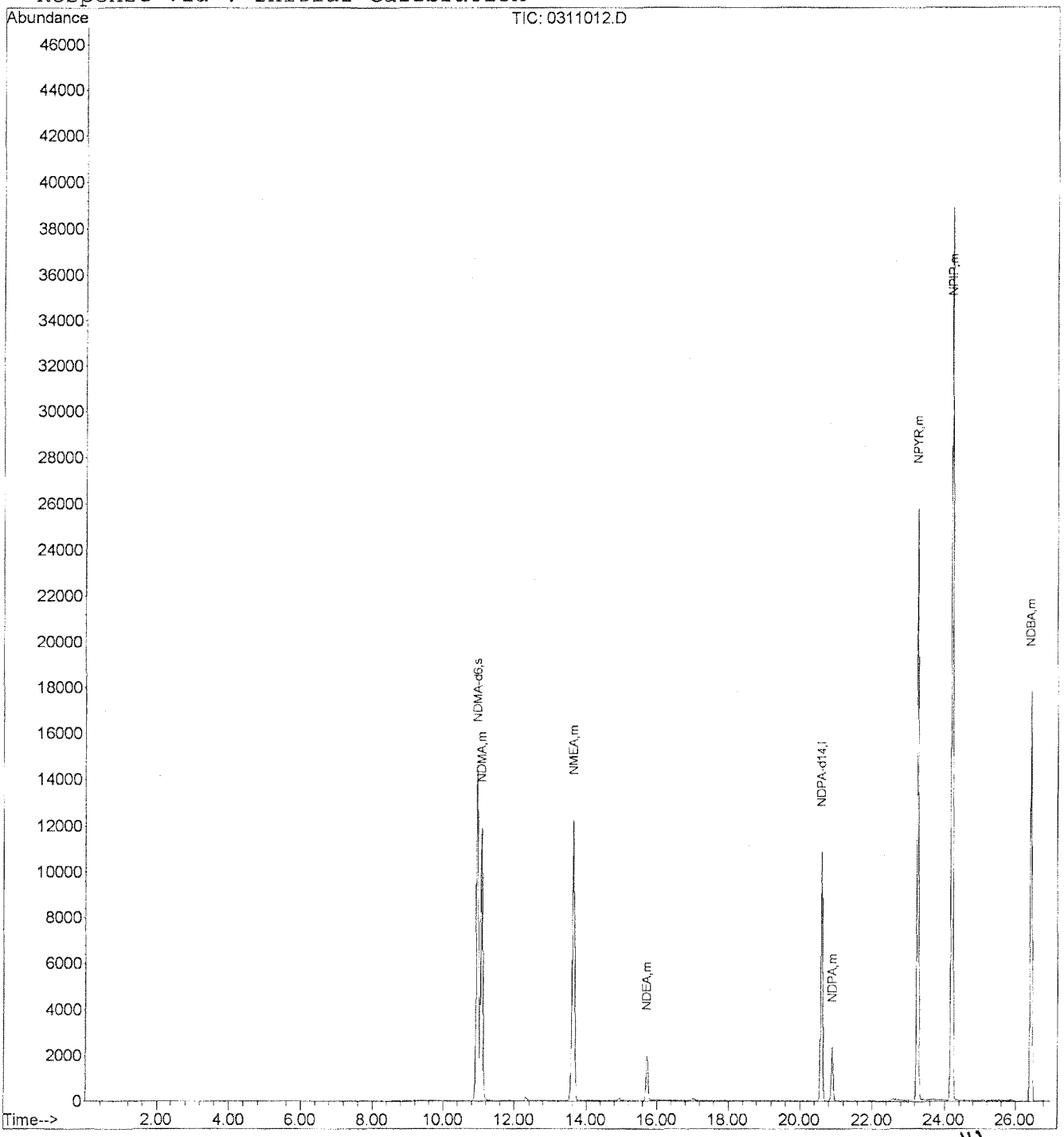
03/12/12

(#) = qualifier out of range (m) = manual integration
0311012.D 031112_D14.M Mon Mar 12 08:23:30 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311012.D Vial: 8
Acq On : 12 Mar 2012 01:36 Operator: SVO-DW
Sample : DWSTD5-42L 15 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311012.D 031112_D14.M Mon Mar 12 08:23:31 2012 Page 2

3/12/12

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311013.D Vial: 9
Acq On : 12 Mar 2012 02:18 Operator: SVO-DW
Sample : DWSTD5-42M 20 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.60	97	29929	50.00	ug/L	0.03
System Monitoring Compounds						
3) NDMA-d6	10.96	50	62054	22.72	ug/L	0.07
Target Compounds						Qvalue
4) NDMA	11.08	47	46487	18.92	ug/L	99
5) NMEA	13.64	61	86114	22.95	ug/L	99
6) NDEA	15.73	75	11096	20.76	ug/L	100
7) NDPA	20.90	89	9412	16.35	ug/L	100
8) NPYR	23.28	55	96259	17.71	ug/L	100
9) NPIP	24.19	69	172721	18.16	ug/L	100
10) NDBA	26.45	57	66211	15.71	ug/L	100

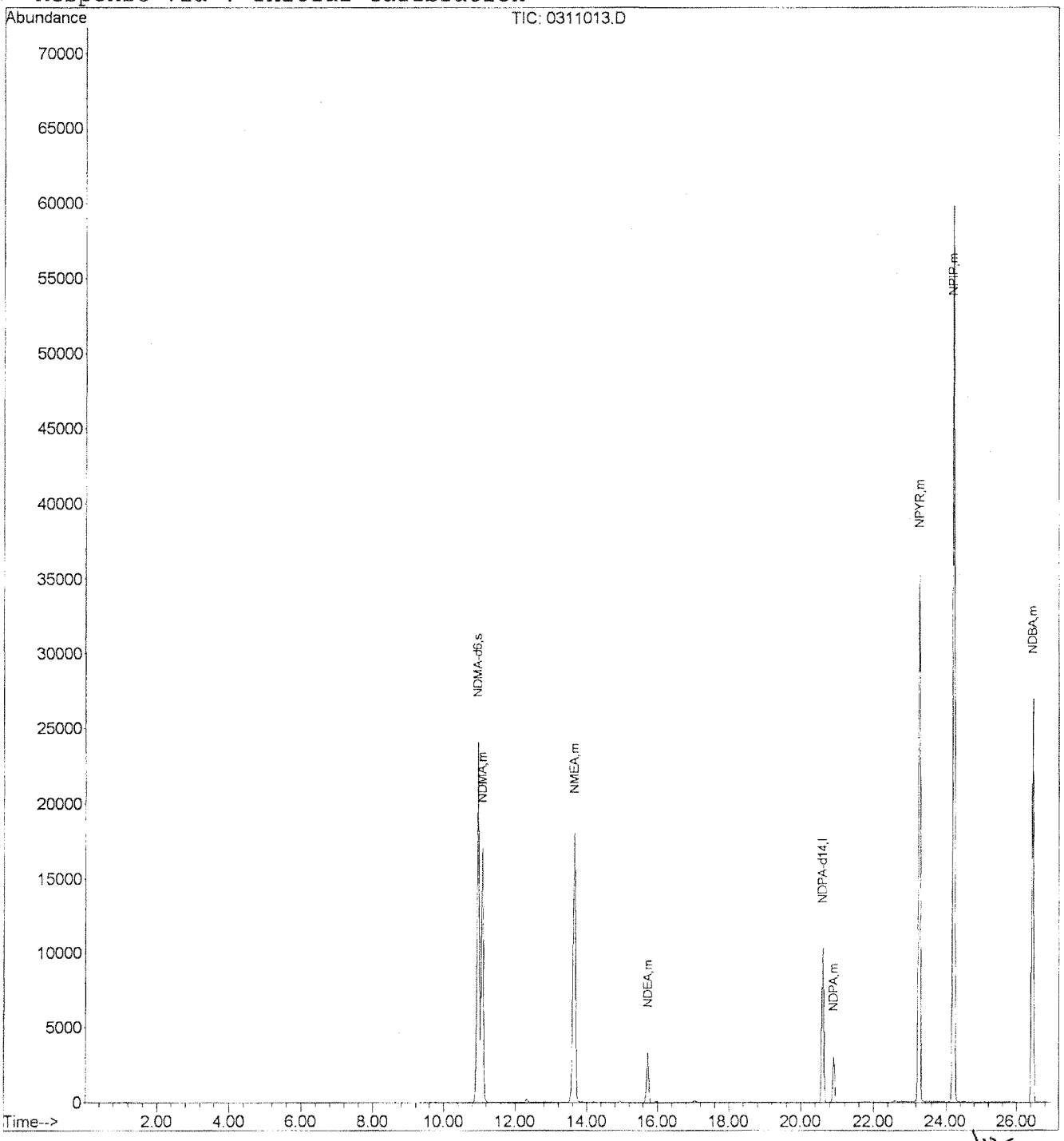
3/14/12

(#) = qualifier out of range (m) = manual integration
0311013.D 031112_D14.M Mon Mar 12 08:23:32 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311013.D Vial: 9
Acq On : 12 Mar 2012 02:18 Operator: SVO-DW
Sample : DWSTD5-42M 20 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\031112-521\0311014.D Vial: 10
Acq On : 12 Mar 2012 03:01 Operator: SVO-DW
Sample : DWSTD5-50B ICV 10 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:40:42 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	25007	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	0.00	50	0	0.00	ug/L	
Target Compounds						Qvalue
4) NDMA	11.08	47	12119	7.67	ug/L	97
5) NMEA	13.62	61	20016	8.05	ug/L	100
6) NDEA	15.71	75	2597	7.97	ug/L	100
7) NDPA	20.89	89	2542	8.49	ug/L	100
8) NPYR	23.26	55	28231	8.16	ug/L	94
9) NPIP	24.19	69	49441	8.21	ug/L	100
10) NDBA	26.43	57	15154	8.18	ug/L	100

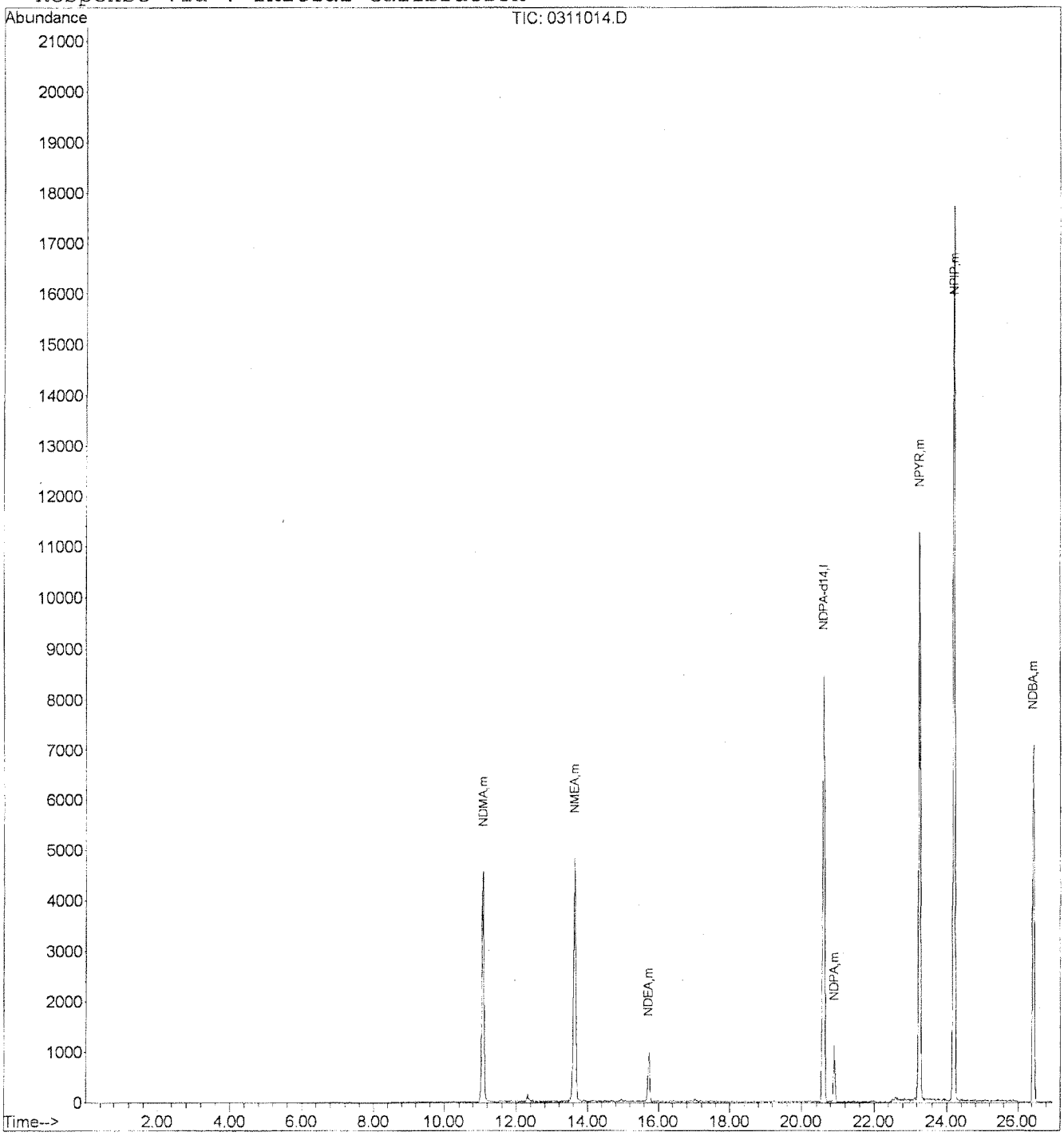
3/14/12

(#) = qualifier out of range (m) = manual integration
0311014.D 031112_D14.M Mon Mar 12 08:40:42 2012 Page 1

Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\031112-521\0311014.D Vial: 10
Acq On : 12 Mar 2012 03:01 Operator: SVO-DW
Sample : DWSTD5-50B ICV 10 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:40 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/01/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	0.98		3.46	0.816	NA	-2	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	0.89		2.75	1.53	NA	-11	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050112-521\0501001.D
Lab ID: KWG1204793-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/01/2012 17:04
Date Quantitated: 05/01/2012 17:33
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501001.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 17:04	**Quant Date:**	05/01/2012 17:33	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204793-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204793	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050112-521\0501.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	-0.06	97	32908	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.85			50	537	0.9800		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97			47	1005	0.8900			
1	N-Nitrosomethylethylamine	13.53			61	987	1.06			
1	N-Nitrosodiethylamine	15.64			75	157	1.04			
1	N-Nitrosodi-n-propylamine	20.83			89	153	1.23			
1	N-Nitrosopyrrolidine	23.21			55	2655	1.19			
1	N-Nitrosopiperidine	24.13			69	5111	1.32			
1	N-Nitrosodi-n-butylamine	26.38			57	612	1.38			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808

DataFile: J:\MS16\DATA\050112-521\0501001.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	0.816		0.9800	1.000	-2.0
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	1.527		0.8900	1.000	-11.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	1.500		1.060	1.000	6.0
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.239		1.040	1.000	4.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.232		1.230	1.000	23.0
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	4.034		1.190	1.000	19.0
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	7.766		1.320	1.000	32.0
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	0.930		1.380	1.000	38.0

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501001.D Vial: 1
Acq On : 01 May 12 17:04 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 01 17:33:02 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

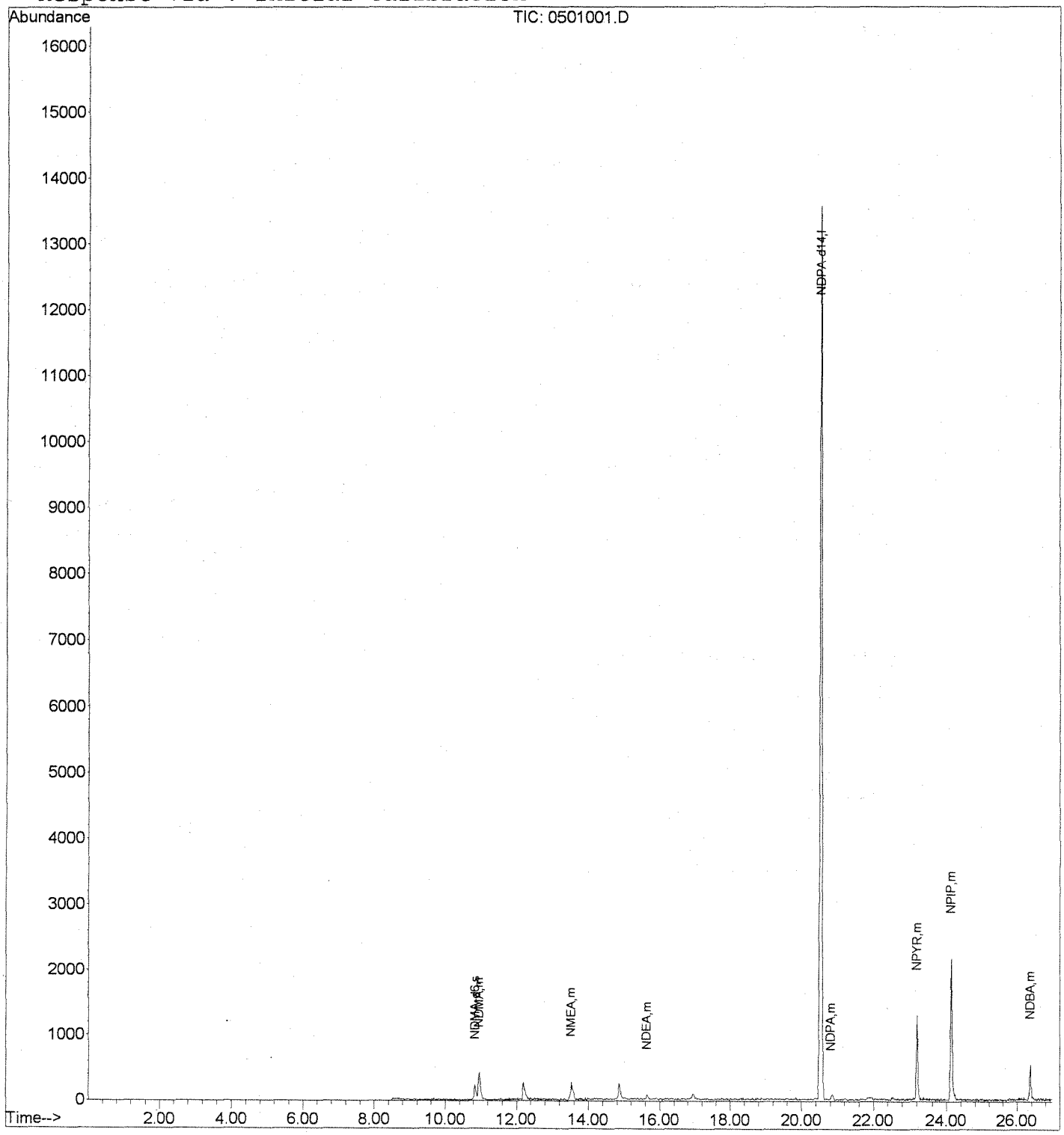
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	32908	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.85	50	537	0.98	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.97	47	1005	0.89	ug/L	98
5) NMEA	13.53	61	987	1.06	ug/L	99
6) NDEA	15.64	75	157	1.04	ug/L	100
7) NDPA	20.83	89	153	1.23	ug/L	99
8) NPYR	23.21	55	2655	1.19	ug/L	94
9) NPIP	24.13	69	5111	1.32	ug/L	100
10) NDBA	26.38	57	612	1.38	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501001.D 031112_D14.M Wed May 09 11:58:38 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501001.D Vial: 1
Acq On : 01 May 12 17:04 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 1 17:33 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	4.3		3.46	2.75	NA	-15	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	5.4		2.75	3.21	NA	8	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050112-521\0501013.D
Lab ID: KWG1204793-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/02/2012 01:33
Date Quantitated: 05/02/2012 16:17
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501013.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 01:33	**Quant Date:**	05/02/2012 16:17	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204793-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204793	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050112-521\0501.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	-0.04	97	32882	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.81			50	9051	4.27		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.93			47	10566	5.40			
1	N-Nitrosomethylethylamine	13.53			61	10533	4.04			
1	N-Nitrosodiethylamine	15.64			75	2140	5.55			
1	N-Nitrosodi-n-propylamine	20.83			89	1908	5.49			
1	N-Nitrosopyrrolidine	23.21			55	26354	6.09			
1	N-Nitrosopiperidine	24.13			69	51712	6.77			
1	N-Nitrosodi-n-butylamine	26.37			57	17691	7.53			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808
DataFile: J:\MS16\DATA\050112-521\0501013.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	2.753		4.270	5.000	-14.6
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	3.213		5.400	5.000	8.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	3.203		4.040	5.000	-19.2
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.651		5.550	5.000	11.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.580		5.490	5.000	9.8
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	8.015		6.090	5.000	21.8
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	1.6E+1		6.770	5.000	35.4
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	5.380		7.530	5.000	50.6 *

1 Compounds Failed CCV Criteria (12.50 Percent)

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501013.D Vial: 2
Acq On : 02 May 2012 01:33 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:17:00 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

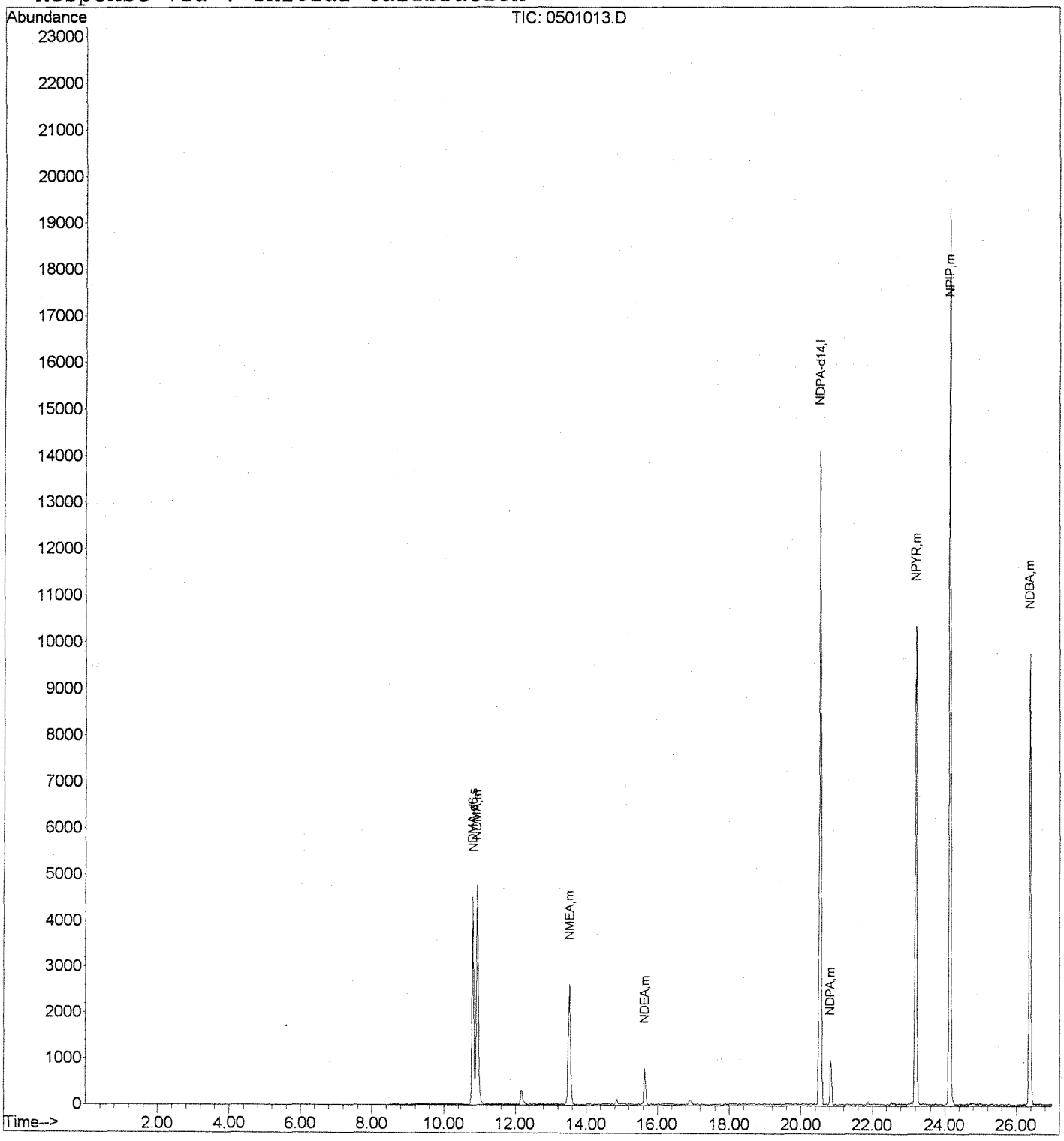
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	32882	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.81	50	9051	4.27	ug/L	-0.14
Target Compounds						Qvalue
4) NDMA	10.93	47	10566	5.40	ug/L	95
5) NMEA	13.53	61	10533	4.04	ug/L	100
6) NDEA	15.64	75	2140	5.55	ug/L	100
7) NDPA	20.83	89	1908	5.49	ug/L	100
8) NPYR	23.21	55	26354	6.09	ug/L	94
9) NPIP	24.13	69	51712	6.77	ug/L	100
10) NDBA	26.37	57	17691	7.53	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501013.D 031112_D14.M Wed May 09 11:58:50 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501013.D Vial: 2
Acq On : 02 May 2012 01:33 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 2 16:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.3		3.46	1.80	NA	25	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.3		2.75	2.78	NA	30	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050212-521\0502001.D
Lab ID: KWG1204794-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/02/2012 17:19
Date Quantitated: 05/03/2012 13:45
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502001.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 17:19	**Quant Date:**	05/03/2012 13:45	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204794-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204794	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	-0.06	97	30450	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.83			50	1094	1.25		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97			47	1694	1.30			
1	N-Nitrosomethylethylamine	13.57			61	1266	1.19			
1	N-Nitrosodiethylamine	15.65			75	178	1.13			
1	N-Nitrosodi-n-propylamine	20.87			89	197	1.39			
1	N-Nitrosopyrrolidine	23.22			55	3470	1.43			
1	N-Nitrosopiperidine	24.14			69	5823	1.47			
1	N-Nitrosodi-n-butylamine	26.38			57	524	1.36			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808

DataFile: J:\MS16\DATA\050212-521\0502001.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	1.796		1.250	1.000	25.0
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	2.782		1.300	1.000	30.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	2.079		1.190	1.000	19.0
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.292		1.130	1.000	13.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.323		1.390	1.000	39.0
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	5.698		1.430	1.000	43.0
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	9.562		1.470	1.000	47.0
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	0.860		1.360	1.000	36.0

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502001.D Vial: 1
Acq On : 02 May 12 17:19 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:45:01 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

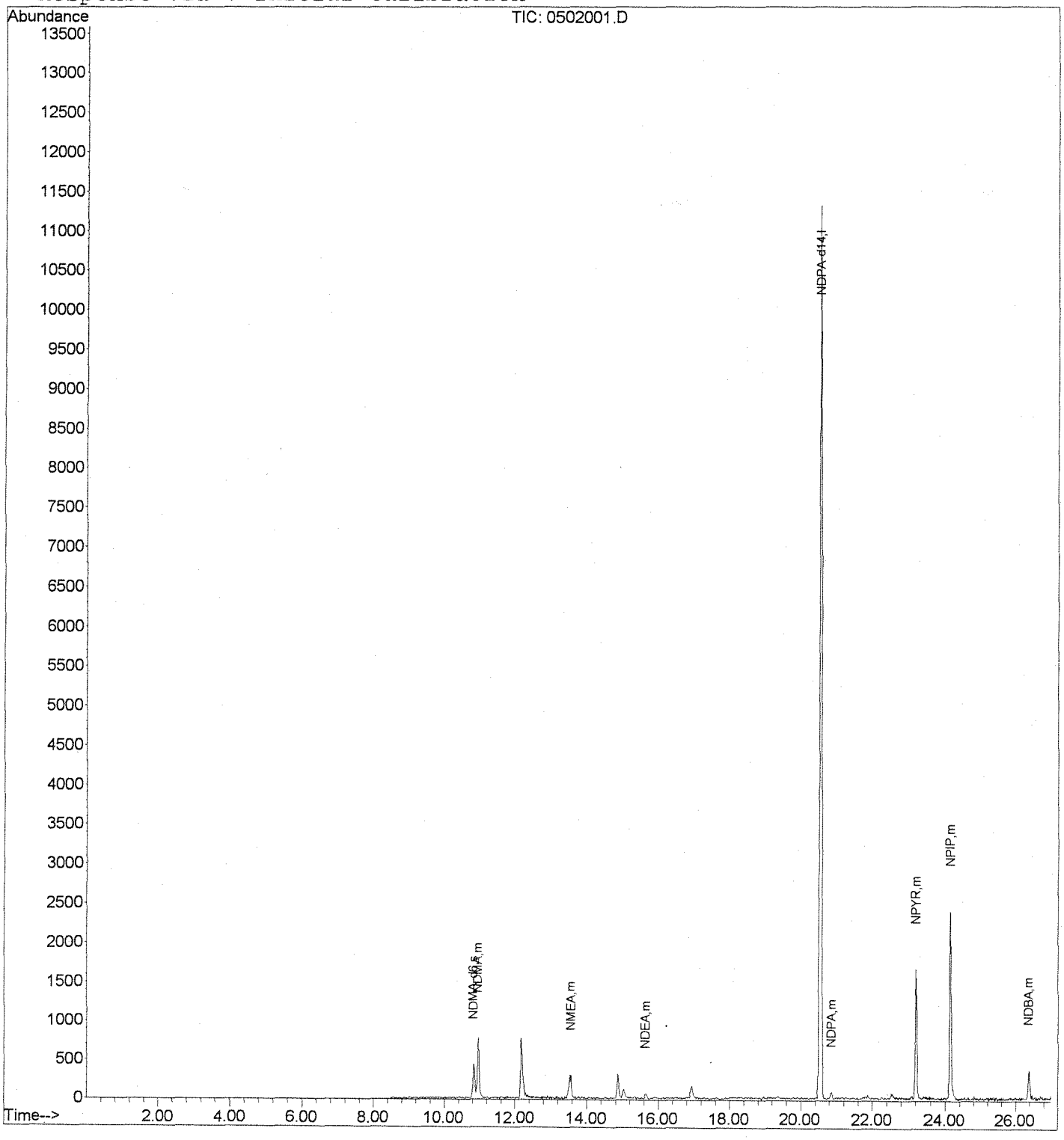
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	30450	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.83	50	1094	1.25	ug/L	-0.12
Target Compounds						Qvalue
4) NDMA	10.97	47	1694	1.30	ug/L	98
5) NMEA	13.57	61	1266	1.19	ug/L	100
6) NDEA	15.65	75	178	1.13	ug/L	100
7) NDPA	20.87	89	197	1.39	ug/L	100
8) NPYR	23.22	55	3470	1.43	ug/L	97
9) NPIP	24.14	69	5823	1.47	ug/L	100
10) NDBA	26.38	57	524	1.36	ug/L	100

(#) = qualifier out of range (m) = manual integration
0502001.D 031112_D14.M Wed May 09 12:11:50 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502001.D Vial: 1
Acq On : 02 May 12 17:19 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:45 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502008.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.1		3.46	3.43	NA	1	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.3		2.75	3.88	NA	27	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050212-521\0502008.D
Lab ID: KWG1204794-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/02/2012 22:16
Date Quantitated: 05/03/2012 13:46
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502008.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 22:16	**Quant Date:**	05/03/2012 13:46	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204794-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204794	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	-0.02	97	27043	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.84			50	9283	5.06		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.96			47	10492	6.34			
1	N-Nitrosomethylethylamine	13.55			61	9530	4.33			
1	N-Nitrosodiethylamine	15.67			75	1764	5.56			
1	N-Nitrosodi-n-propylamine	20.85			89	1569	5.49			
1	N-Nitrosopyrrolidine	23.23			55	24098	6.66			
1	N-Nitrosopiperidine	24.15			69	49139	7.64			
1	N-Nitrosodi-n-butylamine	26.40			57	15150	7.74			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808
DataFile: J:\MS16\DATA\050212-521\0502008.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	3.433		5.060	5.000	1.2
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	3.880		6.340	5.000	26.8
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	3.524		4.330	5.000	-13.4
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.652		5.560	5.000	11.2
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.580		5.490	5.000	9.8
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	8.911		6.660	5.000	33.2
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	1.8E+1		7.640	5.000	52.8 *
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	5.602		7.740	5.000	54.8 *

2 Compounds Failed CCV Criteria (25.00 Percent)

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502008.D Vial: 2
Acq On : 02 May 12 22:16 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:46:21 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

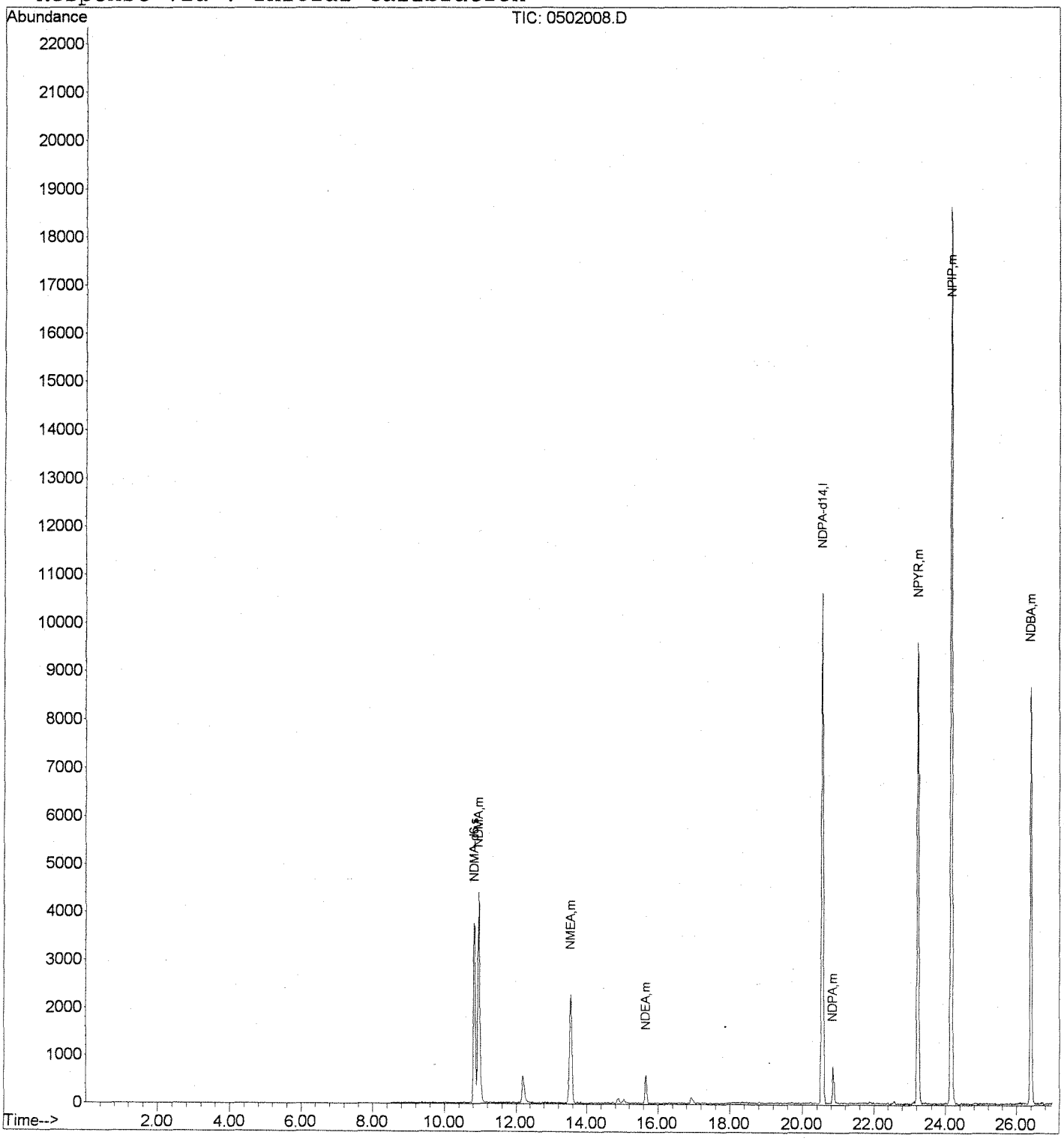
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	27043	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.84	50	9283	5.06	ug/L	-0.11
Target Compounds						Qvalue
4) NDMA	10.96	47	10492	6.34	ug/L	95
5) NMEA	13.55	61	9530	4.33	ug/L	100
6) NDEA	15.67	75	1764	5.56	ug/L	100
7) NDPA	20.85	89	1569	5.49	ug/L	100
8) NPYR	23.23	55	24098	6.66	ug/L	94
9) NPIP	24.15	69	49139	7.64	ug/L	100
10) NDBA	26.40	57	15150	7.74	ug/L	100

(#) = qualifier out of range (m) = manual integration
0502008.D 031112_D14.M Wed May 09 12:11:57 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502008.D Vial: 2
Acq On : 02 May 12 22:16 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:46 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/08/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.2		3.46	1.72	NA	23	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.2		2.75	2.36	NA	16	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050812-521\0508013.D
Lab ID: KWG1204795-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/08/2012 21:22
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508013.D			**Instrument:**	MS16
Acqu Date:	05/08/2012 21:22	**Quant Date:**	05/09/2012 12:13	**Vial:**	3
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204795-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204795	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.51	-0.08	97	28678	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.88			50	988	1.23		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.99			47	1353	1.16			
1	N-Nitrosomethylethylamine	13.57			61	1110	1.16			
1	N-Nitrosodiethylamine	15.64			75	174	1.15			
1	N-Nitrosodi-n-propylamine	20.83			89	159	1.30			
1	N-Nitrosopyrrolidine	23.19			55	2383	1.21			
1	N-Nitrosopiperidine	24.11			69	4536	1.34			
1	N-Nitrosodi-n-butylamine	26.34			57	350	1.28			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808
DataFile: J:\MS16\DATA\050812-521\0508013.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	1.723		1.230	1.000	23.0
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	2.359		1.160	1.000	16.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	1.935		1.160	1.000	16.0
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.303		1.150	1.000	15.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.277		1.300	1.000	30.0
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	4.155		1.210	1.000	21.0
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	7.909		1.340	1.000	34.0
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	0.610		1.280	1.000	28.0

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508013.D Vial: 3
Acq On : 08 May 12 21:22 Operator: SVO-DW
Sample : DWSTD5-55J 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:30 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

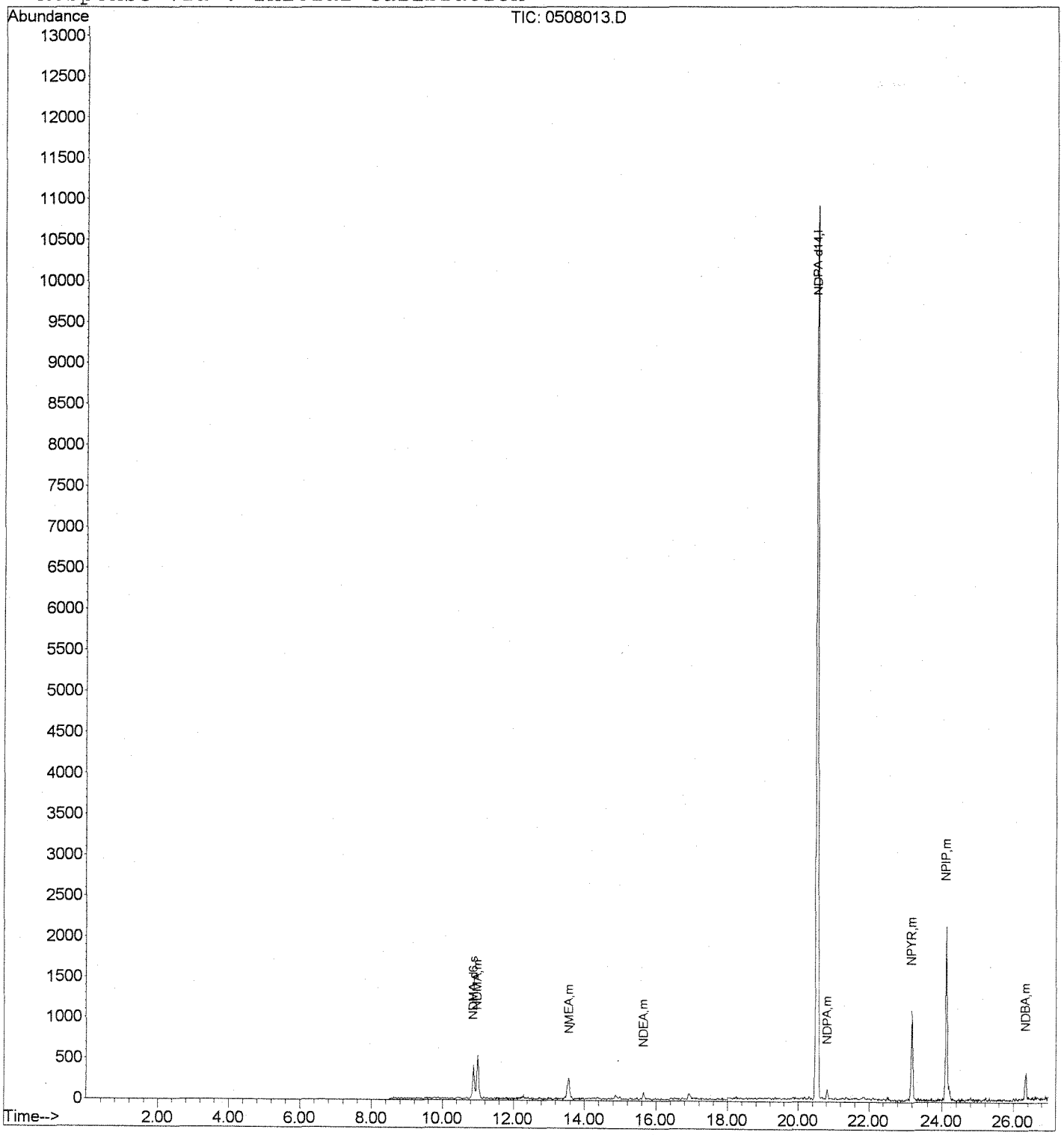
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.51	97	28678	50.00	ug/L	-0.07
System Monitoring Compounds						
3) NDMA-d6	10.88	50	988	1.23	ug/L	-0.08
Target Compounds						Qvalue
4) NDMA	10.99	47	1353	1.16	ug/L	95
5) NMEA	13.57	61	1110	1.16	ug/L	99
6) NDEA	15.64	75	174	1.15	ug/L	100
7) NDPA	20.83	89	159	1.30	ug/L	100
8) NPYR	23.19	55	2383	1.21	ug/L	94
9) NPIP	24.11	69	4536	1.34	ug/L	100
10) NDBA	26.34	57	350	1.28	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508013.D 031112_D14.M Wed May 09 12:16:16 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508013.D Vial: 3
Acq On : 08 May 12 21:22 Operator: SVO-DW
Sample : DWSTD5-55J 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/09/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508024.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.5		3.46	3.84	NA	10	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.6		2.75	4.04	NA	31	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050812-521\0508024.D
Lab ID: KWG1204795-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/09/2012 08:53
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508024.D			**Instrument:**	MS16
Acqu Date:	05/09/2012 08:53	**Quant Date:**	05/09/2012 12:13	**Vial:**	5
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204795-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204795	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.51	-0.06	97	27403	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.87			50	10510	5.51		70-130	NA	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97			47	11071	6.57			
1	N-Nitrosomethylethylamine	13.54			61	11895	5.07			
1	N-Nitrosodiethylamine	15.62			75	2070	6.23			
1	N-Nitrosodi-n-propylamine	20.81			89	1950	6.43			
1	N-Nitrosopyrrolidine	23.19			55	26653	7.18			
1	N-Nitrosopiperidine	24.10			69	50086	7.68			
1	N-Nitrosodi-n-butylamine	26.33			57	17435	8.47			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808

DataFile: J:\MS16\DATA\050812-521\0508024.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	3.835		5.510	5.000	10.2
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	4.040		6.570	5.000	31.4
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	4.341		5.070	5.000	1.4
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.755		6.230	5.000	24.6
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.712		6.430	5.000	28.6
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	9.726		7.180	5.000	43.6
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	1.8E+1		7.680	5.000	53.6 *
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	6.362		8.470	5.000	69.4 *

2 Compounds Failed CCV Criteria (25.00 Percent)

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508024.D Vial: 5
Acq On : 09 May 2012 08:53 Operator: SVO-DW
Sample : DWSTD5-55L 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:33 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

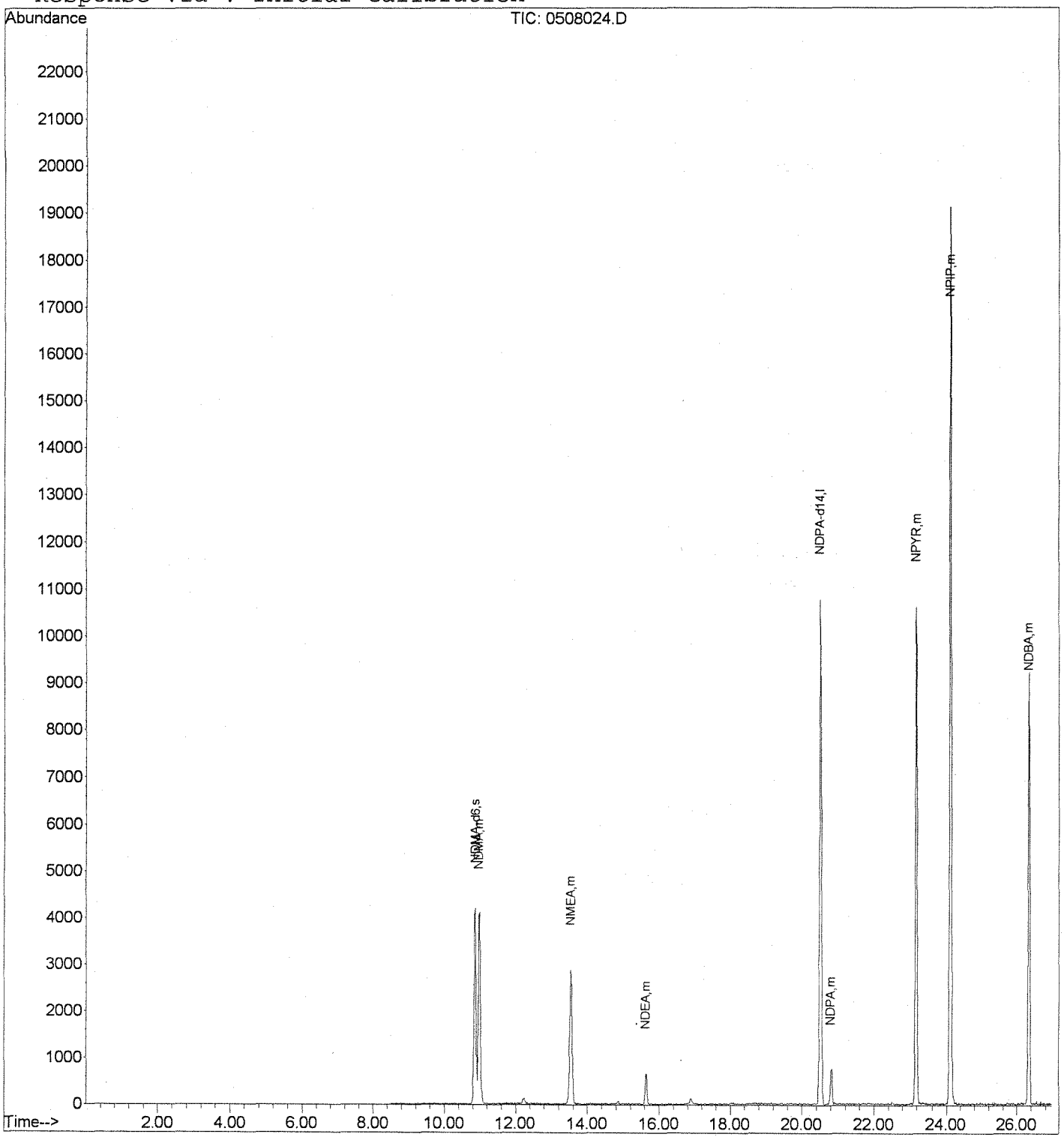
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.51	97	27403	50.00	ug/L	-0.07
System Monitoring Compounds						
3) NDMA-d6	10.87	50	10510	5.51	ug/L	-0.08
Target Compounds						Qvalue
4) NDMA	10.97	47	11071	6.57	ug/L	97
5) NMEA	13.54	61	11895	5.07	ug/L	100
6) NDEA	15.62	75	2070	6.23	ug/L	100
7) NDPA	20.81	89	1950	6.43	ug/L	100
8) NPYR	23.19	55	26653	7.18	ug/L	97
9) NPIP	24.10	69	50086	7.68	ug/L	100
10) NDBA	26.33	57	17435	8.47	ug/L	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508024.D Vial: 5
Acq On : 09 May 2012 08:53 Operator: SVO-DW
Sample : DWSTD5-55L 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Sample Prep and Screen Data

Preparation Information

Group ID:	KWG1204391	**Prep Method:**	METHOD	**Prep Date:**	04/30/12 08:00
Department:	Semivoa GC				

Lab Code	Client ID	Product	Matrix	Amt. Ext.	Final Vol.
KWG1204391-1	Matrix Spike	521 Nitrosamines	WATER	500ml	1ml
KWG1204391-2	Duplicate Matrix Spike	521 Nitrosamines	WATER	500ml	1ml
KWG1204391-3	Lab Control Sample	521 Nitrosamines	WATER	500ml	1ml
KWG1204391-4	Method Blank	521 Nitrosamines	WATER	500ml	1ml
P1201573-002	MW-16	521 Nitrosamines	WATER	500ml	1ml
P1201573-003	DUPE-8-2Q12	521 Nitrosamines	WATER	500ml	1ml
P1201588-002	MW-13	521 Nitrosamines	WATER	500ml	1ml
P1201604-005	MW-24-1	521 Nitrosamines	WATER	500ml	1ml
P1201630-005	MW-4-1	521 Nitrosamines	WATER	500ml	1ml

Lab Code	Parent Lab Code	Comments
KWG1204391-1	P1201573-002	
KWG1204391-2	P1201573-002	

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
KWG1204391-1	1121342	DWSTD05-35 I	10uL	DWSTD05-55 B	100uL	
KWG1204391-2	1121343	DWSTD05-35 I	10uL	DWSTD05-55 B	100uL	
KWG1204391-3	1121344	DWSTD05-35 I	10uL	DWSTD05-55 B	100uL	
KWG1204391-4	1121345	DWSTD05-35 I	10uL			
P1201573-002	1121338	DWSTD05-35 I	10uL			
P1201573-003	1121339	DWSTD05-35 I	10uL			
P1201588-002	1121340	DWSTD05-35 I	10uL			
P1201604-005	1121341	DWSTD05-35 I	10uL			
P1201630-005	1121337	DWSTD05-35 I	10uL			

Comments:

Started By: RHayes Assisted By:

Completed By: RHayes Assisted By:

Training: Yes / No (Yes circled) — Yes / No

Reviewed By: [signature] Date: 5/9/12 Storage: 215A - F. 06

Chain of Custody

Relinquished By: [signature] Date: 4/30/12

Received By: [signature] Date: 5/1/12

~~Extracts~~ Examined: Yes (circled) / No

COLUMBIA ANALYTICAL SERVICES, INC.

Service Request No.: As listed **Date Extracted:** 4-30-12

Analyst: Rob Hayes **Method:** EPA 521

StarLims Run :

Nitrosoamines in Water

Lab ID	Client ID ISTD:	Sample Volume (mL)	Surr (mL)	MS	Residual Chlorine	Final Volume mL
P1201573-002	10 mL	500	10		<0.1	1
F -003		500	10		<0.1	1
P1201588-002		500	10		<0.1	1
P1201604-005		500	10		<0.1	1
P1201630-005		500	10		<0.1	1
MB		500	10		<0.1	1
LCS		500	10	100	<0.1	1
P1201573-002	MS	500	10	100	<0.1	1
P1201573-002	DMS	500	10	100	<0.1	1
MRL		500	10	10	<0.1	1

Comments:

DCM Lot # DE597 **MeOH Lot #** DE997 **Sulfate Lot #** 2/14/12 - J49603

SPE Cartridge Lot # 94627-EL

Surrogate ID: DuoTD05-35 I 1ppm XP 5/15/12

Spike ID : DuoTD05-35B 100ppb XP 10/30/12 ISTD: DuoTD05-496 5ppm X1 7/9/12

Vial: Amber **Extract Storage:** 215A-F-06 **Extracts Received:** 4/11/12

Reviewed By:	**Date:** 5/9/12

Preparation Information Benchsheet

Prep Run#: 156720 **Prep WorkFlow:** OrgExtDW(14/28) **Status:** Draft

Team: Semivoa GC **Prep Method:** Method **Prep Date/Time:** 4/30/12 09:18 AM

Number of Copies to make: 4

#	Lab Code	Client ID	B#	√	Test	Matrix	Amt Ext.	pH	Int Vol	Final Vol	Surr Added	Spike Added
1	P1201573-002	MW-16	.02	✓	521/Nitrosamines	Water						
2	P1201573-003	DUPE-8-2Q12	.01	✓	521/Nitrosamines	Water						
3	P1201588-002	MW-13	.02	✓	521/Nitrosamines	Water						
4	P1201604-005	MW-24-1	.01	✓	521/Nitrosamines	Water						
5	P1201630-005	MW-4-1	.01	✓	521/Nitrosamines	Water						

Comments: used for ID only

Surrogate ID: _____ Spike ID: _____

Witnessed By: _____

Analyst: _____ Assisted By: _____

Injection Log

Directory: J:\MS16\DATA\050112-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0501.D	1.	DCM	Run # 290877	01 May 2012 28:2
2	1	0501001.D	1.	DWSTD5-53A 1 PPB		01 May 2012 29:0
3	3	0501002.D	1.	043012-MRL		01 May 2012 29:4
4	4	0501003.D	1.	043012-MB – rerun Surr low –		01 May 2012 30:2
5	5	0501004.D	1.	043012-LCS – rerun Surr low		01 May 2012 31:1
6	6	0501005.D	1.	P1201573-002 – rerun Surr low –		01 May 2012 31:5
7	7	0501006.D	1.	P1201573-002 MS		01 May 2012 32:3
8	8	0501007.D	1.	P1201573-002 DMS		01 May 2012 33:1
9	9	0501008.D	1.	P1201573-003		01 May 2012 34:0
10	10	0501009.D	1.	P1201588-002		01 May 2012 34:4
11	11	0501010.D	1.	P1201604-005		01 May 2012 35:2
12	12	0501011.D	1.	P1201630-005		02 May 2012 12:0
13		0501012.D	1.	CARRYOVER BLANK		02 May 2012 12:5
14	2	0501013.D	1.	DWSTD5-53C 5 PPB		02 May 2012 13:3

Injection Log

Directory: J:\MS16\DATA\050212-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0502.D	1.	DCM		02 May 2012 28:3
2	1	0502001.D	1.	DWSTD5-53A 1 PPB		02 May 2012 29:1
3	4	0502002.D	1.	043012-MB		02 May 2012 30:0
4	5	0502003.D	1.	043012-LCS – ~~NR, report only~~ report Q reads NR rerun		02 May 2012 30:4
5	6	0502004.D	1.	P1201573-002		02 May 2012 31:2
6	7	0502005.D	1.	P1201573-002 MS		02 May 2012 32:0
7	8	0502006.D	1.	P1201573-002 DMS - NR rerun		02 May 2012 32:5
8		0502007.D	1.	CARRYOVER BLANK		02 May 2012 33:3
9	2	0502008.D	1.	DWSTD5-53C 5 PPB		02 May 2012 34:1

Injection Log

Directory: J:\MS16\DATA\050812-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0508.D	1.	DCM		08 May 2012 23:0
2	1	0508001.D	1.	DWSTD5-55H 0.25 PPB		08 May 2012 23:4
3	2	0508002.D	1.	DWSTD5-55I 0.5 PPB	NR reinject	08 May 2012 25:3
4	3	0508003.D	1.	DWSTD5-55J 1 PPB		08 May 2012 26:1
5	2	0508004.D	1.	DWSTD5-55I 0.5 PPB		08 May 2012 27:0
6	4	0508005.D	1.	DWSTD5-55K 2 PPB		08 May 2012 27:4
7	5	0508006.D	1.	DWSTD5-55L 5 PPB		08 May 2012 28:2
8	6	0508007.D	1.	DWSTD5-55M 7 PPB		08 May 2012 29:0
9	7	0508008.D	1.	DWSTD5-55N 10 PPB	NR, not needed	08 May 2012 29:5
10	8	0508009.D	1.	DWSTD5-55O 15 PPB		08 May 2012 30:3
11	9	0508010.D	1.	DWSTD5-55P 20 PPB		08 May 2012 31:1
12	10	0508011.D	1.	DWSTD5-56B ICV 10		08 May 2012 31:5
13		0508012.D	1.	DCM		08 May 2012 32:3
14	3	0508013.D	1.	DWSTD5-55J 1 PPB		08 May 2012 33:2
15	11	0508014.D	1.	043012-MRL		08 May 2012 34:0
16	12	0508015.D	1.	043012-MB		08 May 2012 34:4
17	13	0508016.D	1.	043012-LCS	(Surr only)	08 May 2012 35:2
18	14	0508017.D	1.	P1201573-002		09 May 2012 12:1
19	15	0508018.D	1.	P1201573-002 MS		09 May 2012 12:5
20	16	0508019.D	1.	P1201573-002 DMS	(Surr only)	09 May 2012 13:3
21	17	0508020.D	1.	P1201573-003		09 May 2012 14:1
22	18	0508021.D	1.	P1201588-002		09 May 2012 15:0
23	19	0508022.D	1.	P1201604-005		09 May 2012 15:4
24		0508023.D	1.	CARRYOVER BLANK		09 May 2012 20:1
25	5	0508024.D	1.	DWSTD5-55L 5 PPB	NDMA FAIL	09 May 2012 20:5

1,4-Dioxane

Organic Analysis:
1,4-Dioxane by GC/MS

Summary Package

Sample and QC Results

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604

Cover Page - Organic Analysis Data Package
1,4-Dioxane by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
MW-24-1	P1201604-005	04/25/2012	04/25/2012

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Carl Dagen

Date: 5/9/12 Title: Group Supervisor

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Collected: 04/25/2012
Date Received: 04/25/2012

1,4-Dioxane by GC/MS

Sample Name: MW-24-1
Lab Code: P1201604-005

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**0.91**	J	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	82	48-118	05/03/12	Acceptable

Comments:

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1204380-5	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	90	48-118	05/03/12	Acceptable

Comments:

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604

Surrogate Recovery Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	K1203834-003	80
MW-24-1	P1201604-005	82
Method Blank	KWG1204380-5	90
Batch QCMS	KWG1204380-1	80
Batch QCDMS	KWG1204380-2	80
Lab Control Sample	KWG1204380-3	93
Duplicate Lab Control Sample	KWG1204380-4	96

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Dioxane-d8	48-118

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/03/2012
Time Analyzed: 16:29

Internal Standard Area and RT Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F003.D
Instrument ID: MS26
Analysis Method: 8270D SIM

Lab Code: KWG1204586-2
Analysis Lot: KWG1204586

		1,4-Dichlorobenzene-d4	
		Area	**RT**
	Results ==>	14,092	5.28
	Upper Limit ==>	28,184	5.78
	Lower Limit ==>	7,046	4.78
	ICAL Result ==>	15,754	5.29
Associated Analyses			
Method Blank	KWG1204380-5	14,307	5.28
Lab Control Sample	KWG1204380-3	15,930	5.28
Duplicate Lab Control Sample	KWG1204380-4	14,308	5.27
Batch QCMS	KWG1204380-1	14,342	5.27
Batch QCDMS	KWG1204380-2	13,718	5.27
Batch QC	K1203834-003	16,251	5.28
MW-24-1	P1201604-005	16,123	5.28

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Extracted: 04/30/2012
Date Analyzed: 05/03/2012

Matrix Spike/Duplicate Matrix Spike Summary
1,4-Dioxane by GC/MS

Sample Name: Batch QC
Lab Code: K1203834-003

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA

Level: Low
Extraction Lot: KWG1204380

Analyte Name	Sample Result	Batch QCMS KWG1204380-1 Matrix Spike			Batch QCDMS KWG1204380-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,4-Dioxane	ND	24.3	25.0	97	23.8	25.0	95	33-127	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Extracted: 04/30/2012
Date Analyzed: 05/03/2012

Lab Control Spike/Duplicate Lab Control Spike Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1204380

	Lab Control Sample KWG1204380-3 Lab Control Spike			Duplicate Lab Control Sample KWG1204380-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,4-Dioxane	23.6	25.0	94	22.8	25.0	91	52-111	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	16:48

Method Blank Summary
1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS26
Lab Code:	KWG1204380-5	**File ID:**	J:\MS26\DATA\050312\0503F004.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/12	17:08
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/12	17:27
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-24-1	P1201604-005	J:\MS26\DATA\050312\0503F018.D	05/03/12	21:16

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	17:08

Lab Control Sample Summary
1,4-Dioxane by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS26
Lab Code:	KWG1204380-3	**File ID:**	J:\MS26\DATA\050312\0503F005.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/12	16:48
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-24-1	P1201604-005	J:\MS26\DATA\050312\0503F018.D	05/03/12	21:16

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/03/2012
Time Analyzed: 16:10

Tune Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F002.D
Instrument ID: MS26
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1204586

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.9	55287	PASS
68	69	0	2	1.3	1000	PASS
69	198	0	100	23.0	75190	PASS
70	69	0	2	0.4	321	PASS
127	198	10	80	41.2	134864	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	53.1	327258	PASS
199	198	5	9	6.7	22072	PASS
275	198	10	60	28.6	93752	PASS
365	442	1	50	2.1	12870	PASS
441	443	0	100	73.0	87834	PASS
442	442	100	100	100.0	615872	PASS
443	442	15	24	19.5	120280	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1204586-2	J:\MS26\DATA\050312\0503F003.D	05/03/2012	16:29	
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/2012	16:48	
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/2012	17:08	
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/2012	17:27	
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/2012	17:46	
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/2012	18:05	
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/2012	18:24	
MW-24-1	P1201604-005	J:\MS26\DATA\050312\0503F018.D	05/03/2012	21:16	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26

Column: MS

Level ID	File ID
A	J:\MS26\DATA\041112\0411F009.D
B	J:\MS26\DATA\041112\0411F010.D
C	J:\MS26\DATA\041112\0411F011.D
D	J:\MS26\DATA\041112\0411F012.D
E	J:\MS26\DATA\041112\0411F013.D
F	J:\MS26\DATA\041112\0411F014.D
G	J:\MS26\DATA\041112\0411F015.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,4-Dioxane	A	2.0	0.346	B	4.0	0.323	C	10	0.385	D	20	0.376	E	50	0.406
	F	100	0.417	G	200	0.401									
1,4-Dioxane-d8	A	2.0	0.360	B	4.0	0.348	C	10	0.389	D	20	0.384	E	50	0.381
	F	100	0.407	G	200	0.394									

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,4-Dioxane	MS	AverageRF	% RSD	9.0		≤ 20	0.379		0.01
1,4-Dioxane-d8	SURR	AverageRF	% RSD	5.4		≤ 20	0.380		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Calibration Date: 04/11/2012
Date Analyzed: 04/11/2012

Second Source Calibration Verification
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL11446
Units: ng/ml

File ID: J:\MS26\DATA\041112\0411F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	21	0.379	0.404	7	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/03/2012

Continuing Calibration Verification Summary
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 04/11/2012
Calibration ID: CAL11446
Analysis Lot: KWG1204586
Units: ng/ml

File ID: J:\MS26\DATA\050312\0503F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	20	0.01	0.379	0.376	-1	NA	± 20 %	AverageRF
1,4-Dioxane-d8	20	17	0.01	0.380	0.314	-17	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201604

Analysis Run Log
1,4-Dioxane by GC/MS

Analysis Method: 8270D SIM
Analysis Lot: KWG1204586
Instrument ID: MS26

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0503F002.D	GC/MS Tuning - Generic	KWG1204586-1	5/3/2012	16:10		5/3/2012	16:20
0503F003.D	Continuing Calibration Verification	KWG1204586-2	5/3/2012	16:29		5/3/2012	16:39
0503F004.D	Method Blank	KWG1204380-5	5/3/2012	16:48		5/3/2012	16:58
0503F005.D	Lab Control Sample	KWG1204380-3	5/3/2012	17:08		5/3/2012	17:18
0503F006.D	Duplicate Lab Control Sample	KWG1204380-4	5/3/2012	17:27		5/3/2012	17:37
0503F007.D	Batch QCMS	KWG1204380-1	5/3/2012	17:46		5/3/2012	17:56
0503F008.D	Batch QCDMS	KWG1204380-2	5/3/2012	18:05		5/3/2012	18:15
0503F009.D	Batch QC	K1203834-003	5/3/2012	18:24		5/3/2012	18:34
0503F010.D	ZZZZZZ	ZZZZZZ	5/3/2012	18:43		5/3/2012	18:53
0503F011.D	ZZZZZZ	ZZZZZZ	5/3/2012	19:02		5/3/2012	19:12
0503F012.D	ZZZZZZ	ZZZZZZ	5/3/2012	19:21		5/3/2012	19:31
0503F013.D	ZZZZZZ	ZZZZZZ	5/3/2012	19:40		5/3/2012	19:50
0503F014.D	ZZZZZZ	ZZZZZZ	5/3/2012	20:00		5/3/2012	20:10
0503F015.D	ZZZZZZ	ZZZZZZ	5/3/2012	20:19		5/3/2012	20:29
0503F016.D	ZZZZZZ	ZZZZZZ	5/3/2012	20:38		5/3/2012	20:48
0503F017.D	ZZZZZZ	ZZZZZZ	5/3/2012	20:57		5/3/2012	21:07
0503F018.D	MW-24-1	P1201604-005	5/3/2012	21:16		5/3/2012	21:26
0503F019.D	ZZZZZZ	ZZZZZZ	5/3/2012	21:35		5/3/2012	21:45

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Extracted: 04/30/2012

Extraction Prep Log
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Extraction Lot: KWG1204380
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MW-24-1	P1201604-005	04/25/12	04/25/12	100ml	50ml	NA	
Method Blank	KWG1204380-5	NA	NA	100ml	50ml	NA	
Batch QC	K1203834-003	NA	NA	100ml	50ml	NA	
Batch QCMS	KWG1204380-1	NA	NA	100ml	50ml	NA	
Batch QCDMS	KWG1204380-2	NA	NA	100ml	50ml	NA	
Lab Control Sample	KWG1204380-3	NA	NA	100ml	50ml	NA	
Duplicate Lab Control Sample	KWG1204380-4	NA	NA	100ml	50ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

QC Reports

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604

Surrogate Recovery Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	K1203834-003	80
MW-24-1	P1201604-005	82
Method Blank	KWG1204380-5	90
Batch QCMS	KWG1204380-1	80
Batch QCDMS	KWG1204380-2	80
Lab Control Sample	KWG1204380-3	93
Duplicate Lab Control Sample	KWG1204380-4	96

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Dioxane-d8	48-118

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/03/2012
Time Analyzed: 16:29

Internal Standard Area and RT Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F003.D
Instrument ID: MS26
Analysis Method: 8270D SIM

Lab Code: KWG1204586-2
Analysis Lot: KWG1204586

		1,4-Dichlorobenzene-d4	
		Area	**RT**
	Results ==>	14,092	5.28
	Upper Limit ==>	28,184	5.78
	Lower Limit ==>	7,046	4.78
	ICAL Result ==>	15,754	5.29
Associated Analyses			
Method Blank	KWG1204380-5	14,307	5.28
Lab Control Sample	KWG1204380-3	15,930	5.28
Duplicate Lab Control Sample	KWG1204380-4	14,308	5.27
Batch QCMS	KWG1204380-1	14,342	5.27
Batch QCDMS	KWG1204380-2	13,718	5.27
Batch QC	K1203834-003	16,251	5.28
MW-24-1	P1201604-005	16,123	5.28

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012

Matrix Spike/Duplicate Matrix Spike Summary
1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1203834-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

Analyte Name	Sample Result	Batch QCMS KWG1204380-1 Matrix Spike			Batch QCDMS KWG1204380-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,4-Dioxane	ND	24.3	25.0	97	23.8	25.0	95	33-127	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Extracted: 04/30/2012
Date Analyzed: 05/03/2012

Lab Control Spike/Duplicate Lab Control Spike Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1204380

	Lab Control Sample KWG1204380-3 Lab Control Spike			Duplicate Lab Control Sample KWG1204380-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,4-Dioxane	23.6	25.0	94	22.8	25.0	91	52-111	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	16:48

Method Blank Summary
1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS26
Lab Code:	KWG1204380-5	**File ID:**	J:\MS26\DATA\050312\0503F004.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/12	17:08
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/12	17:27
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-24-1	P1201604-005	J:\MS26\DATA\050312\0503F018.D	05/03/12	21:16

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Extracted: 04/30/2012
Date Analyzed: 05/03/2012
Time Analyzed: 17:08

Lab Control Sample Summary
1,4-Dioxane by GC/MS

Sample Name: Lab Control Sample
Lab Code: KWG1204380-3

Instrument ID: MS26
File ID: J:\MS26\DATA\050312\0503F005.D

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Level: Low
Extraction Lot: KWG1204380

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/12	16:48
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-24-1	P1201604-005	J:\MS26\DATA\050312\0503F018.D	05/03/12	21:16

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Raw Data

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	04/25/2012
Sample Matrix:	Water	**Date Received:**	04/25/2012

1,4-Dioxane by GC/MS

Sample Name:	MW-24-1	**Units:**	ug/L
Lab Code:	P1201604-005	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**0.91**	J	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	82	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F018.D
Lab ID: P1201604-005
RunType: SMPL
Matrix: WATER

Date Acquired: 05/03/2012 21:16
Date Quantitated: 05/04/2012 08:53
Batch ID: KWG1204586
Analysis Method: 8270D SIM
ListJoinID: LJ2865

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Duplicate Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: MAY 04 2012

Secondary Review: 05·04·12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F018.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 21:16	**Quant Date:**	05/04/2012 08:53	**Vial:**	18
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201604-005			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**	04/25/2012	**Receive Date:**	04/25/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	P1201604
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121262	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:	1,4-Dioxane by GC/MS	**Report List ID:**	LJ2865
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.00?	152	16123	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.21	0.02	0.00	96	5051	41.20	82	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.23	0.02	0.00	88	222m	1.82	0.91	J	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F018.D Vial: 18
Acq On : 3 May 2012 9:16 pm Operator: KBailey
Sample : P1201604-005 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:22 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

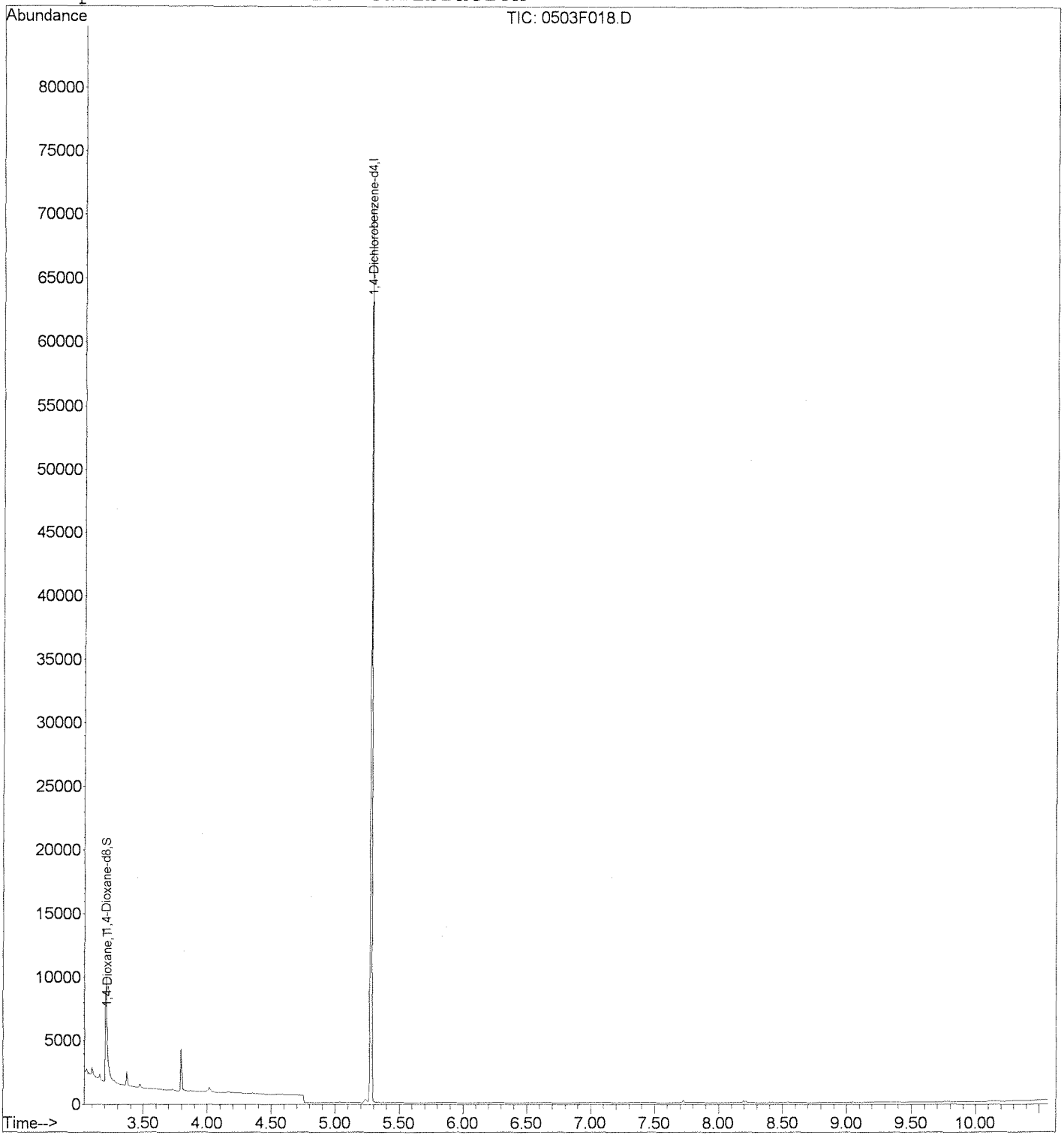
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	16123	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.21	96	5051	41.20	ng/ml	-0.02
Spiked Amount 50.000			Recovery =	82.40%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	222m	1.82	ng/ml	

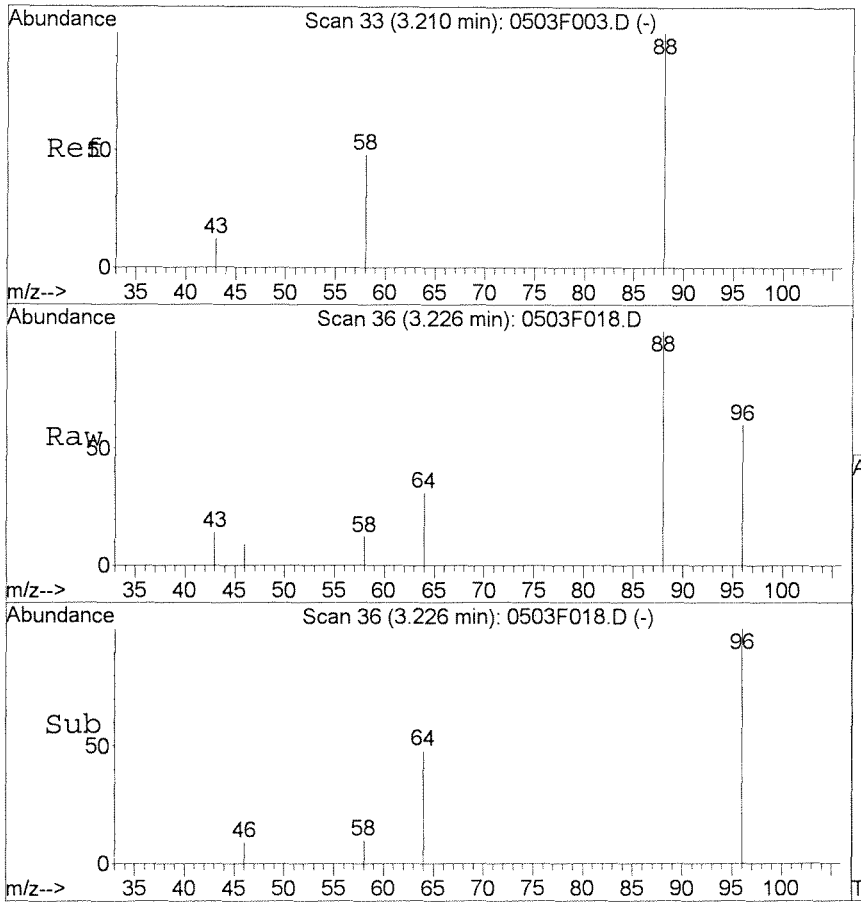
(#) = qualifier out of range (m) = manual integration
0503F018.D 041112_DX.M Fri May 04 08:54:37 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F018.D Vial: 18
Acq On : 3 May 2012 9:16 pm Operator: KBailey
Sample : P1201604-005 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:53 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

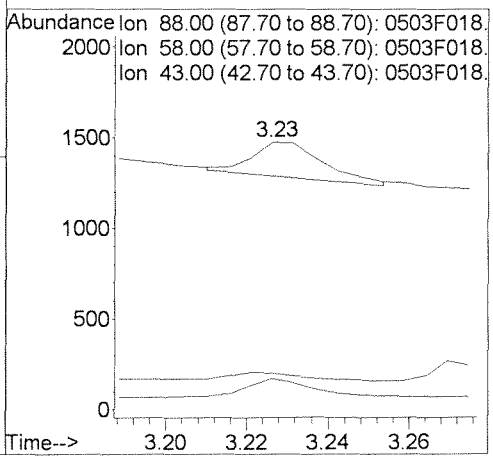




#3
1,4-Dioxane
Concen: 1.82 ng/ml m
RT: 3.23 min Scan# 36
Delta R.T. -0.01 min
Lab File: 0503F018.D
Acq: 3 May 2012 9:16 pm

Tgt Ion: 88 Resp: 222

Ion	Ratio	Lower	Upper
88	100		
58	11.7	0.0	35.5
43	13.8	0.0	35.9

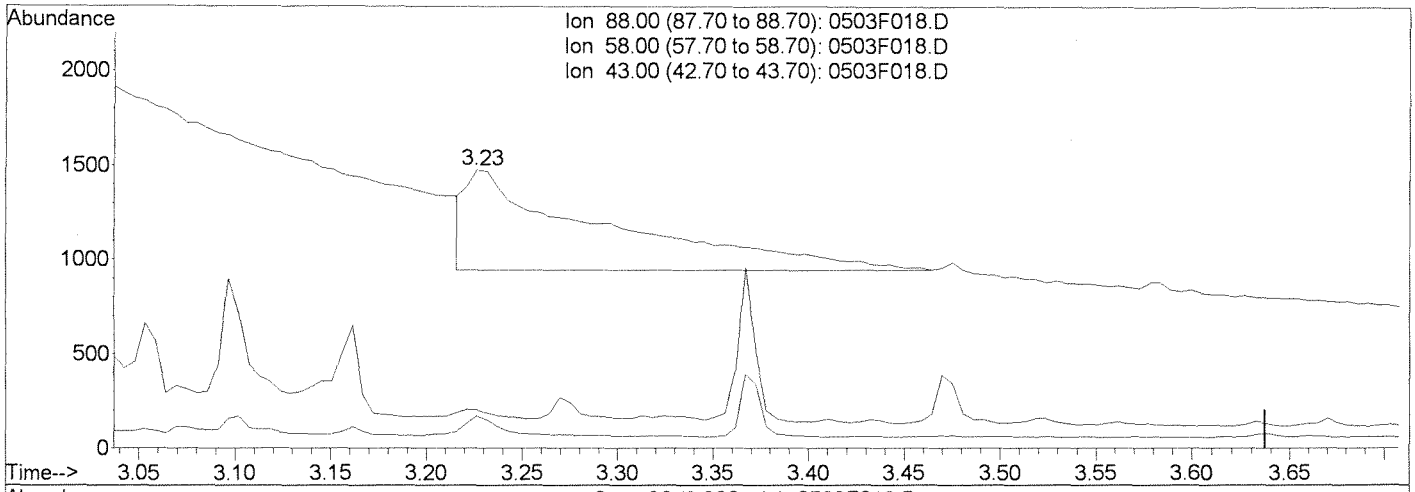


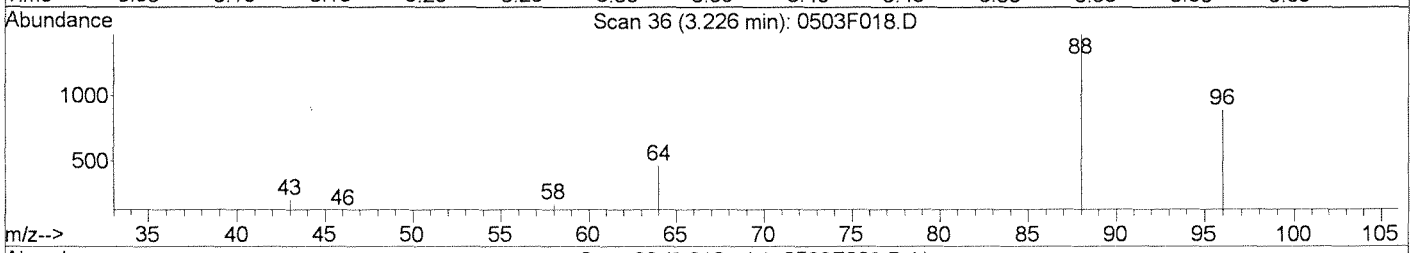
Quantitation Report (Qedit)

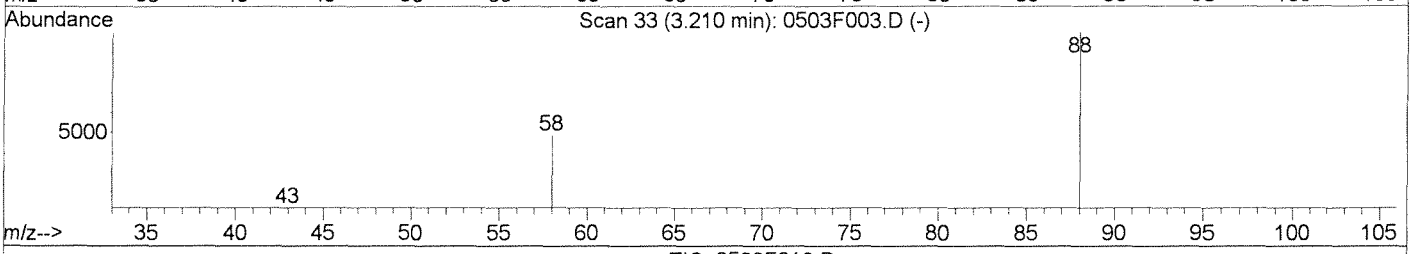
Data File : J:\MS26\DATA\050312\0503F018.D
Acq On : 3 May 2012 9:16 pm
Sample : P1201604-005
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012

Vial: 18
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F018.D

(3) 1,4-Dioxane (T)

3.23min 21.78ng/ml

response 2663

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	20.98
43.00	15.90	4.16
0.00	0.00	0.00

Manual Integration:

Before

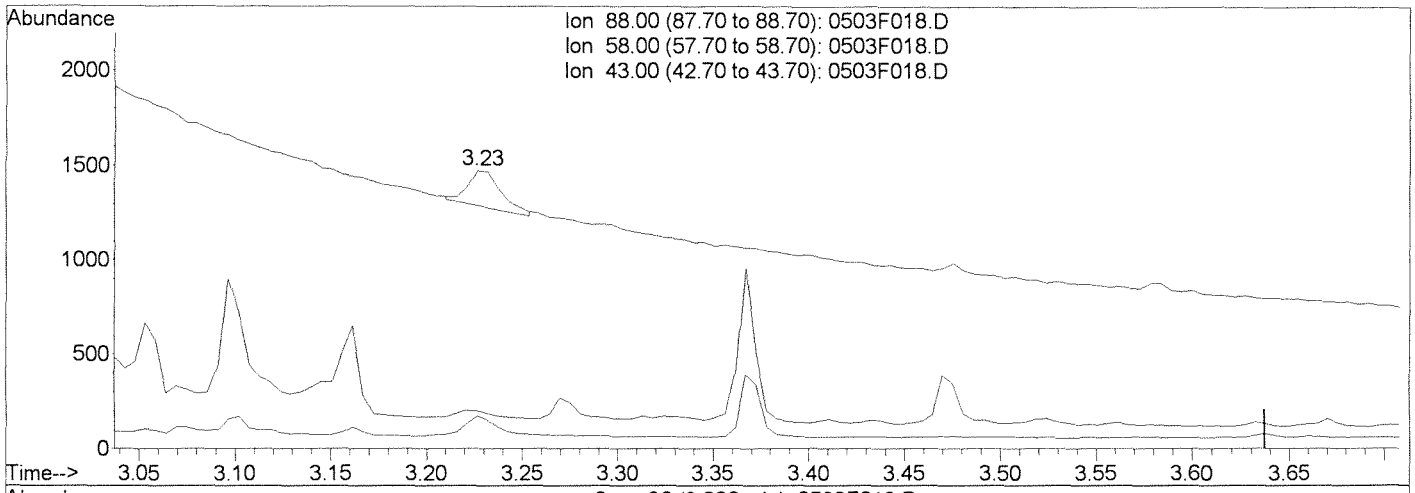
0503F018.D 041112_DX.M Fri May 04 08:53:52 2012

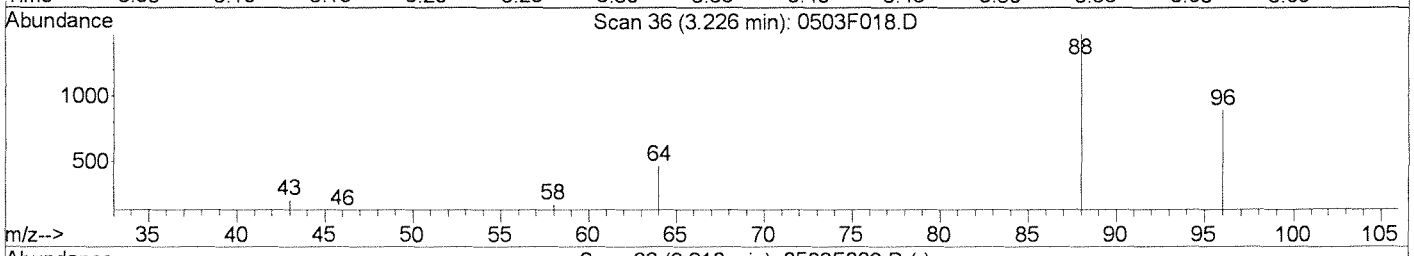
Quantitation Report (Qedit)

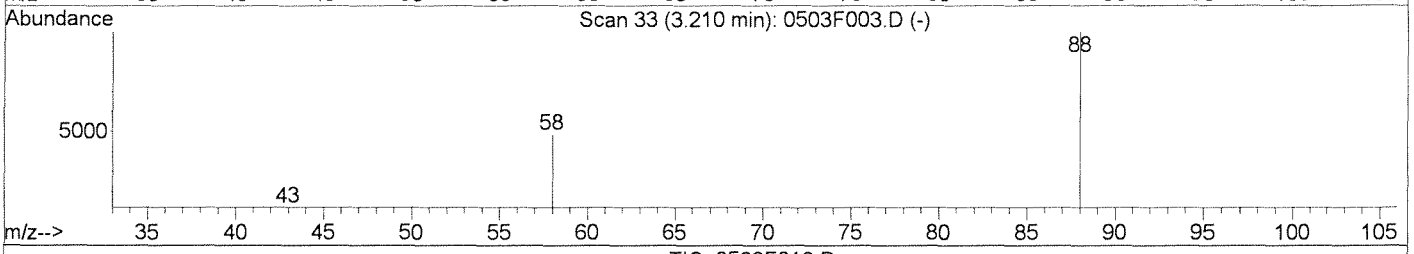
Data File : J:\MS26\DATA\050312\0503F018.D
Acq On : 3 May 2012 9:16 pm
Sample : P1201604-005
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:53 2012

Vial: 18
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F018.D

(3) 1,4-Dioxane (T)

3.23min 1.82ng/ml m

response 222

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	11.67
43.00	15.90	13.77
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

CM LB

0503F018.D 041112_DX.M Fri May 04 08:54:00 2012

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1204380-5	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	90	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F004.D
Lab ID: KWG1204380-5
RunType: MB
Matrix: WATER

Date Acquired: 05/03/2012 16:48
Date Quantitated: 05/04/2012 08:46
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

L3834
L3902
P1573
P1588
P1604
P1630

Primary Review: LCB MAY 04 2012

Secondary Review: CK 05.04.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F004.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 16:48	**Quant Date:**	05/04/2012 08:46	**Vial:**	4
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1204380-5			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121267	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.00?	152	14307	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.20	0.01	0.00	96	4916	45.18	90	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (Not Reviewed)

Data File : J:\MS26\DATA\050312\0503F004.D Vial: 4
Acq On : 3 May 2012 4:48 pm Operator: KBailey
Sample : KWG1204380-5 | MB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:19 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	14307	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.20	96	4916	45.18	ng/ml	-0.03
Spiked Amount 50.000			Recovery =	90.36%		

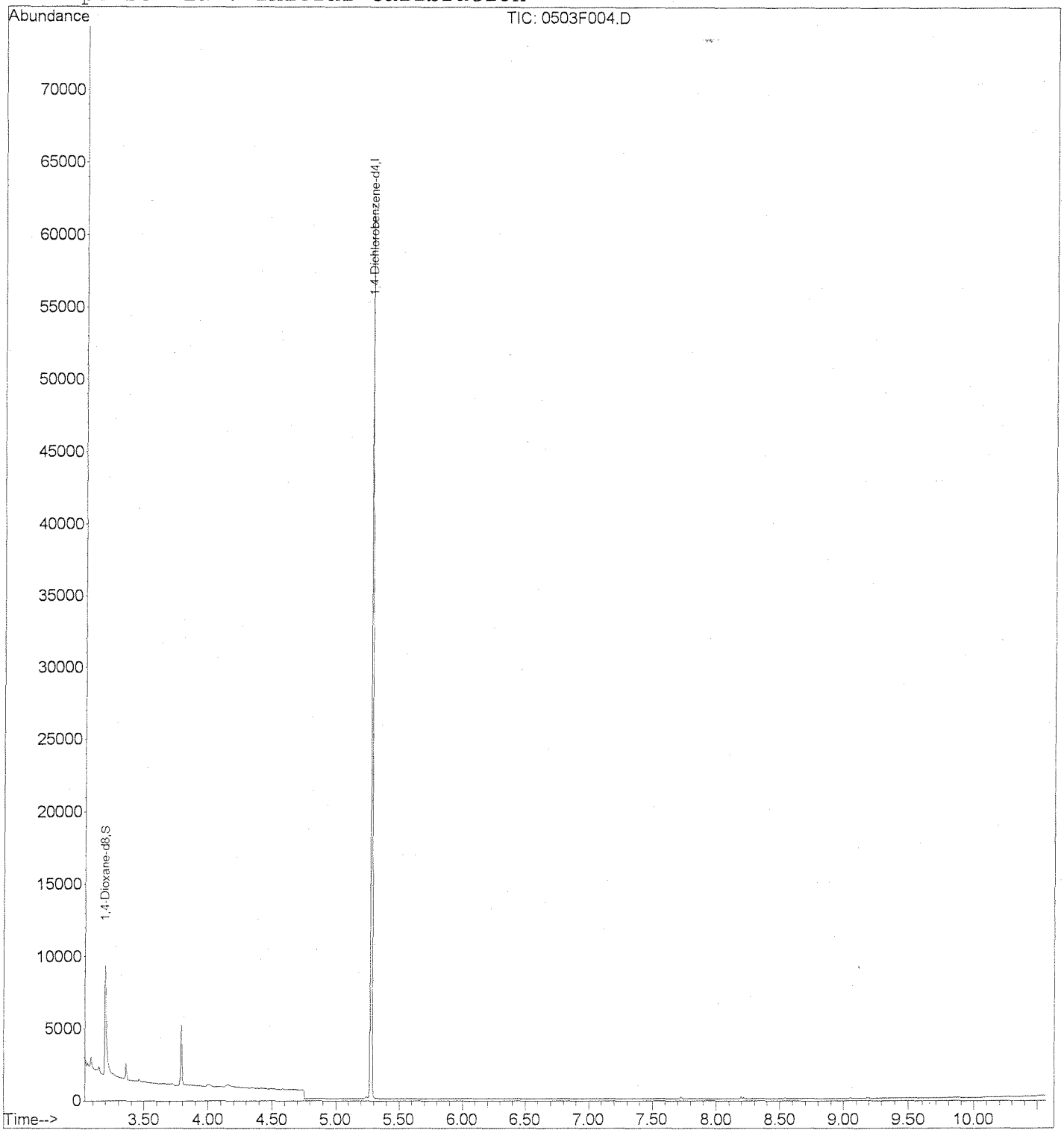
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration
0503F004.D 041112_DX.M Fri May 04 08:54:29 2012 Page 1

Quantitation Report (Not Reviewed)

Data File : J:\MS26\DATA\050312\0503F004.D Vial: 4
Acq On : 3 May 2012 4:48 pm Operator: KBailey
Sample : KWG1204380-5 | MB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1203834-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	80	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F009.D
Lab ID: K1203834-003
RunType: SMPL
Matrix: WATER

Date Acquired: 05/03/2012 18:24
Date Quantitated: 05/04/2012 08:48
Batch ID: KWG1204586
Analysis Method: 8270D SIM
ListJoinID: LJ2865

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Duplicate Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
K 3902
P 1573
P 1588
P 1604
P 1630

Primary Review: MAY 04 2012

Secondary Review: 05·04·12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F009.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 18:24	**Quant Date:**	05/04/2012 08:48	**Vial:**	9
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1203834-003			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**	04/23/2012	**Receive Date:**	04/25/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	K1203834
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121255	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:	1,4-Dioxane by GC/MS	**Report List ID:**	LJ2865
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.00?	152	16251	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.22	0.03	0.01	96	4920m	39.81	80	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F009.D Vial: 9
Acq On : 3 May 2012 6:24 pm Operator: KBailey
Sample : K1203834-003 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:21 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

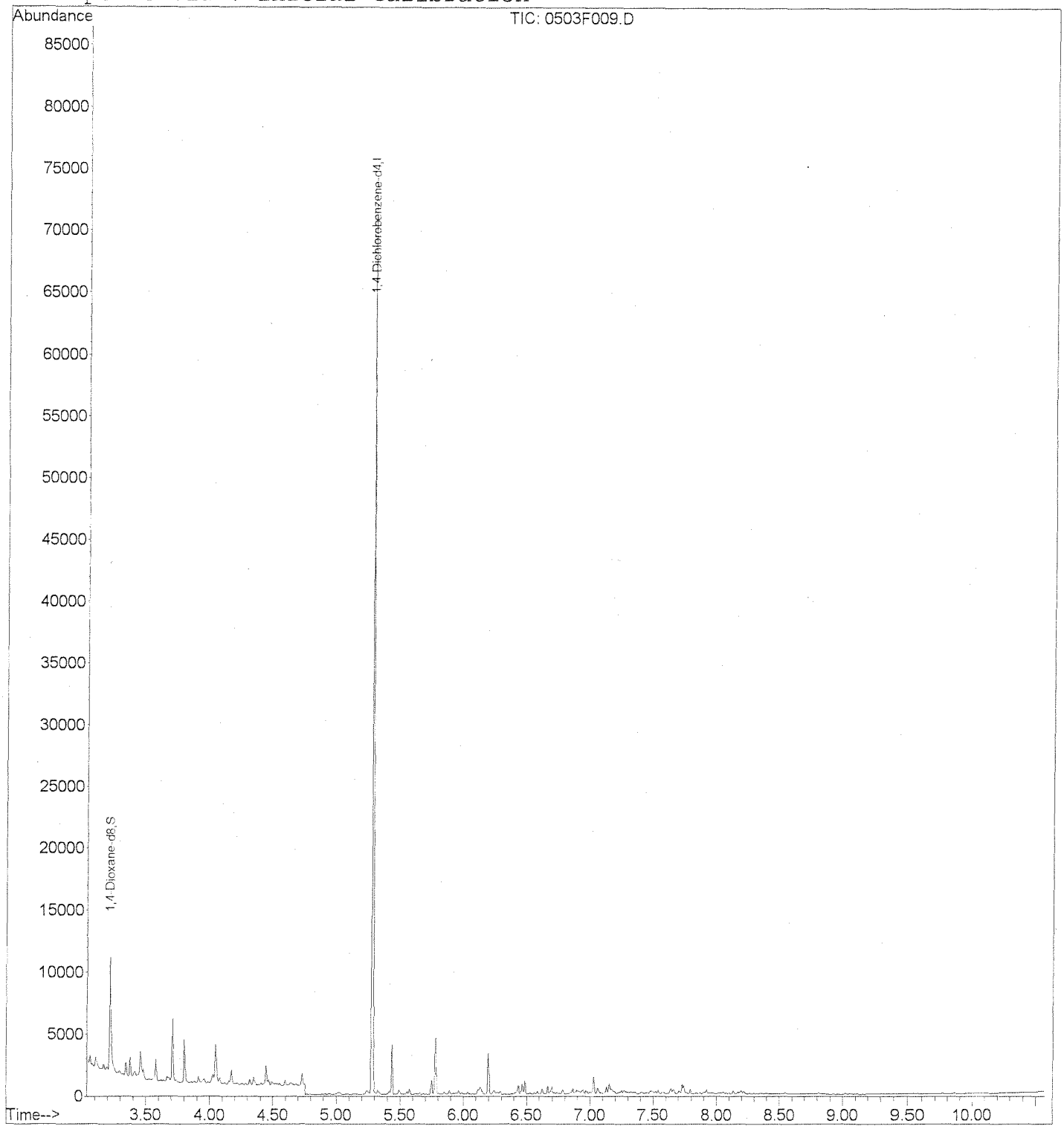
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	16251	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	4920m	39.81	ng/ml	-0.01
Spiked Amount 50.000			Recovery =	79.62%		
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration
0503F009.D 041112_DX.M Fri May 04 08:54:32 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F009.D Vial: 9
Acq On : 3 May 2012 6:24 pm Operator: KBailey
Sample : K1203834-003 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:48 2012 Quant Results File: 041112_DX.RE

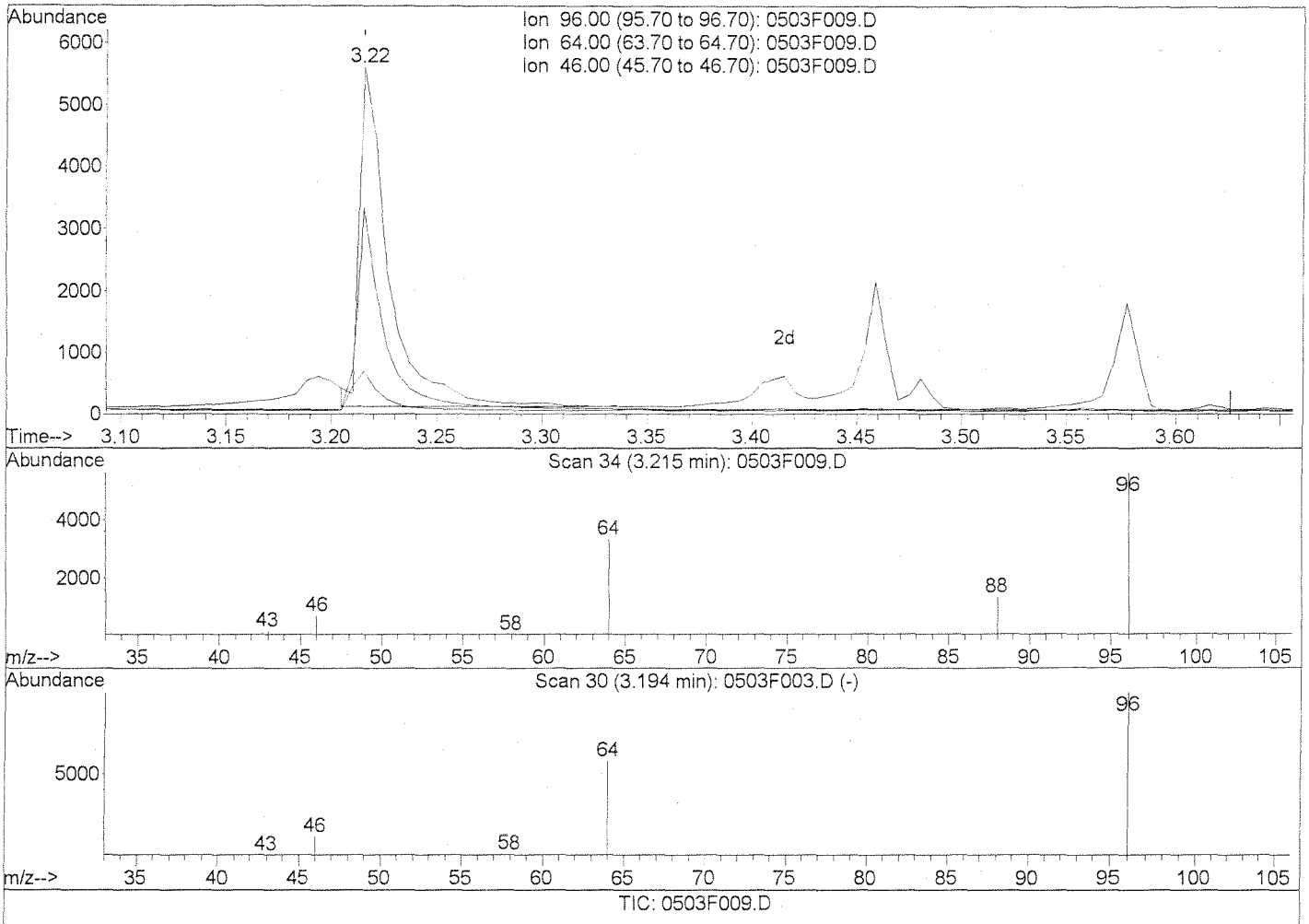
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration



Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F009.D Vial: 9
Acq On : 3 May 2012 6:24 pm Operator: KBailey
Sample : K1203834-003 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



(2) 1,4-Dioxane-d8 (S)

3.22min 43.05ng/ml

response 5320

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	59.32
46.00	9.50	11.67
0.00	0.00	0.00

Manual Integration:

Before

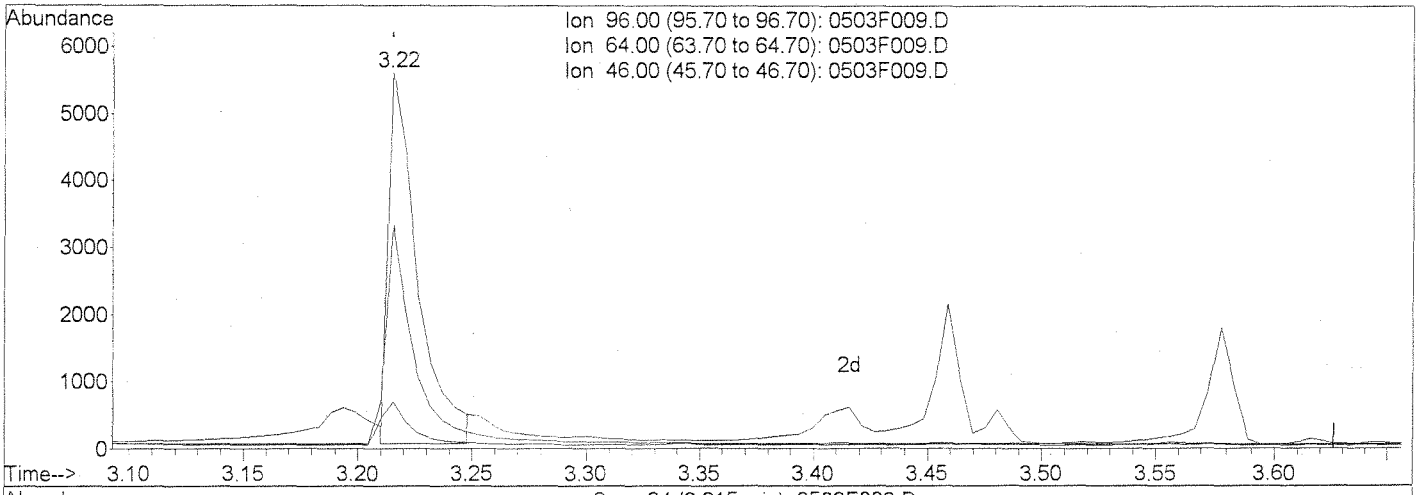
0503F009.D 041112_DX.M Fri May 04 08:48:05 2012

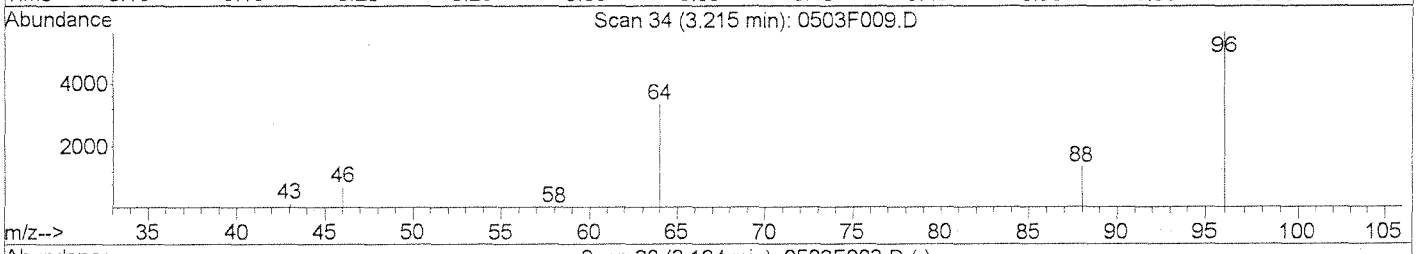
Quantitation Report (Qedit)

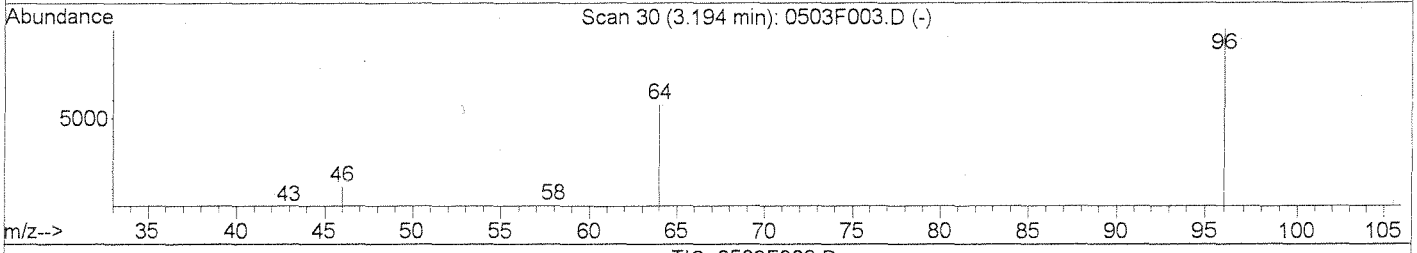
Data File : J:\MS26\DATA\050312\0503F009.D
Acq On : 3 May 2012 6:24 pm
Sample : K1203834-003
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:48 2012

Vial: 9
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F009.D

(2) 1,4-Dioxane-d8 (S)

3.22min 39.81ng/ml m

response 4920

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	59.36
46.00	9.50	12.44
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F009.D 041112_DX.M Fri May 04 08:48:15 2012

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QCMS	**Units:**	ug/L
Lab Code:	KWG1204380-1	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**24.3**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	80	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F007.D
Lab ID: KWG1204380-1 -- K1203834-003MS
RunType: MS
Matrix: WATER

Date Acquired: 05/03/2012 17:46
Date Quantitated: 05/04/2012 08:47
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
L3902
P1573
P1588
P1LCS
P1LCSD

Primary Review: MAY 04 2012

Secondary Review: 05-May-12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F007.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 17:46	**Quant Date:**	05/04/2012 08:47	**Vial:**	7
Run Type:	MS			**Dilution:**	1.0
Lab ID:	KWG1204380-1 -- K1203834-003MS			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121263	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	14342	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.18	-0.01	0.00	96	4336m	39.76	80	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.19	-0.02	0.00	88	5291m	48.65	24.3		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

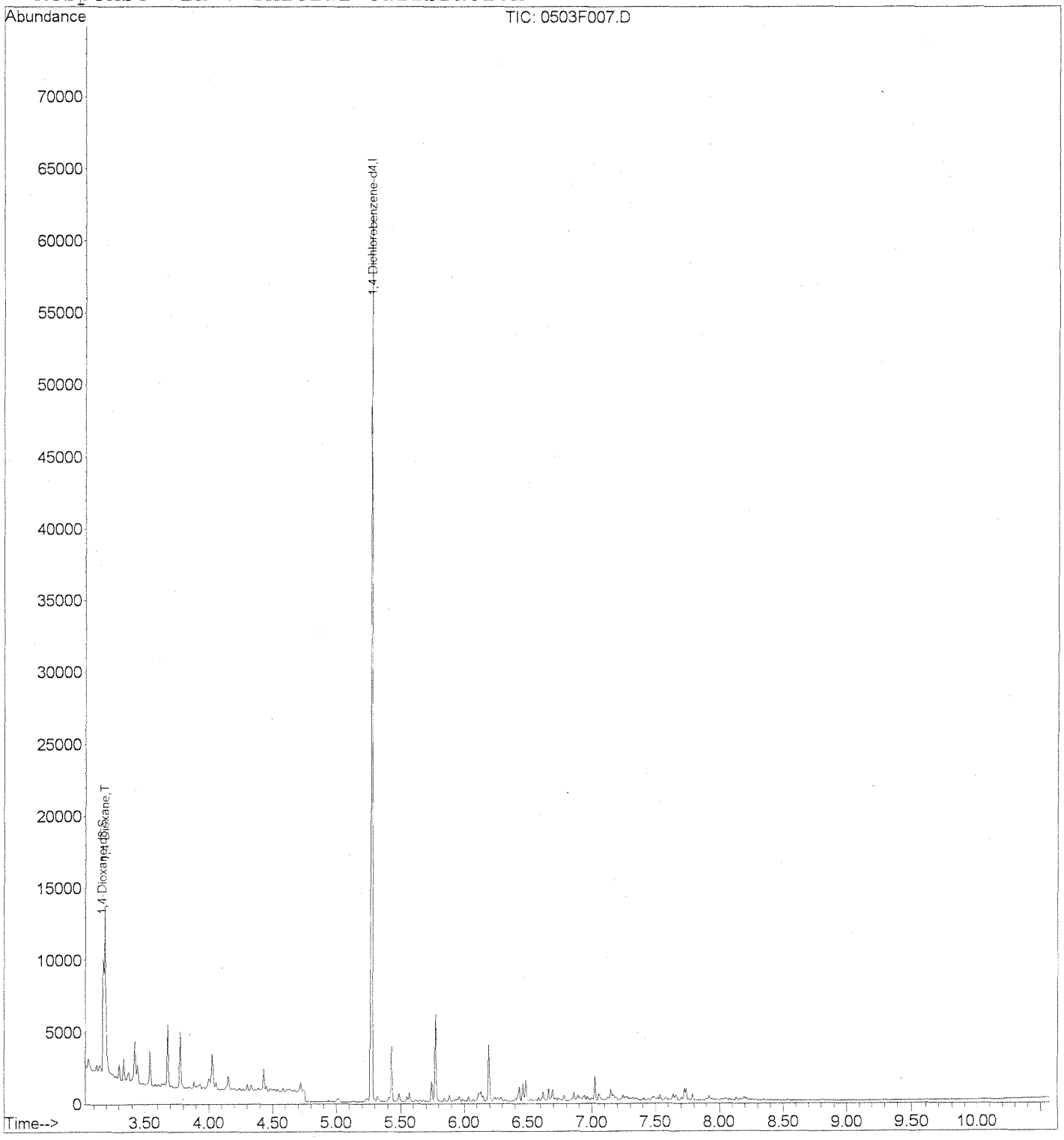
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	14342	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.18	96	4336m	39.76	ng/ml	-0.05
Spiked Amount 50.000			Recovery =	79.52%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.19	88	5291m	48.65	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F007.D 041112_DX.M Fri May 04 08:54:30 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: 041112_DX.RE

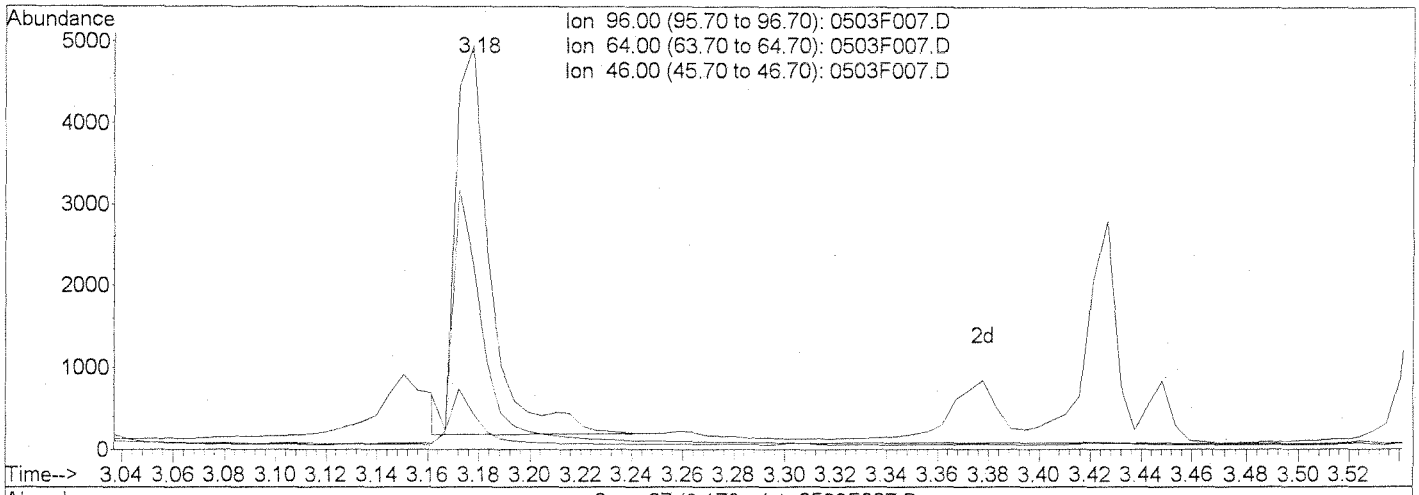
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

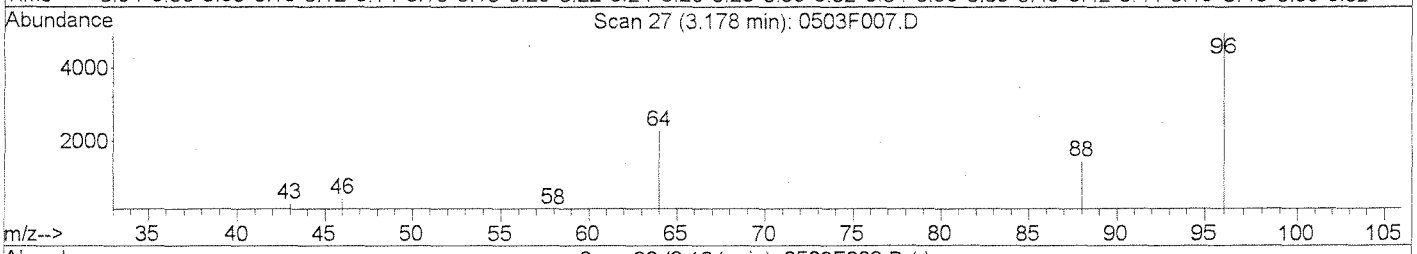


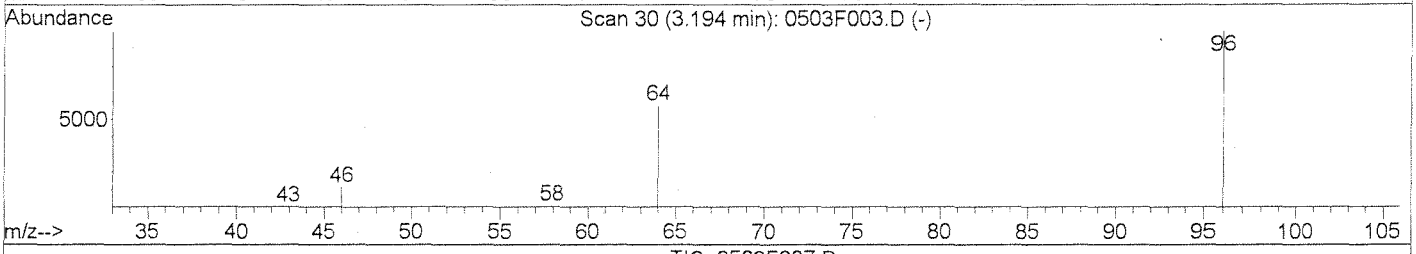
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F007.D

(2) 1,4-Dioxane-d8 (S)

3.18min 40.96ng/ml

response 4467

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	46.36
46.00	9.50	8.07
0.00	0.00	0.00

Manual Integration:

Before

0503F007.D 041112_DX.M Fri May 04 08:47:13 2012

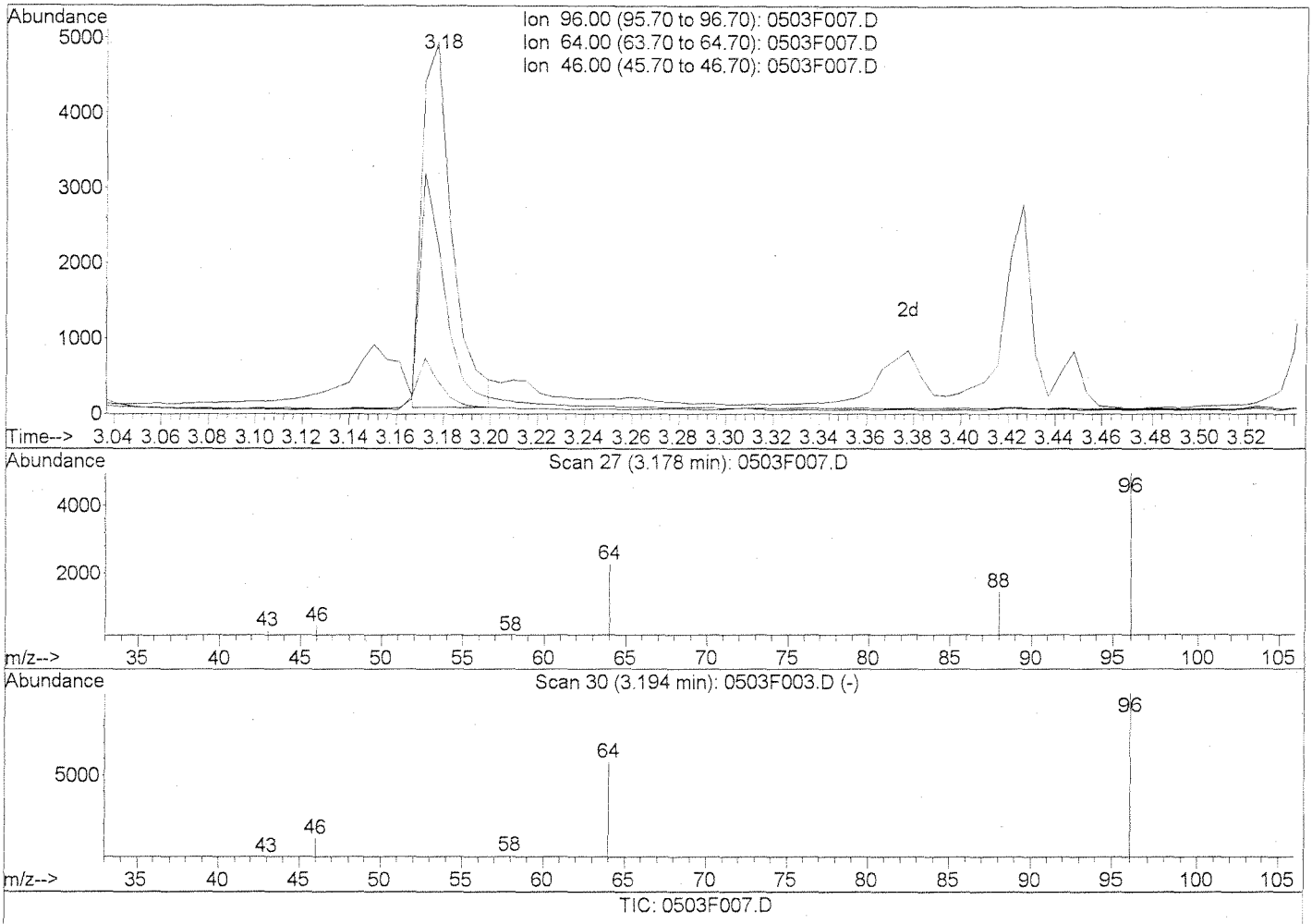
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D
Acq On : 3 May 2012 5:46 pm
Sample : KWG1204380-1 | MS K1203834-003MS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012

Vial: 7
Operator: KBailey
Inst : MS26
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F007.D

(2) 1,4-Dioxane-d8 (S)

3.18min 39.76ng/ml m

response 4336

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	46.06
46.00	9.50	8.91
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

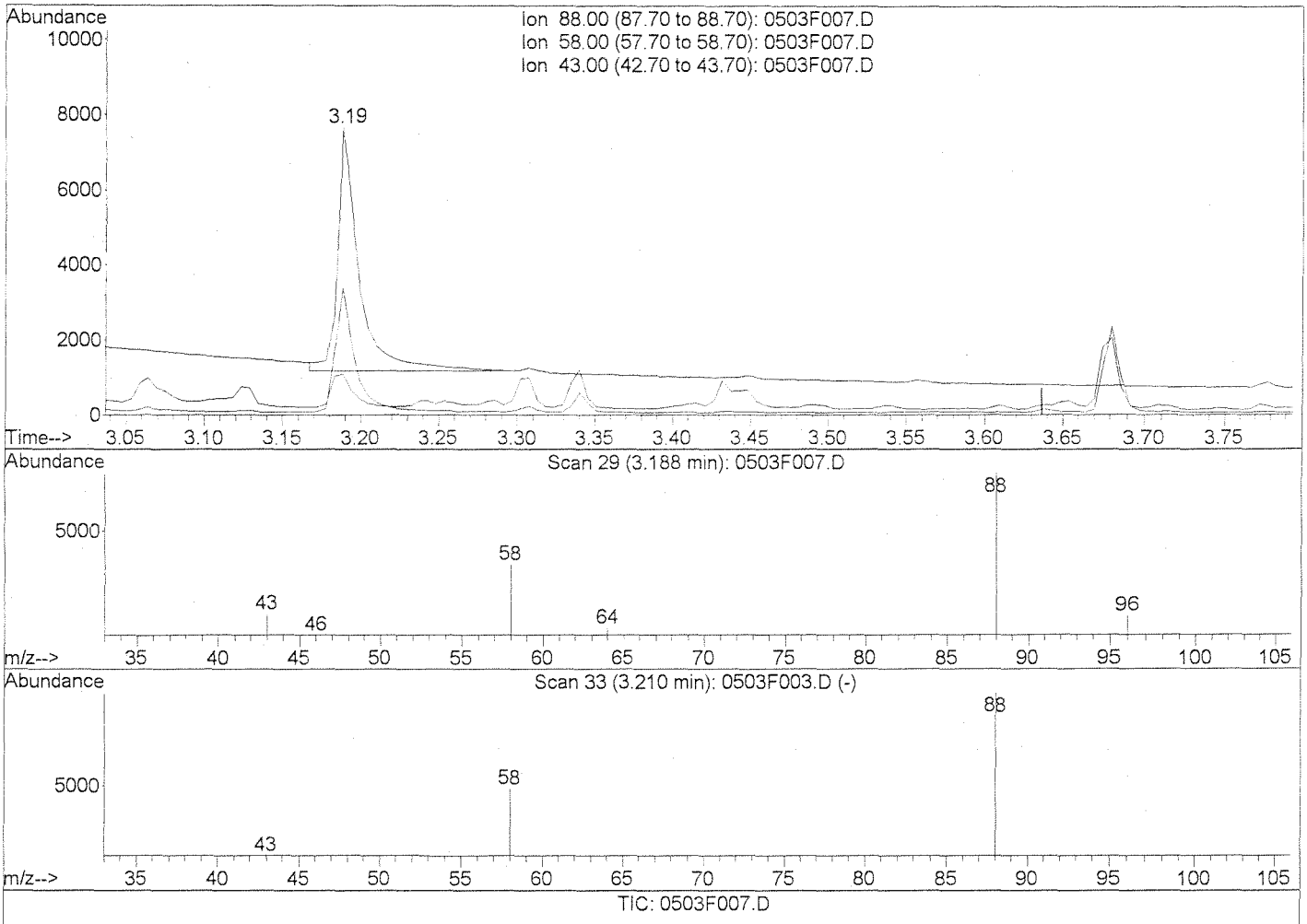
CM 143

0503F007.D 041112_DX.M Fri May 04 08:47:19 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F007.D

(3) 1,4-Dioxane (T)

3.19min 56.85ng/ml

response 6183

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	51.74#
43.00	15.90	13.70
0.00	0.00	0.00

Manual Integration:

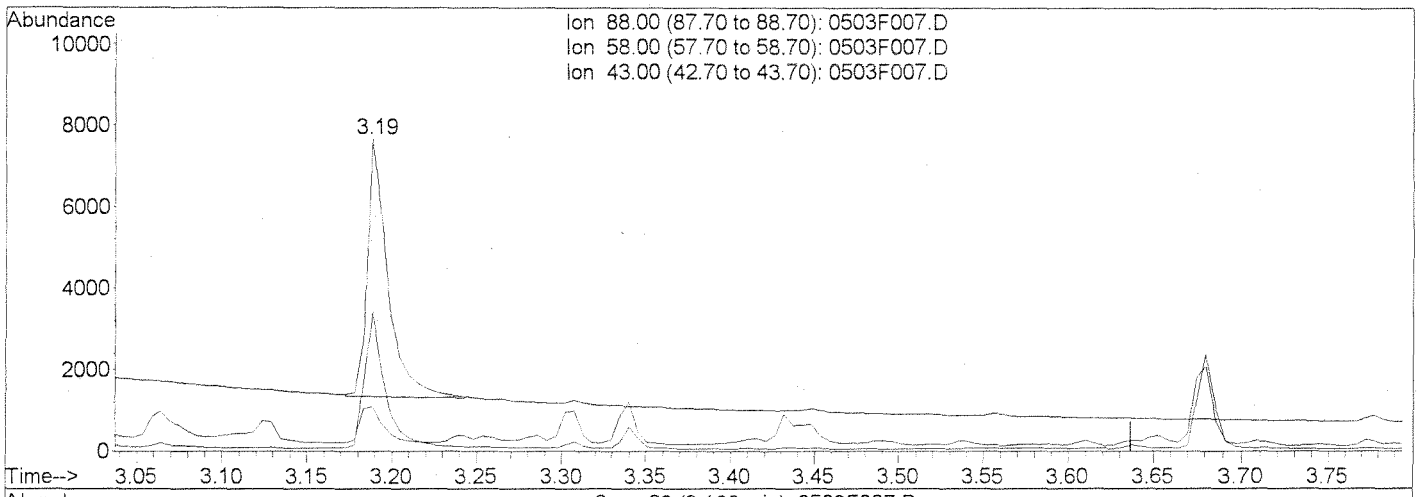
Before

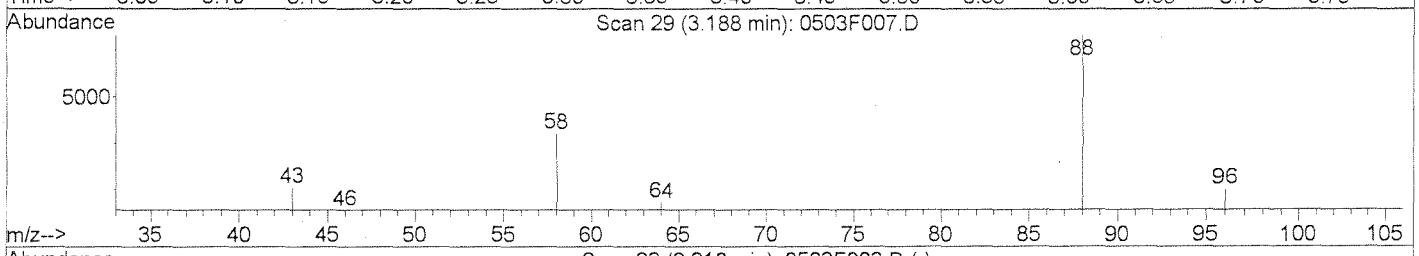
0503F007.D 041112_DX.M Fri May 04 08:47:24 2012

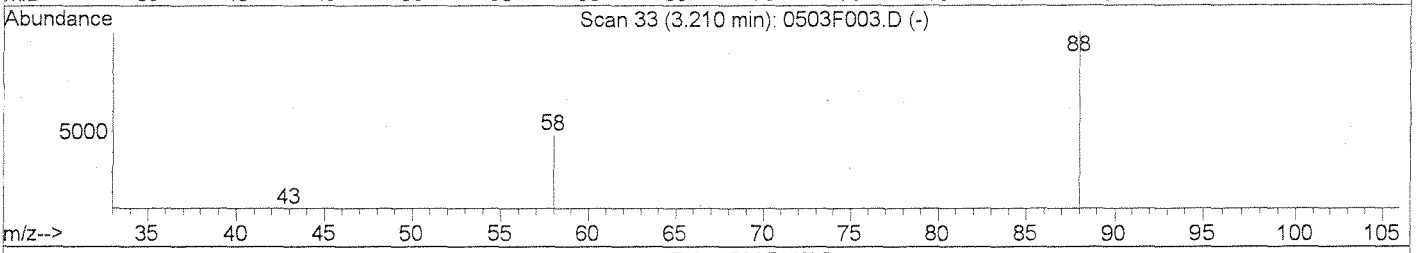
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F007.D

(3) 1,4-Dioxane (T)

3.19min 48.65ng/ml m

response 5291

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	44.73#
43.00	15.90	14.31
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F007.D 041112_DX.M Fri May 04 08:47:29 2012

Client:	Battelle	**Service Request:**	P1201604
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QCDMS	**Units:**	ug/L
Lab Code:	KWG1204380-2	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**23.8**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	80	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F008.D
Lab ID: KWG1204380-2 -- K1203834-003DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/03/2012 18:05
Date Quantitated: 05/04/2012 08:47
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
L 3902
P 1573
P 1588
P 1604
P 1630

Primary Review: LCB MAY 04 2012

Secondary Review: CH 05.04.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F008.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 18:05	**Quant Date:**	05/04/2012 08:47	**Vial:**	8
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1204380-2 -- K1203834-003DMS			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121264	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	13718	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.16	-0.03	0.00	96	4176m	40.03	80	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.18	-0.03	0.00	88	4942m	47.51	23.8		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

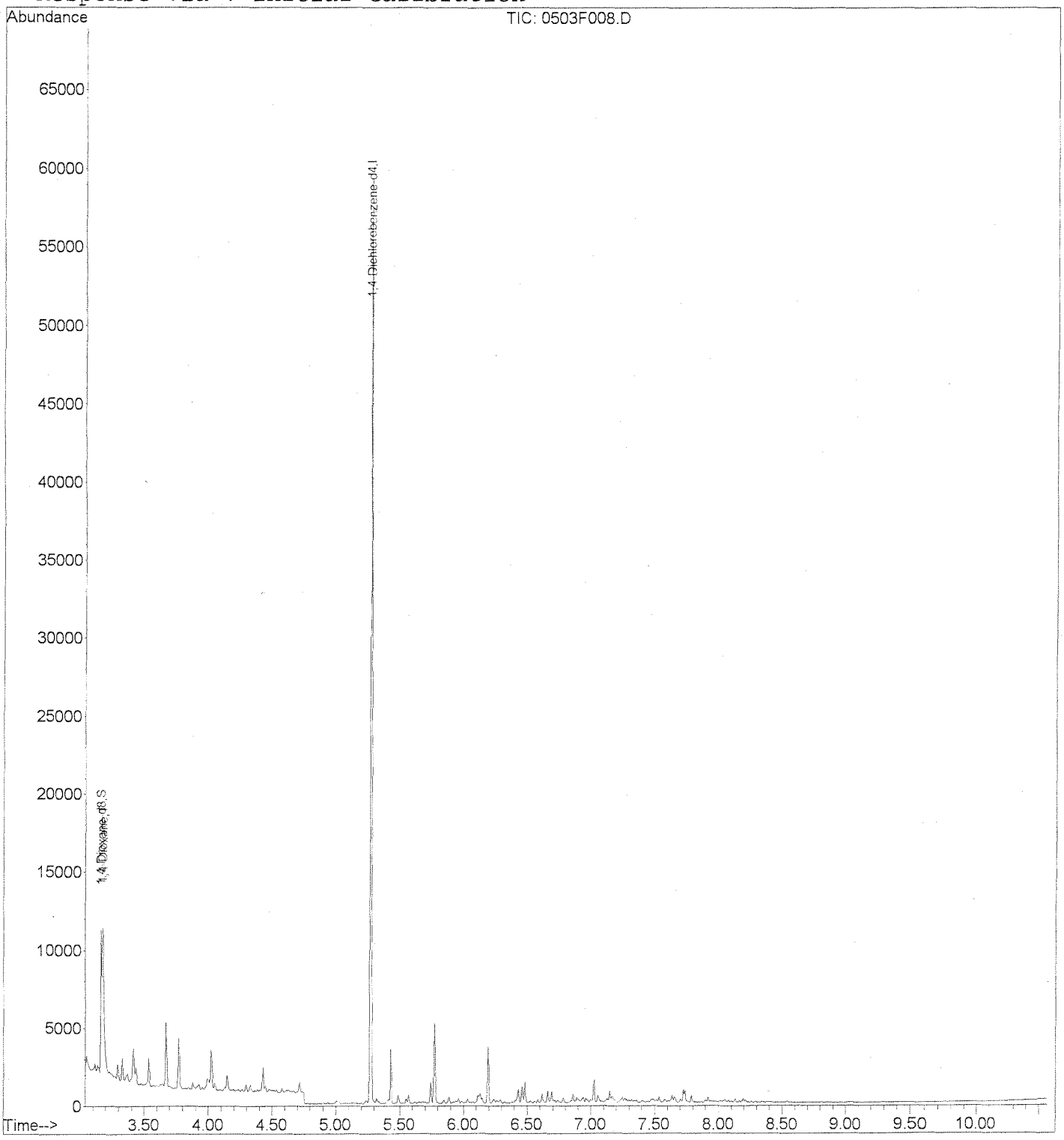
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	13718	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.16	96	4176m	40.03	ng/ml	-0.07
Spiked Amount 50.000			Recovery =	80.06%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.18	88	4942m	47.51	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F008.D 041112_DX.M Fri May 04 08:54:31 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: 041112_DX.RE

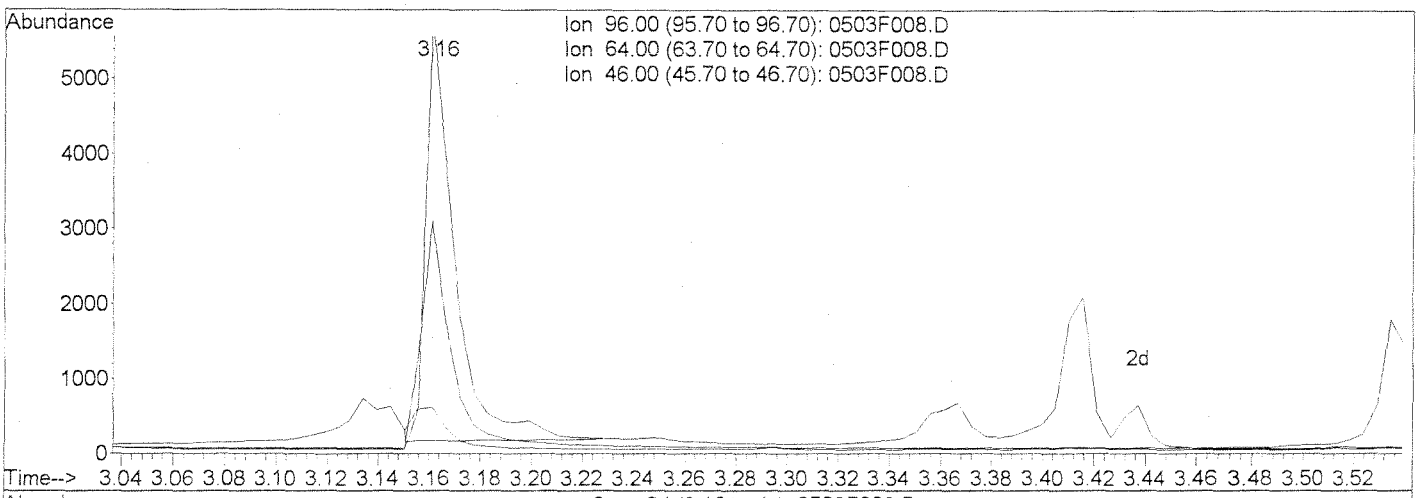
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

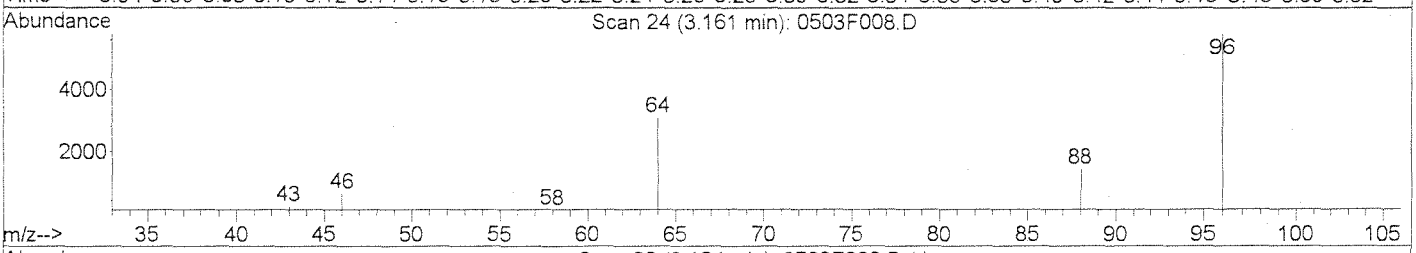


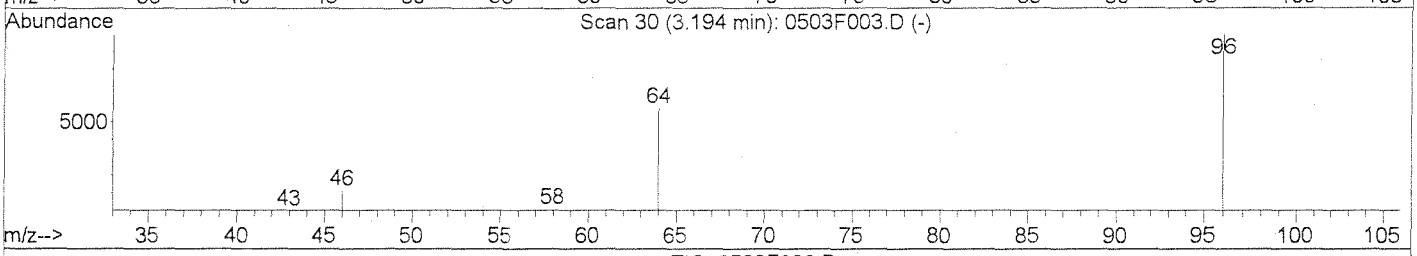
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F008.D

(2) 1,4-Dioxane-d8 (S)

3.16min 41.83ng/ml

response 4364

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	54.05
46.00	9.50	10.07
0.00	0.00	0.00

Manual Integration:

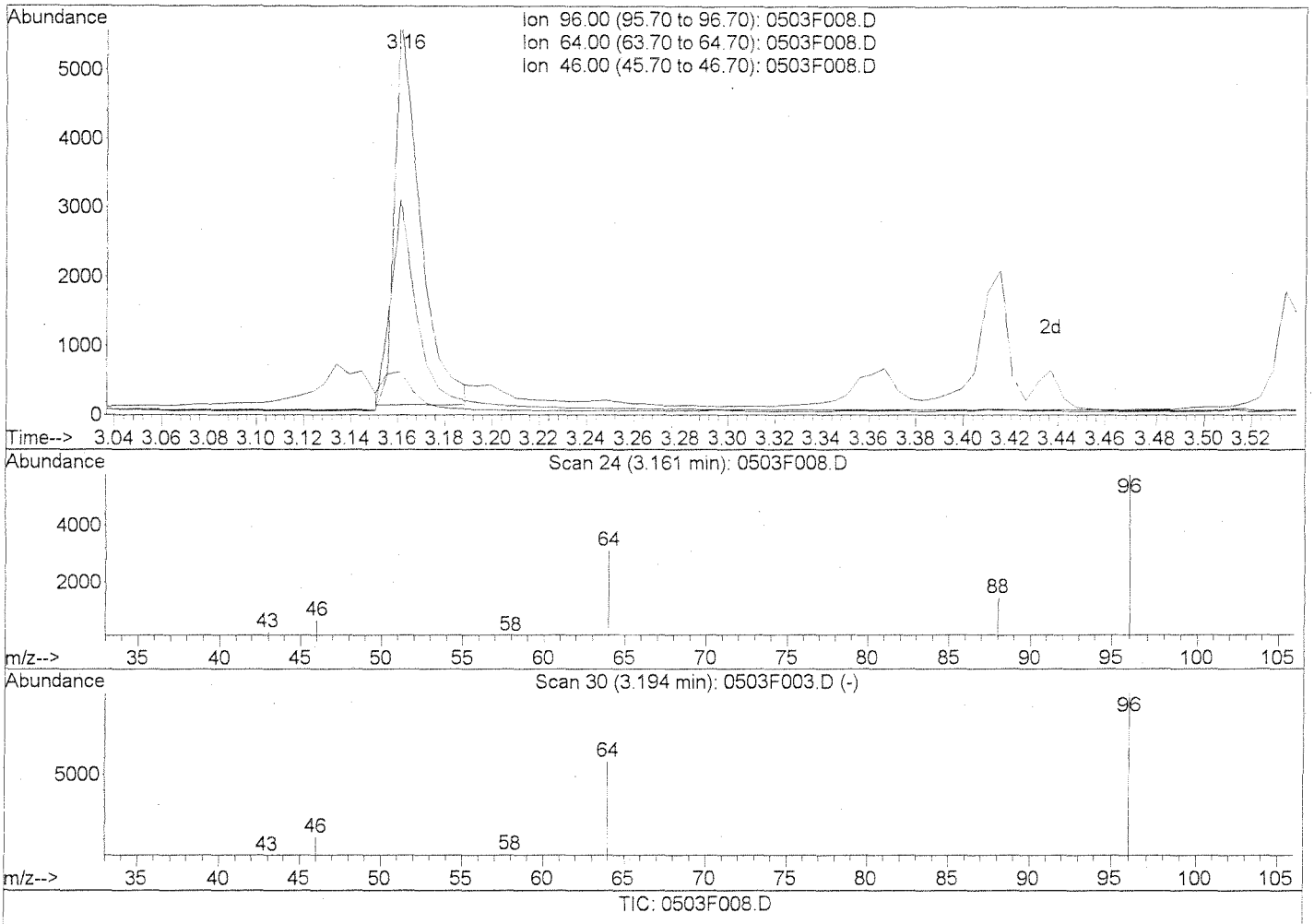
Before

0503F008.D 041112_DX.M Fri May 04 08:47:37 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



(2) 1,4-Dioxane-d8 (S)

3.16min 40.03ng/ml m

response 4176

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	53.53
46.00	9.50	10.74
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

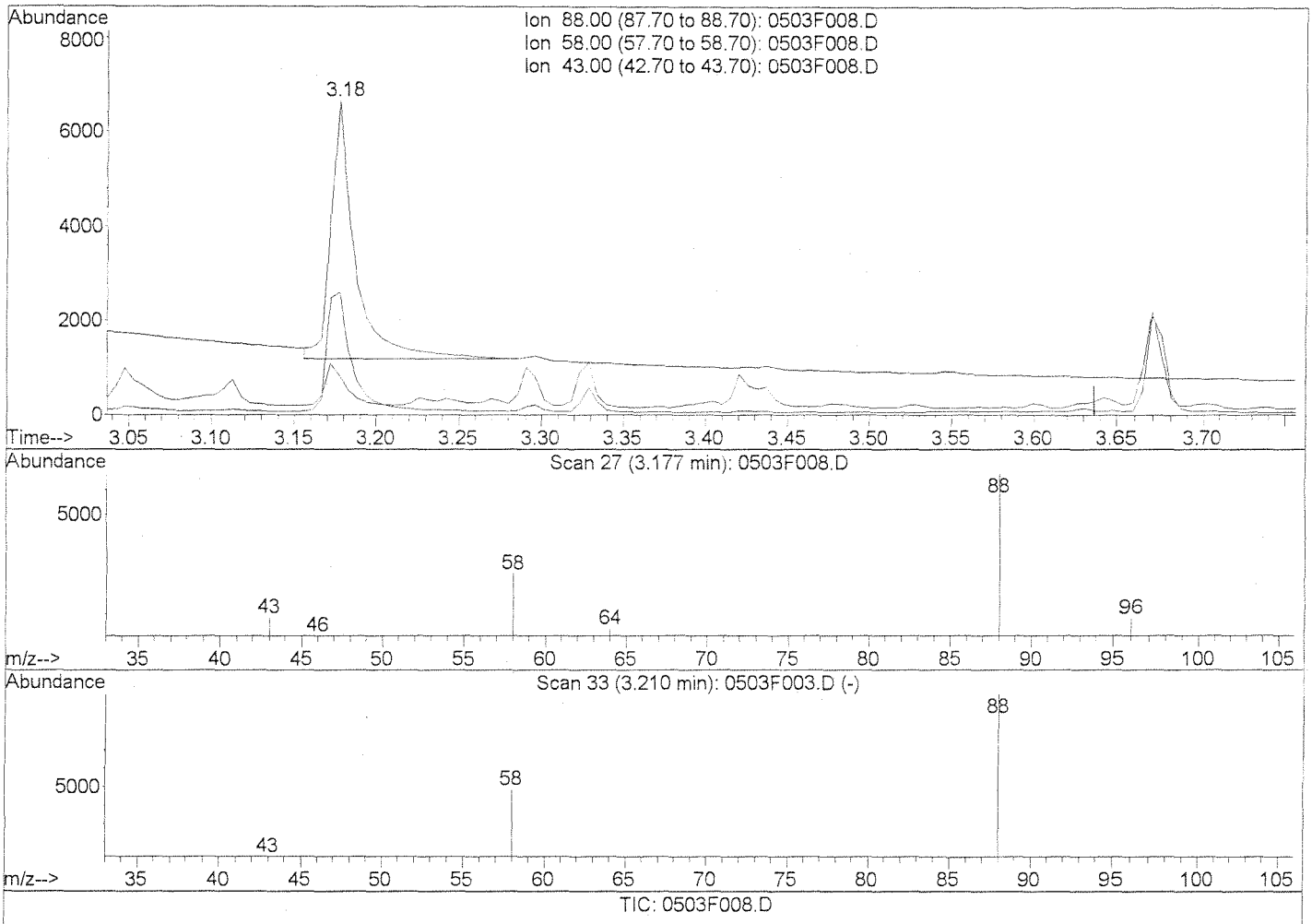
05/04/12

0503F008.D 041112_DX.M Fri May 04 08:47:45 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F008.D

(3) 1,4-Dioxane (T)

3.18min 54.17ng/ml

response 5635

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	46.28#
43.00	15.90	11.78
0.00	0.00	0.00

Manual Integration:

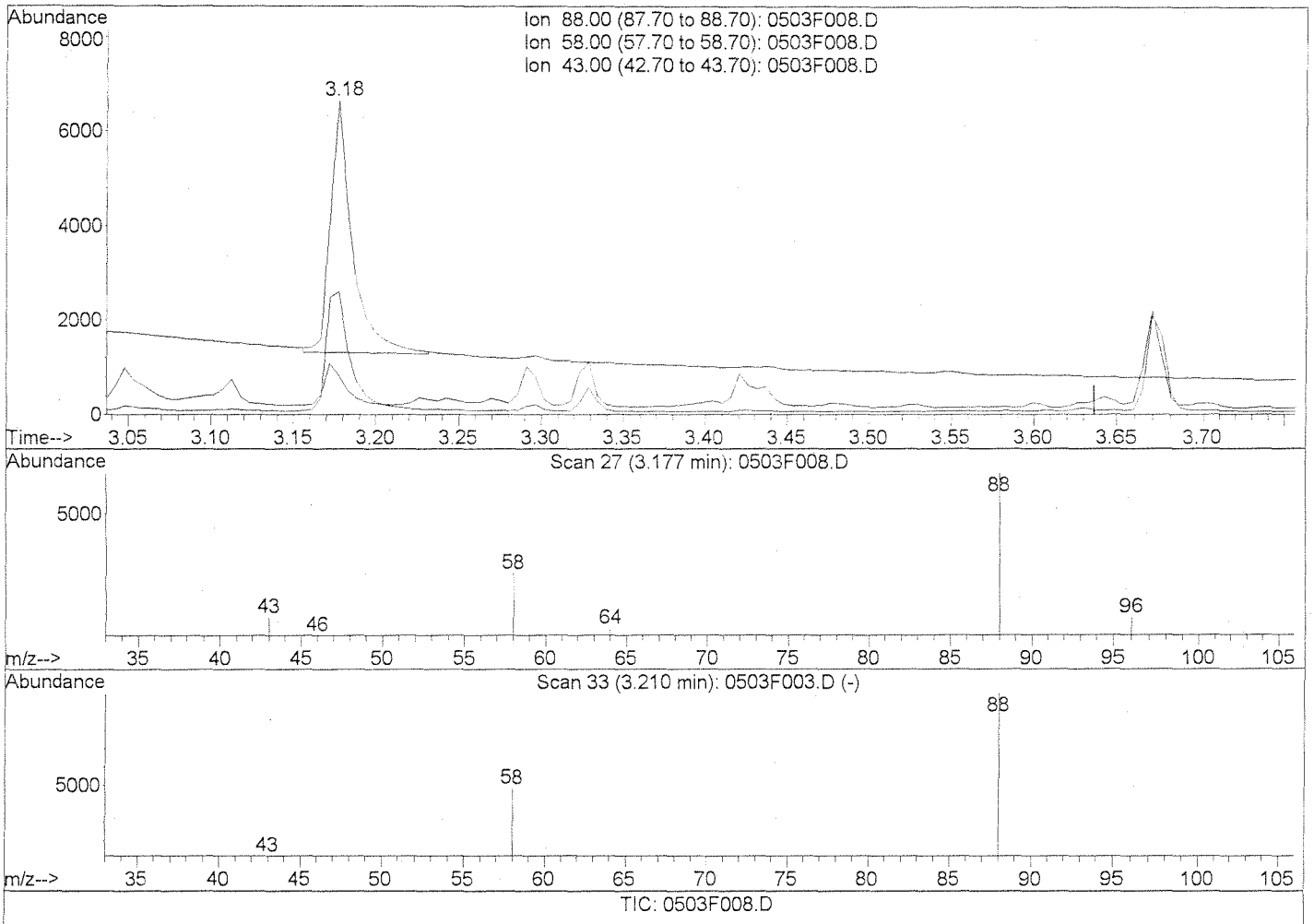
Before

0503F008.D 041112_DX.M Fri May 04 08:47:49 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F008.D

(3) 1,4-Dioxane (T)

3.18min 47.51ng/ml m

response 4942

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	39.25#
43.00	15.90	12.67
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F008.D 041112_DX.M Fri May 04 08:47:57 2012

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Collected: NA
Date Received: NA

1,4-Dioxane by GC/MS

Sample Name: Lab Control Sample
Lab Code: KWG1204380-3

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**23.6**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	93	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F005.D
Lab ID: KWG1204380-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/03/2012 17:08
Date Quantitated: 05/04/2012 08:46
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

L3834
L3902
P1573
P1588
P1604
P1630

Primary Review: LCB MAY 04 2012

Secondary Review: CM 05 MAY 12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F005.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 17:08	**Quant Date:**	05/04/2012 08:46	**Vial:**	5
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1204380-3			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121265	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.00?	152	15930	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.20	0.01	0.00	96	5614	46.34	93	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.22	0.01	0.00	88	5706m	47.23	23.6		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F005.D Vial: 5
Acq On : 3 May 2012 5:08 pm Operator: KBailey
Sample : KWG1204380-3 | LCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

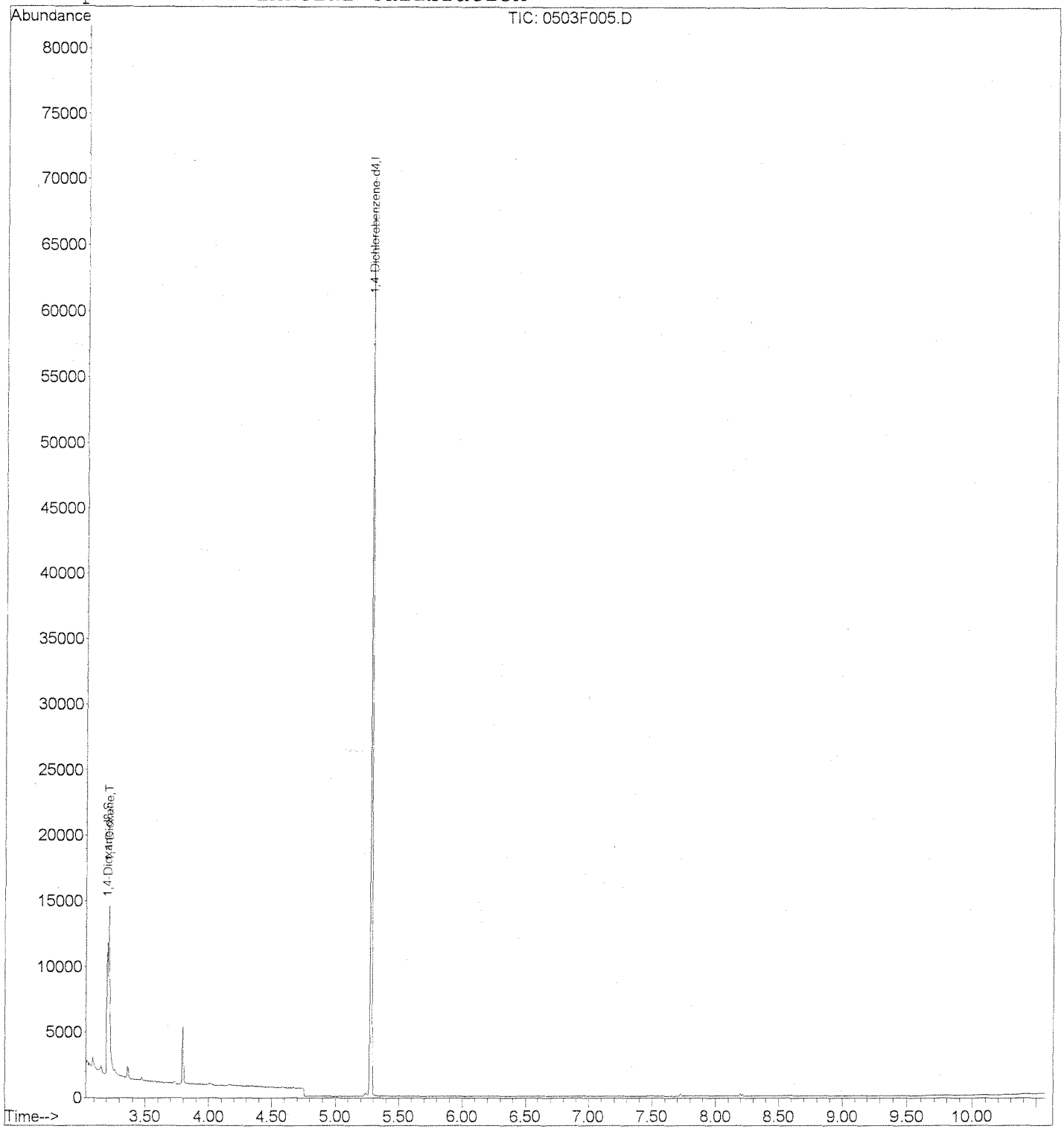
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	15930	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.20	96	5614	46.34	ng/ml	-0.02
Spiked Amount 50.000			Recovery =	92.68%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.22	88	5706m	47.23	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F005.D 041112_DX.M Fri May 04 08:54:29 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F005.D Vial: 5
Acq On : 3 May 2012 5:08 pm Operator: KBailey
Sample : KWG1204380-3 | LCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

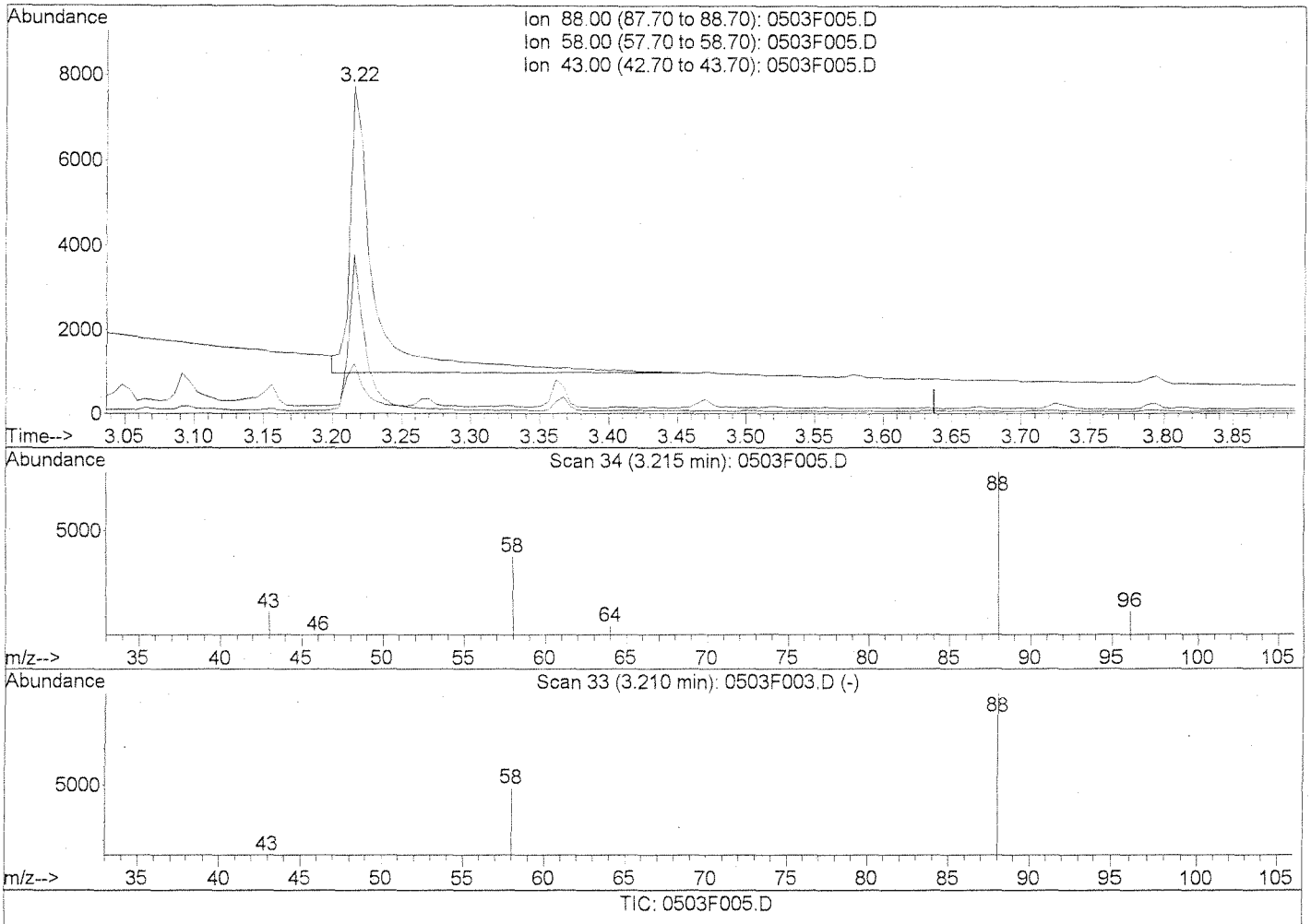


Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F005.D
Acq On : 3 May 2012 5:08 pm
Sample : KWG1204380-3 | LCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012

Vial: 5
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F005.D

(3) 1,4-Dioxane (T)

3.22min 71.24ng/ml

response 8606

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	54.96#
43.00	15.90	15.21
0.00	0.00	0.00

Manual Integration:

Before

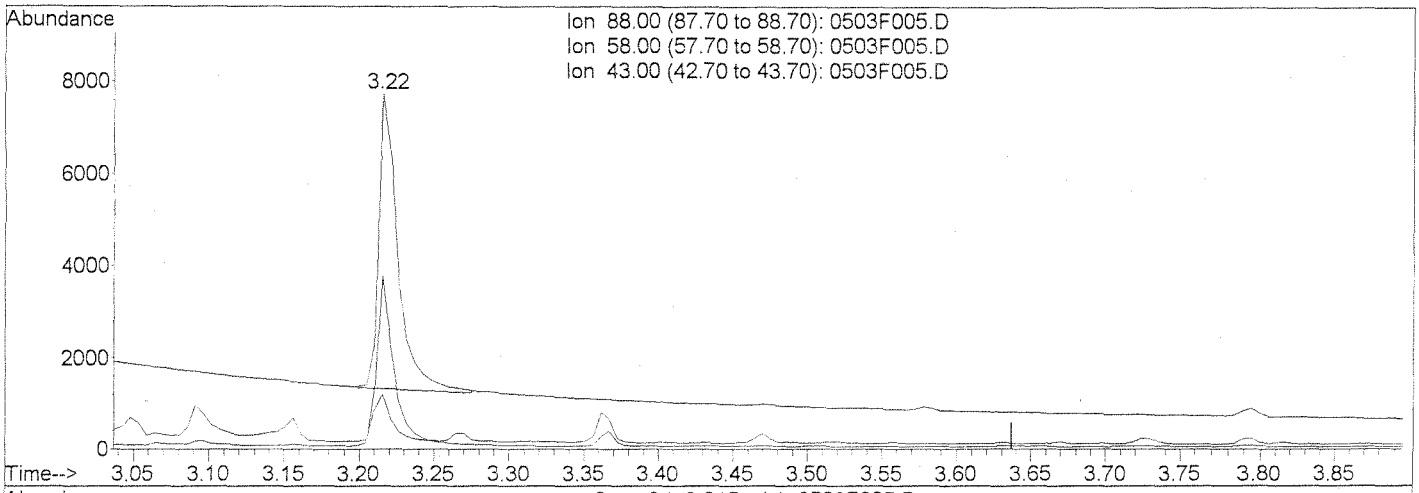
0503F005.D 041112_DX.M Fri May 04 08:46:42 2012

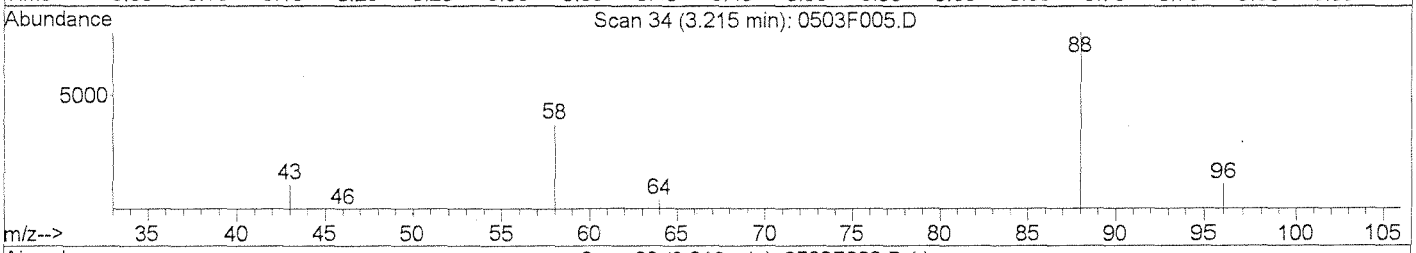
Quantitation Report (Qedit)

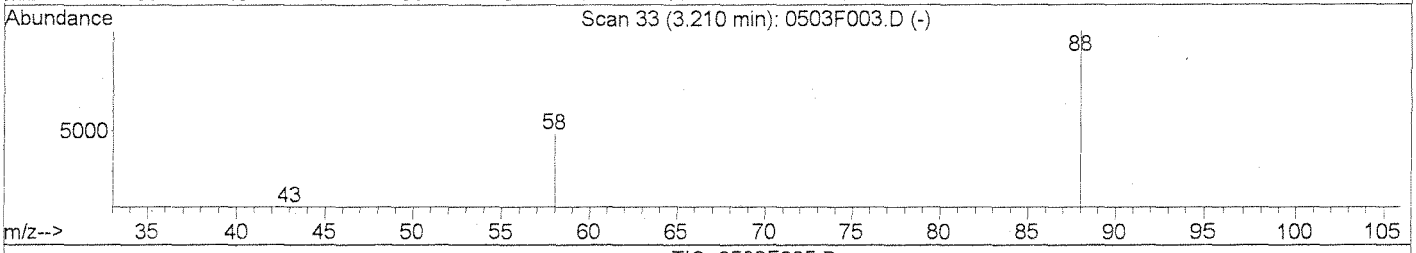
Data File : J:\MS26\DATA\050312\0503F005.D
Acq On : 3 May 2012 5:08 pm
Sample : KWG1204380-3 | LCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012

Vial: 5
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F005.D

(3) 1,4-Dioxane (T)

3.22min 47.23ng/ml m

response 5706

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	48.89#
43.00	15.90	15.60
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

CA 43

0503F005.D 041112_DX.M Fri May 04 08:46:49 2012

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201604
Date Collected: NA
Date Received: NA

1,4-Dioxane by GC/MS

Sample Name: Duplicate Lab Control Sample
Lab Code: KWG1204380-4

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**22.8**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	96	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F006.D
Lab ID: KWG1204380-4
RunType: DLCS
Matrix: WATER

Date Acquired: 05/03/2012 17:27
Date Quantitated: 05/04/2012 08:47
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

L3834
L3902
P1573
P1588
P1604
P1630

Primary Review: MAY 04 2012

Secondary Review: CH 05·04·12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F006.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 17:27	**Quant Date:**	05/04/2012 08:47	**Vial:**	6
Run Type:	DLCS			**Dilution:**	1.0
Lab ID:	KWG1204380-4			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121266	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	14308	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.17	-0.02	0.00	96	5246	48.21	96	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.18	-0.03	0.00	88	4957m	45.68	22.8		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F006.D Vial: 6
Acq On : 3 May 2012 5:27 pm Operator: KBailey
Sample : KWG1204380-4 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

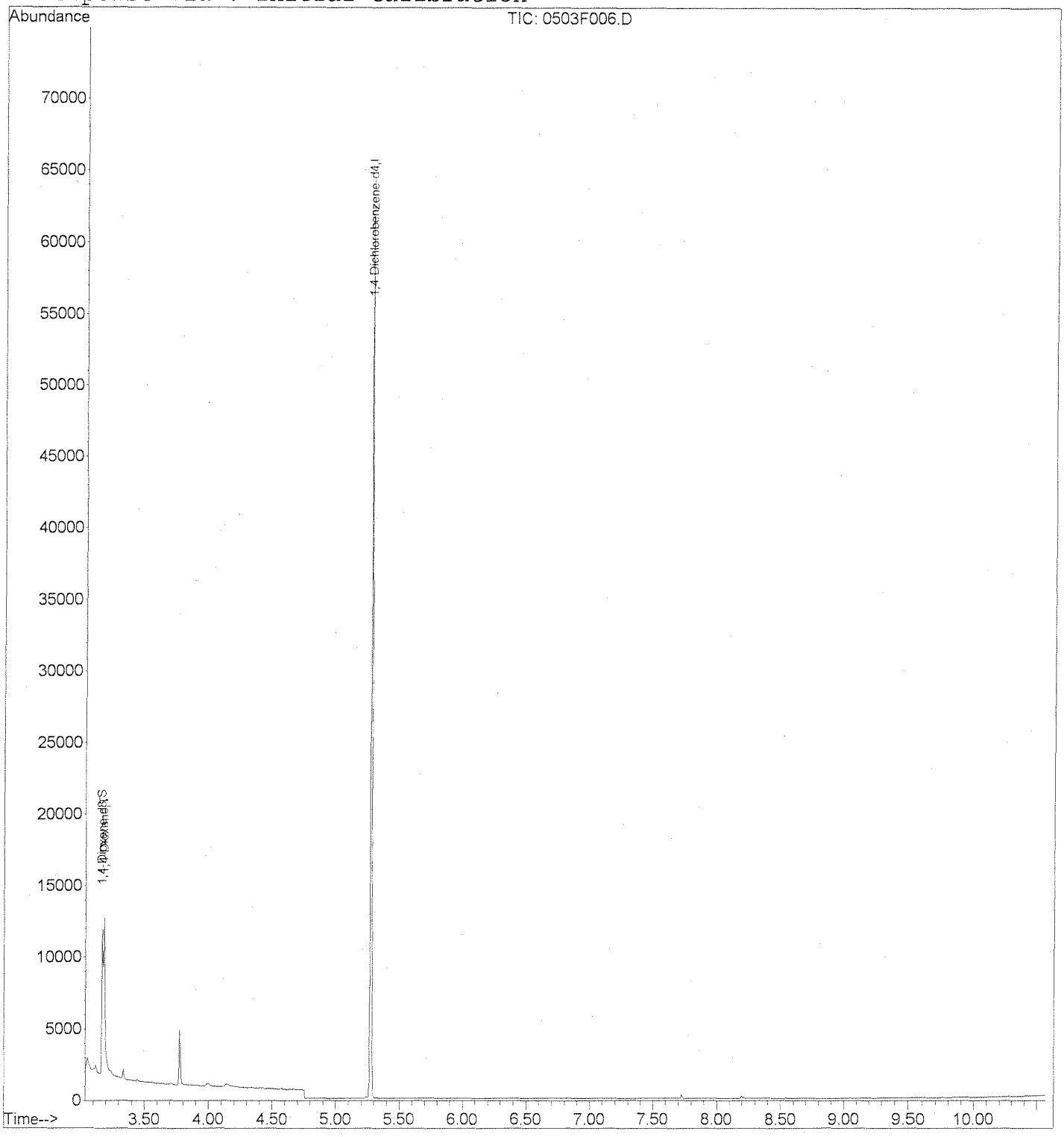
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	14308	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.17	96	5246	48.21	ng/ml	-0.06
Spiked Amount 50.000			Recovery = 96.42%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.18	88	4957m	45.68	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F006.D 041112_DX.M Fri May 04 08:54:30 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F006.D Vial: 6
Acq On : 3 May 2012 5:27 pm Operator: KBailey
Sample : KWG1204380-4 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: 041112_DX.RE

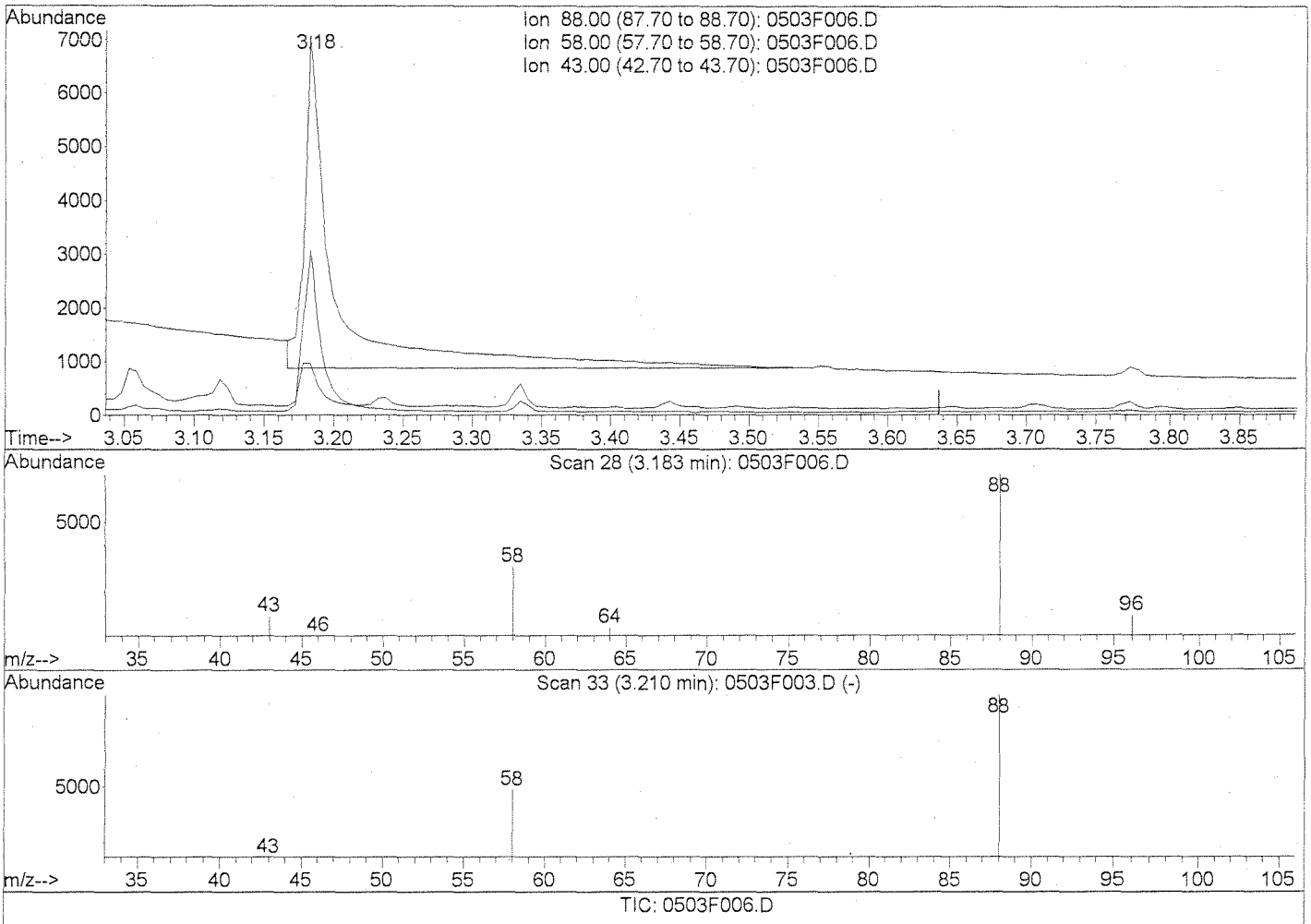
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration



Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F006.D Vial: 6
Acq On : 3 May 2012 5:27 pm Operator: KBailey
Sample : KWG1204380-4 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F006.D

(3) 1,4-Dioxane (T)

3.18min 89.94ng/ml

response 9759

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	48.55#
43.00	15.90	13.38
0.00	0.00	0.00

Manual Integration:

Before

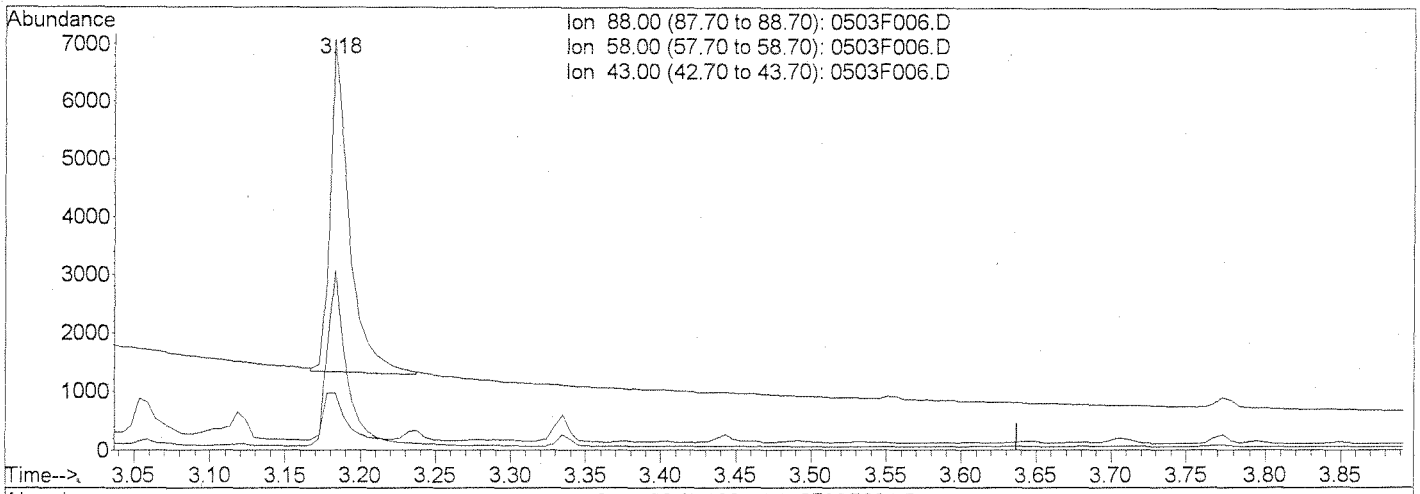
0503F006.D 041112_DX.M Fri May 04 08:46:57 2012

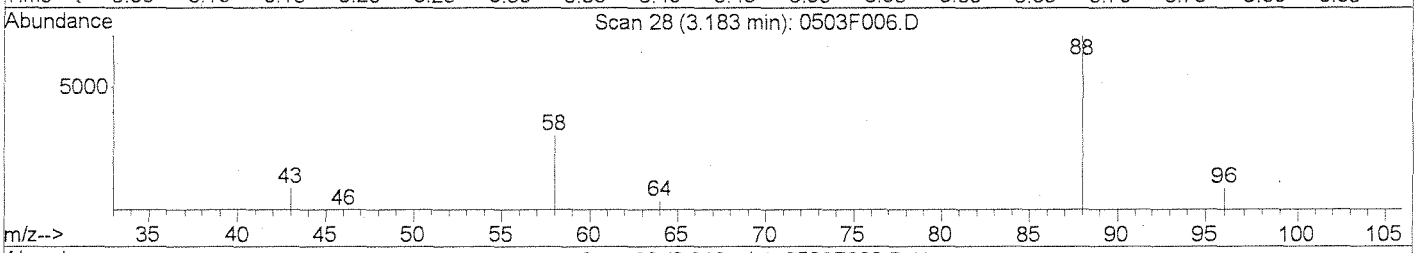
Quantitation Report (Qedit)

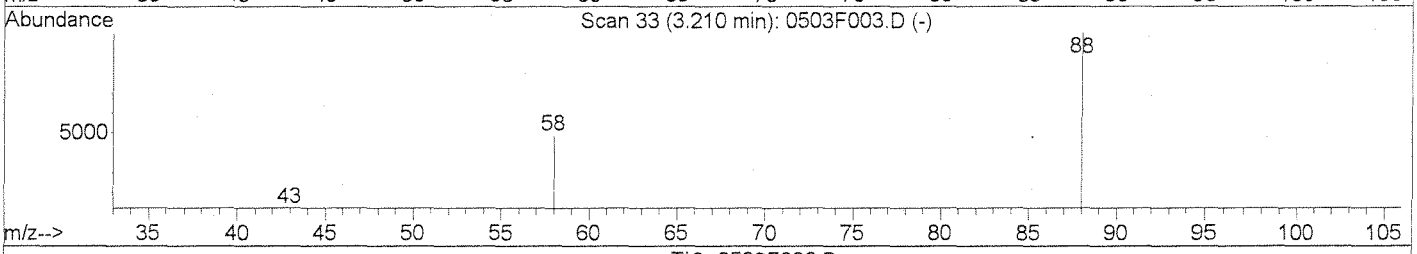
Data File : J:\MS26\DATA\050312\0503F006.D
Acq On : 3 May 2012 5:27 pm
Sample : KWG1204380-4 | DLCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012

Vial: 6
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F006.D

(3) 1,4-Dioxane (T)

3.18min 45.68ng/ml m

response 4957

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	43.34#
43.00	15.90	13.74
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

CA LB

0503F006.D 041112_DX.M Fri May 04 08:47:04 2012

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Standards Data

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/03/2012
Time Analyzed: 16:10

Tune Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F002.D
Instrument ID: MS26
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1204586

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
70	69	0	2	0.4	321	PASS
127	198	10	80	41.2	134864	PASS
197	198	0	2	0.0	0	PASS
51	198	10	80	16.9	55287	PASS
68	69	0	2	1.3	1000	PASS
69	198	0	100	23.0	75190	PASS
198	442	30	100	53.1	327258	PASS
199	198	5	9	6.7	22072	PASS
275	198	10	60	28.6	93752	PASS
365	442	1	50	2.1	12870	PASS
441	443	0	100	73.0	87834	PASS
442	442	100	100	100.0	615872	PASS
443	442	15	24	19.5	120280	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1204586-2	J:\MS26\DATA\050312\0503F003.D	05/03/2012	16:29	
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/2012	16:48	
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/2012	17:08	
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/2012	17:27	
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/2012	17:46	
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/2012	18:05	
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/2012	18:24	
MW-24-1	P1201604-005	J:\MS26\DATA\050312\0503F018.D	05/03/2012	21:16	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Exception Report

Data File:	J:\MS26\DATA\050312\0503F002.D	**Date Acquired:**	05/03/2012 16:10
Lab ID:	KWG1204586-1	**Date Quantitated:**	
RunType:	TUNE	**Batch ID:**	KWG1204586
Matrix:	WATER	**Analysis Method:**	DFTPP
		ListJoinID:	LJ1965

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Ion Ratio	NA	NA	NA	x	

Primary Review: MAY 04 2012

Secondary Review: 05.25 05.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F002.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 16:10	**Quant Date:**		**Vial:**	2
Run Type:	TUNE			**Dilution:**	1.0
Lab ID:	KWG1204586-1			**Soln Conc. Units:**	

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-DIOXA	**Collect Date:**		**Receive Date:**	05/04/2012

Analysis Lot:	KWG1204586	**Prep Lot:**		**Report Group:**	
Analysis Method:	DFTPP	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS26\METHODS\SIM\A_DFTPP.M	**Calibration ID:**	CAL11446
Title:		**Report List ID:**	LJ1965
Tune Ref:		**Method ID:**	MJ190
MB Ref:		**Quant based on Report List**	

Tune Results

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.9	55287	Pass
68	69	0	2	1.3	1000	Pass
69	198	0	100	23.0	75190	Pass
70	69	0	2	0.4	321	Pass
127	198	10	80	41.2	134864	Pass
197	198	0	2	0.0	0	Pass
198	442	30	100	53.1	327258	Pass
199	198	5	9	6.7	22072	Pass
275	198	10	60	28.6	93752	Pass
365	442	1	50	2.1	12870	Pass
441	443	0.01	100	73.0	87834	Pass
442	442	100	100	100.0	615872	Pass
443	442	15	24	19.5	120280	Pass

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

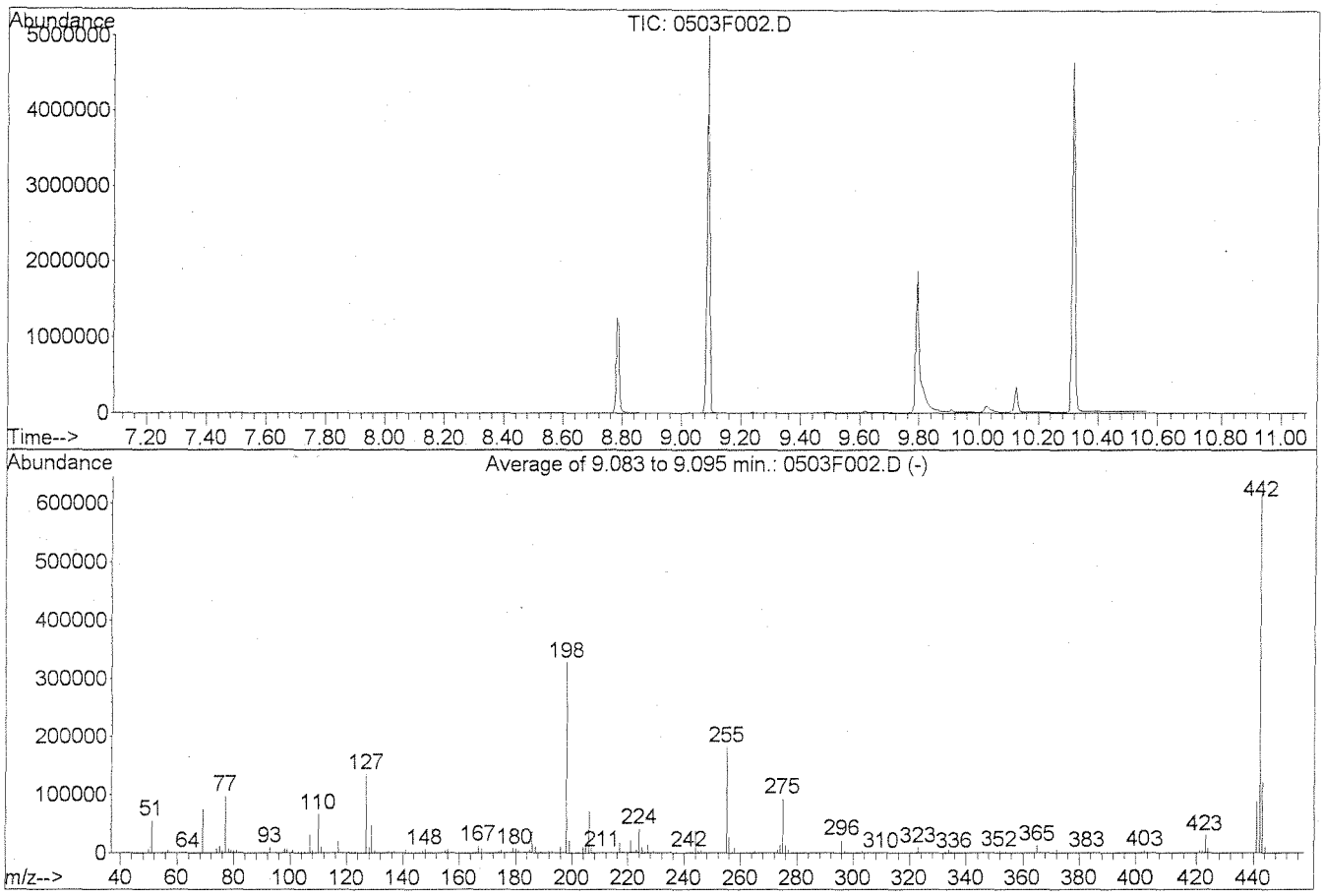
D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

DFTPP

Data File : J:\MS26\DATA\050312\0503F002.D
Acq On : 3 May 2012 4:10 pm
Sample : 3.0ug/mL DFTPP | SVM38-66A
Misc :
MS Integration Params: rteint.p
Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix

Vial: 2
Operator: KBailey
Inst : MS26
Multiplr: 1.00



AutoFind: Scans 1048, 1049, 1050; Background Corrected with Scan 1044

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	16.9	55287	PASS
68	69	0.00	2	1.3	1000	PASS
69	198	0.00	100	23.0	75190	PASS
70	69	0.00	2	0.4	321	PASS
127	198	10	80	41.2	134864	PASS
197	198	0.00	2	0.0	0	PASS
198	442	30	100	53.1	327258	PASS
199	198	5	9	6.7	22072	PASS
275	198	10	60	28.6	93752	PASS
365	442	1	50	2.1	12870	PASS
441	443	0.01	100	73.0	87834	PASS
442	442	30	100	100.0	615872	PASS
443	442	15	24	19.5	120280	PASS

0503F002.D A_DFTPP.M Fri May 04 08:45:18 2012

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
50.00	6876	64.00	352	78.10	6815	88.95	161
51.10	55287	65.00	1502	79.00	5089	91.00	1410
52.05	2927	65.95	106	80.00	4015	92.00	1577
53.00	135	68.00	1000	81.00	6202	93.00	9215
55.00	256	69.00	75190	82.00	1575	94.00	617
56.00	1557	70.00	321	83.00	1681	95.05	167
57.00	4279	73.00	509	83.90	104	96.00	498
58.00	188	74.00	6705	85.00	1392	96.90	79
61.00	705	75.00	11971	85.95	1570	97.10	99
62.00	796	76.00	4210	87.00	908	98.00	6875
63.00	2549	77.10	97394	88.00	337	99.00	6754

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
100.00	510	111.00	9455	123.00	3121	134.00	1247
101.00	4100	112.00	1239	124.00	1428	135.00	3756
102.00	218	113.00	306	125.00	1441	136.00	1479
103.00	1256	114.10	50	126.05	241	137.00	2070
104.00	2334	116.00	1561	127.00	134864	137.85	421
105.00	2171	117.00	19510	128.00	10194	138.95	163
106.00	689	118.00	1575	129.00	47451	139.95	508
107.00	31702	118.90	255	130.00	4014	141.00	5477
108.00	5271	120.00	381	131.00	749	142.00	1958
109.00	781	121.00	66	132.00	455	142.95	1384
110.00	66449	122.00	1934	132.95	258	144.00	325

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
144.95	293	156.00	5404	167.00	12018	177.95	713
146.00	931	157.00	1113	168.00	7575	179.00	8907
147.00	2906	157.95	1089	169.00	1154	180.00	6888
148.00	5927	159.00	825	169.95	362	181.00	3151
149.00	1447	160.00	1871	170.90	470	182.00	433
149.95	396	161.00	2982	172.00	984	182.90	281
151.10	779	162.00	848	173.00	1464	184.00	658
151.80	181	163.00	239	174.00	2668	185.00	4322
153.00	1783	164.00	326	175.00	5114	186.00	37907
154.00	1449	165.00	2037	176.00	1660	187.00	10647
155.00	3313	166.00	1818	177.00	2145	188.00	1095

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
189.00	1957	201.50	1683	214.90	632	226.00	1108
189.95	311	203.00	1589	216.00	1430	227.00	14673
191.00	1030	204.00	9553	217.00	18216	228.00	2135
192.00	3098	205.00	16374	218.00	2285	229.00	3510
193.00	3297	206.00	72696	219.00	194	230.00	469
194.00	720	207.00	9550	220.20	60	231.00	1631
194.95	438	208.00	2084	221.00	20205	231.95	261
196.00	9416	209.00	728	221.80	408	232.95	236
198.00	327258	210.20	153	223.00	4122	234.00	937
199.00	22072	211.00	2734	224.00	41417	235.00	1098
200.00	1602	213.00	198	225.00	10316	236.00	677

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
237.00	1501	247.90	239	259.00	1465	273.00	6086
237.95	195	249.00	1370	259.95	224	274.00	15645
239.00	586	249.95	241	260.95	308	275.00	93752
240.00	473	250.90	238	263.00	52	276.00	12590
240.95	912	251.95	217	263.95	241	277.00	6285
242.00	2242	252.95	657	265.00	3503	278.00	1128
243.00	2447	253.95	792	265.90	436	279.00	194
244.05	37994	255.00	181877	267.90	55	280.90	105
245.00	5014	256.00	27027	269.80	111	281.95	229
246.00	5672	257.00	2053	270.95	281	283.00	795
247.00	1174	258.00	8980	272.00	425	284.00	583

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
285.00	1358	298.00	177	314.00	1192	327.00	1587
286.00	192	301.00	341	315.00	2593	328.00	870
289.00	224	302.00	432	316.00	1598	328.90	91
290.00	256	303.00	2986	317.00	300	332.00	676
291.00	84	304.00	753	320.00	58	333.00	886
292.00	322	304.90	56	321.00	882	334.00	6024
293.00	1644	308.00	368	322.00	456	335.10	1591
294.00	405	309.00	166	323.00	9485	336.00	110
295.00	401	310.00	396	324.00	1758	338.90	91
296.00	22619	310.90	51	325.10	108	340.00	82
297.00	3206	313.00	150	325.90	110	341.00	1104

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
342.00	334	366.90	75	391.00	630	423.00	30156
346.00	2241	369.95	281	392.05	411	424.00	7187
347.00	379	371.00	928	400.90	431	425.10	825
351.00	103	372.00	6222	402.00	2732	441.05	87834
352.00	3157	373.00	1596	403.00	4078	442.10	615872
353.00	2071	374.00	106	404.00	1407	443.05	120280
354.00	3214	376.90	100	405.00	235	444.05	11372
355.00	604	383.00	1794	409.90	62	445.05	660
359.00	223	384.00	501	415.00	172		
365.00	12870	385.00	87	421.00	3968		
366.00	2005	390.00	921	422.00	3564		

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201604
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26
Column: MS

Level ID	File ID
A	J:\MS26\DATA\041112\0411F009.D
B	J:\MS26\DATA\041112\0411F010.D
C	J:\MS26\DATA\041112\0411F011.D
D	J:\MS26\DATA\041112\0411F012.D
E	J:\MS26\DATA\041112\0411F013.D
F	J:\MS26\DATA\041112\0411F014.D
G	J:\MS26\DATA\041112\0411F015.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,4-Dioxane	A	2.0	0.346	B	4.0	0.323	C	10	0.385	D	20	0.376	E	50	0.406
	F	100	0.417	G	200	0.401									
1,4-Dioxane-d8	A	2.0	0.360	B	4.0	0.348	C	10	0.389	D	20	0.384	E	50	0.381
	F	100	0.407	G	200	0.394									

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,4-Dioxane	MS	AverageRF	% RSD	9.0		≤ 20	0.379		0.01
1,4-Dioxane-d8	SURR	AverageRF	% RSD	5.4		≤ 20	0.380		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Calibration Date: 04/11/2012
Date Analyzed: 04/11/2012

Second Source Calibration Verification
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL11446
Units: ng/ml

File ID: J:\MS26\DATA\041112\0411F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	21	0.379	0.404	7	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Injection Log

Directory: J:\MS26\DATA\041112

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0411F001.d	1.	PR		11 Apr 2012 08:4
2	1	0411F002.d	1.	PR		11 Apr 2012 09:0
3	1	0411F003.d	1.	PR		11 Apr 2012 09:2
4	1	0411F004.d	1.	PR		11 Apr 2012 09:4
5	1	0411F005.d	1.	PR		11 Apr 2012 10:0
6	1	0411F006.d	1.	PR		11 Apr 2012 10:2
7	1	0411F007.d	1.	3.0ug/mL DFTPP | SVM37-61C		11 Apr 2012 10:4
8	2	0411F008.d	1.	IB		11 Apr 2012 11:0
9	3	0411F009.d	1.	2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A		11 Apr 2012 11:1
10	4	0411F010.d	1.	4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B		11 Apr 2012 11:3
11	5	0411F011.d	1.	10ng/mL ICAL 1,4-Dioxane | SVM37-76C		11 Apr 2012 11:5
12	6	0411F012.d	1.	20ng/mL ICAL 1,4-Dioxane | SVM37-76D / CCV		11 Apr 2012 12:1
13	7	0411F013.d	1.	50ng/mL ICAL 1,4-Dioxane | SVM37-76E		11 Apr 2012 12:3
14	8	0411F014.d	1.	100ng/mL ICAL 1,4-Dioxane | SVM37-76F		11 Apr 2012 12:5
15	9	0411F015.d	1.	200ng/mL ICAL 1,4-Dioxane | SVM37-76G		11 Apr 2012 13:1
16	10	0411F016.d	1.	20ng/mL ICV 1,4-Dioxane | SVM38-29B		11 Apr 2012 13:3
17	11	0411F017.d	1.	KWG1202790-5 | MB		11 Apr 2012 14:0
18	12	0411F018.d	1.	KWG1202790-1 | LOD		11 Apr 2012 14:2
19	13	0411F019.d	1.	KWG1202790-2 | LOD		11 Apr 2012 14:4
20	14	0411F020.d	1.	KWG1202790-3 | LOD		11 Apr 2012 14:5
21	15	0411F021.d	1.	KWG1202790-4 | LOQ		11 Apr 2012 15:1
22	16	0411F022.d	1.	KWG1202878-8 | MB		11 Apr 2012 15:3
23	17	0411F023.d	1.	KWG1202878-4 | LOD		11 Apr 2012 15:5
24	18	0411F024.d	1.	KWG1202878-5 | LOD		11 Apr 2012 16:1
25	19	0411F025.d	1.	KWG1202878-6 | LOD		11 Apr 2012 16:3
26	20	0411F026.d	1.	KWG1202878-7 | LOQ		11 Apr 2012 16:5

NR

Soil LOD's / LOQ

NR

CAL 11446

LB

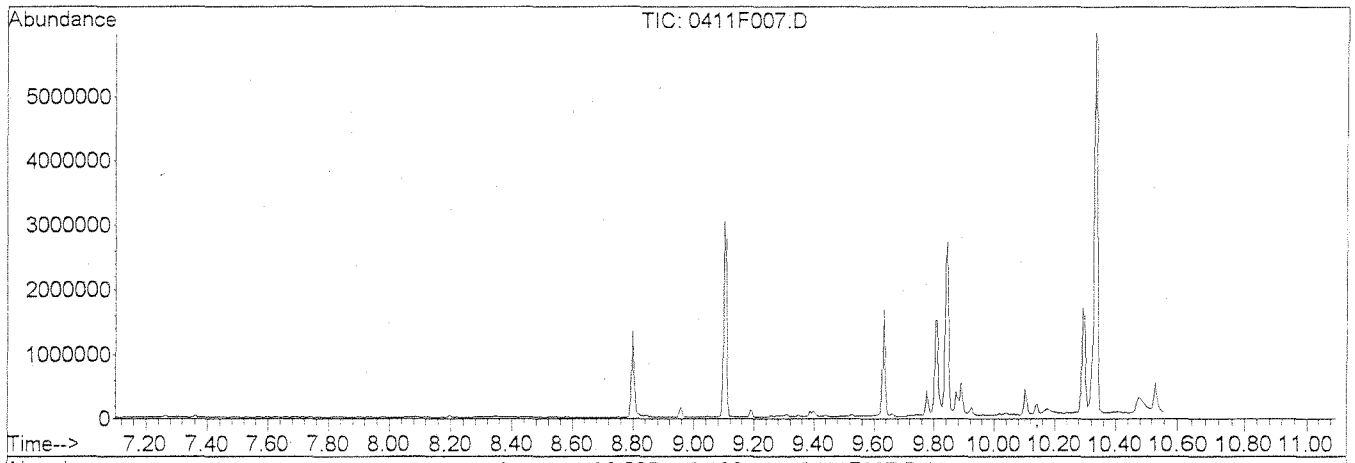
APR 2 0 2012

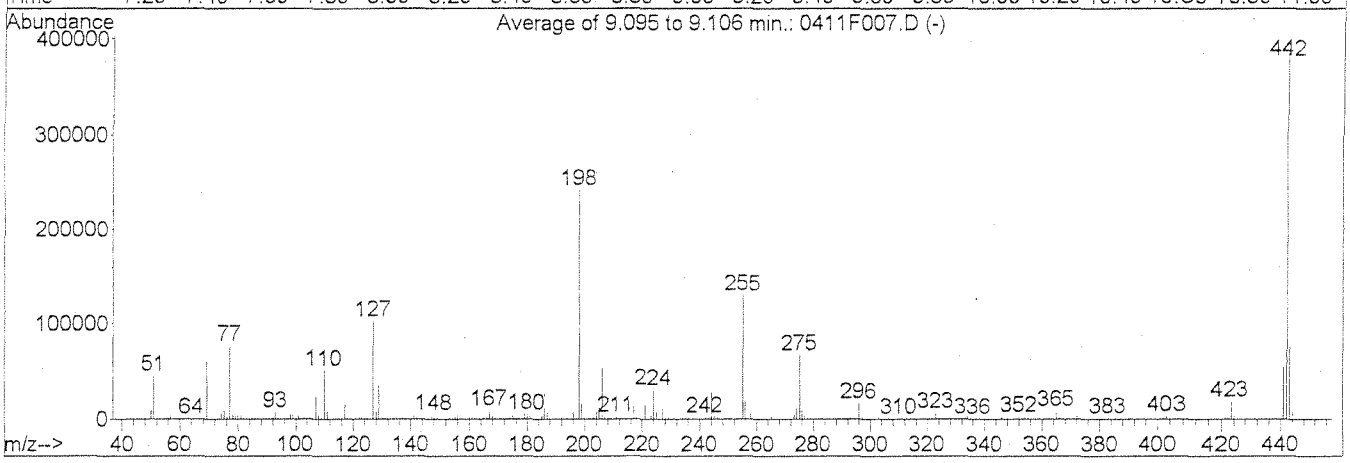
CA 04-23-12

DFTPP

Data File : J:\MS26\DATA\041112\0411F007.D
Acq On : 11 Apr 2012 10:41 am
Sample : 3.0ug/mL DFTPP | SVM37-61C
Misc :
MS Integration Params: rteint.p
Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix

Vial: 1
Operator: KBailey
Inst : MS26
Multiplr: 1.00





AutoFind: Scans 1050, 1051, 1052; Background Corrected with Scan 1046

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	18.8	45513	PASS
68	69	0.00	2	1.3	787	PASS
69	198	0.00	100	25.2	60927	PASS
70	69	0.00	2	0.6	395	PASS
127	198	10	80	42.4	102442	PASS
197	198	0.00	2	0.0	81	PASS
198	442	30	100	63.0	241866	PASS
199	198	5	9	6.8	16472	PASS
275	198	10	60	27.6	66830	PASS
365	442	1	50	2.3	8721	PASS
441	443	0.01	100	72.5	54989	PASS
442	442	30	100	100.0	384122	PASS
443	442	15	24	19.7	75860	PASS

0411F007.D A_DFTPP.M Fri Apr 20 15:55:37 2012

APR 2 0 2012
APR 2 3 2012

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
50.05	9042	63.90	305	75.00	9570	87.00	741
51.00	45513	64.95	1170	76.10	3311	87.90	257
52.05	2433	65.90	27	77.05	76896	89.00	156
53.00	218	66.95	14	78.10	5645	91.00	1007
55.00	207	68.00	787	79.00	3998	92.00	1250
56.00	1413	69.00	60927	80.00	3175	93.00	7123
57.00	3547	70.00	395	81.00	4752	94.00	599
58.00	235	71.10	8	82.00	1230	94.95	117
61.00	612	72.00	158	83.00	1414	95.95	435
62.00	665	73.00	383	84.95	1127	97.05	223
63.00	2173	74.00	5511	85.90	761	98.00	5412

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
99.00	5076	110.00	50992	121.00	138	132.05	379
99.95	480	111.00	7373	122.00	1552	132.90	112
101.00	3277	111.95	963	123.00	2393	134.00	965
102.00	167	112.95	347	124.00	1200	135.00	2783
103.00	1009	113.90	53	125.00	1214	136.00	1175
104.00	1792	114.90	189	126.05	288	137.00	1568
105.00	1691	116.00	1246	127.00	102442	137.85	421
106.00	648	117.00	15489	128.00	7501	139.00	194
107.00	23908	118.00	1257	129.00	35771	139.95	460
108.00	4050	119.00	304	130.00	3102	141.00	4135
109.00	582	120.00	332	131.00	706	142.00	1473

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
142.95	1149	154.00	1125	165.00	1538	176.00	1237
144.00	339	155.00	2521	166.00	1349	177.00	1727
145.00	320	156.00	3927	167.00	9218	178.00	557
146.00	742	157.00	836	168.00	4967	179.00	6513
147.00	2358	157.95	818	169.00	829	180.00	4999
148.00	4480	159.00	634	170.00	293	181.00	2441
149.00	1168	160.00	1335	170.90	443	182.00	427
150.00	314	161.00	2203	171.95	758	182.95	246
151.15	648	161.95	670	173.00	1152	184.00	505
151.80	356	162.95	190	174.00	1988	185.00	3338
153.00	1442	164.00	297	175.05	3754	186.00	27785

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
187.00	7790	198.00	241866	210.30	505	224.00	30477
188.05	784	199.00	16472	211.00	2072	225.00	7686
189.00	1382	200.00	1269	213.00	130	226.00	775
190.00	266	201.50	1223	214.95	416	227.00	11131
191.10	777	203.00	1384	216.00	1045	228.00	1512
192.00	2338	204.00	7195	217.00	13414	229.00	2665
193.00	2567	205.00	12496	218.00	1765	230.00	408
194.00	604	206.00	53876	218.95	182	231.00	1191
195.05	293	207.00	7081	221.00	15072	232.00	193
196.00	7048	208.00	1454	221.80	200	232.95	187
196.90	81	209.00	601	223.00	3145	234.00	677

APR 23 2012 APR 20 2012

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
235.00	913	246.00	4147	257.00	1525	271.95	331
235.95	534	247.00	852	258.00	6574	273.00	4314
237.00	984	247.95	194	259.00	1050	274.00	11381
238.00	145	249.00	981	260.00	220	275.00	66830
239.00	386	249.95	182	260.95	214	276.00	9067
240.00	326	250.95	180	263.85	332	277.00	4502
241.00	685	251.95	167	265.00	2545	278.00	777
242.00	1745	253.00	442	265.85	393	278.95	149
243.05	1834	254.00	548	267.70	73	280.95	111
244.00	27432	255.00	130301	269.95	166	282.00	143
245.00	3713	256.00	19632	270.90	216	283.00	548

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
284.00	366	296.00	16243	314.00	897	328.00	621
285.00	860	297.00	2402	315.00	1899	328.90	61
286.00	179	298.00	153	316.00	1183	332.00	537
288.90	195	300.90	210	317.05	214	333.00	621
290.00	192	302.00	294	321.00	549	334.00	4228
290.80	51	303.05	2164	321.95	322	335.00	1082
291.00	60	304.00	521	323.00	6596	336.05	131
292.00	241	308.00	227	324.00	1317	338.90	57
293.00	1156	309.00	149	324.95	123	341.00	816
294.05	243	310.00	252	326.00	116	342.00	186
295.00	282	313.00	162	326.90	1122	346.00	1700

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
346.95	309	370.95	575	402.00	1868	442.05	384122
350.95	132	372.00	4201	403.00	2705	443.05	75860
352.00	2094	373.00	935	404.00	981	444.10	7088
353.05	1360	374.00	59	404.95	135	445.00	402
354.00	2293	377.00	63	414.90	77		
355.10	420	383.00	1093	421.00	2436		
358.95	172	383.90	347	422.00	2275		
365.00	8721	390.00	554	423.00	18632		
366.00	1367	391.00	382	424.00	3795		
366.90	56	392.05	328	425.00	378		
370.00	215	400.95	281	441.05	54989		

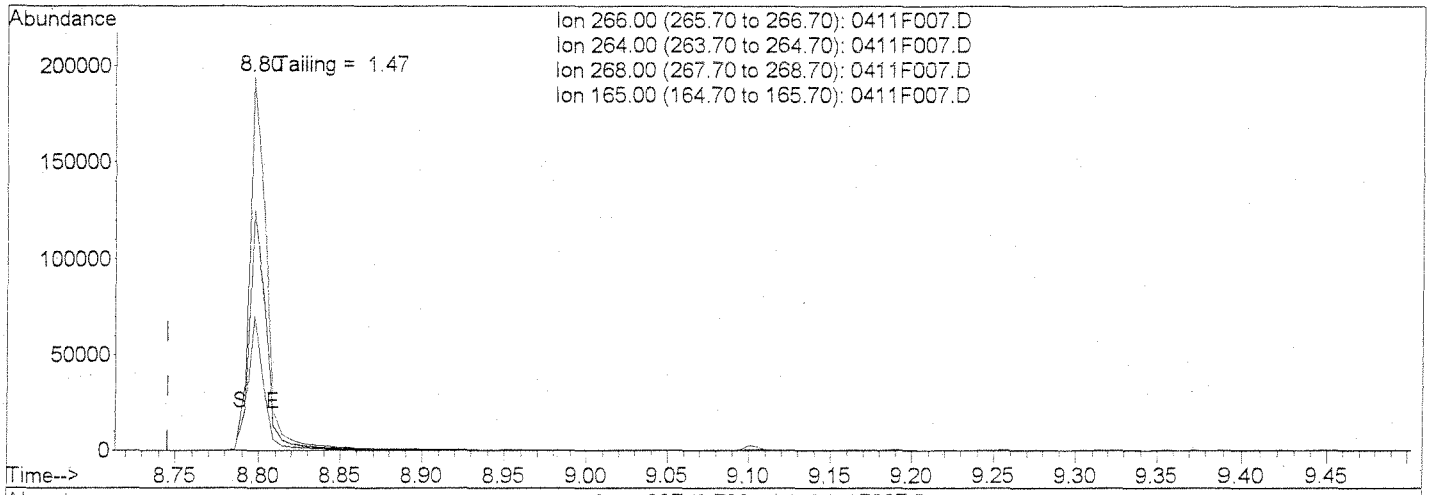
APR 20 2012

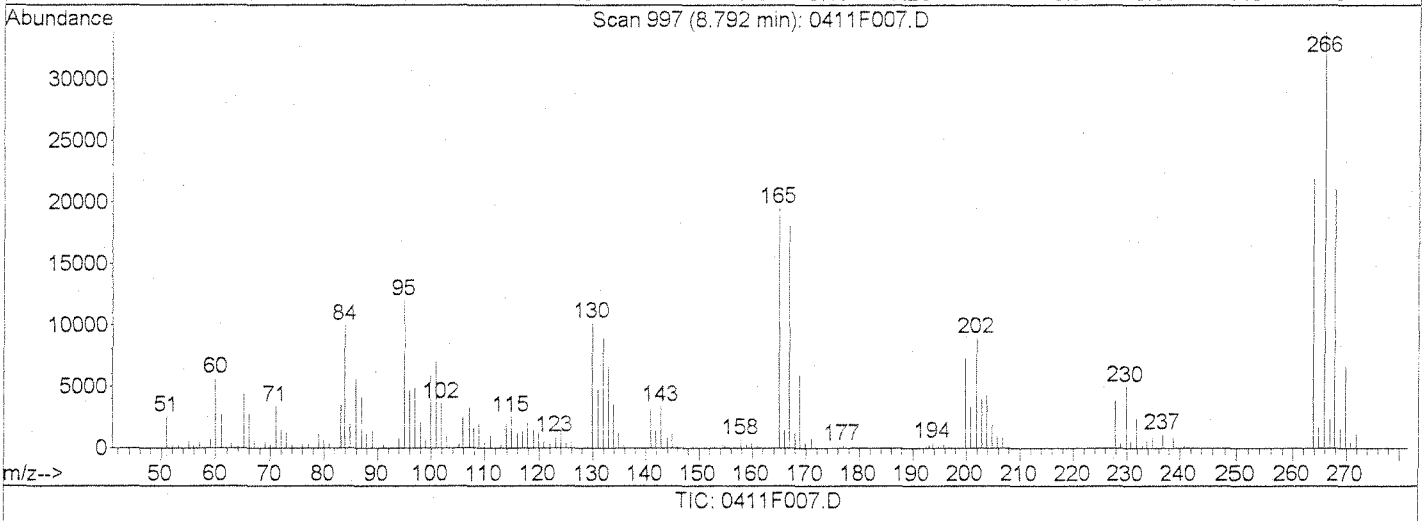
APR 23 2012

Quantitation Report

Data File : J:\MS26\DATA\041112\0411F007.D Vial: 1
Acq On : 11 Apr 2012 10:41 am Operator: KBailey
Sample : 3.0ug/mL DFTPP | SVM37-61C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: rteint.p

Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix
Last Update : Tue Nov 22 15:57:47 2011
Response via : Initial Calibration





TIC: 0411F007.D

(1) Pentachlorophenol

Exp R.T. 9.25min

response 0

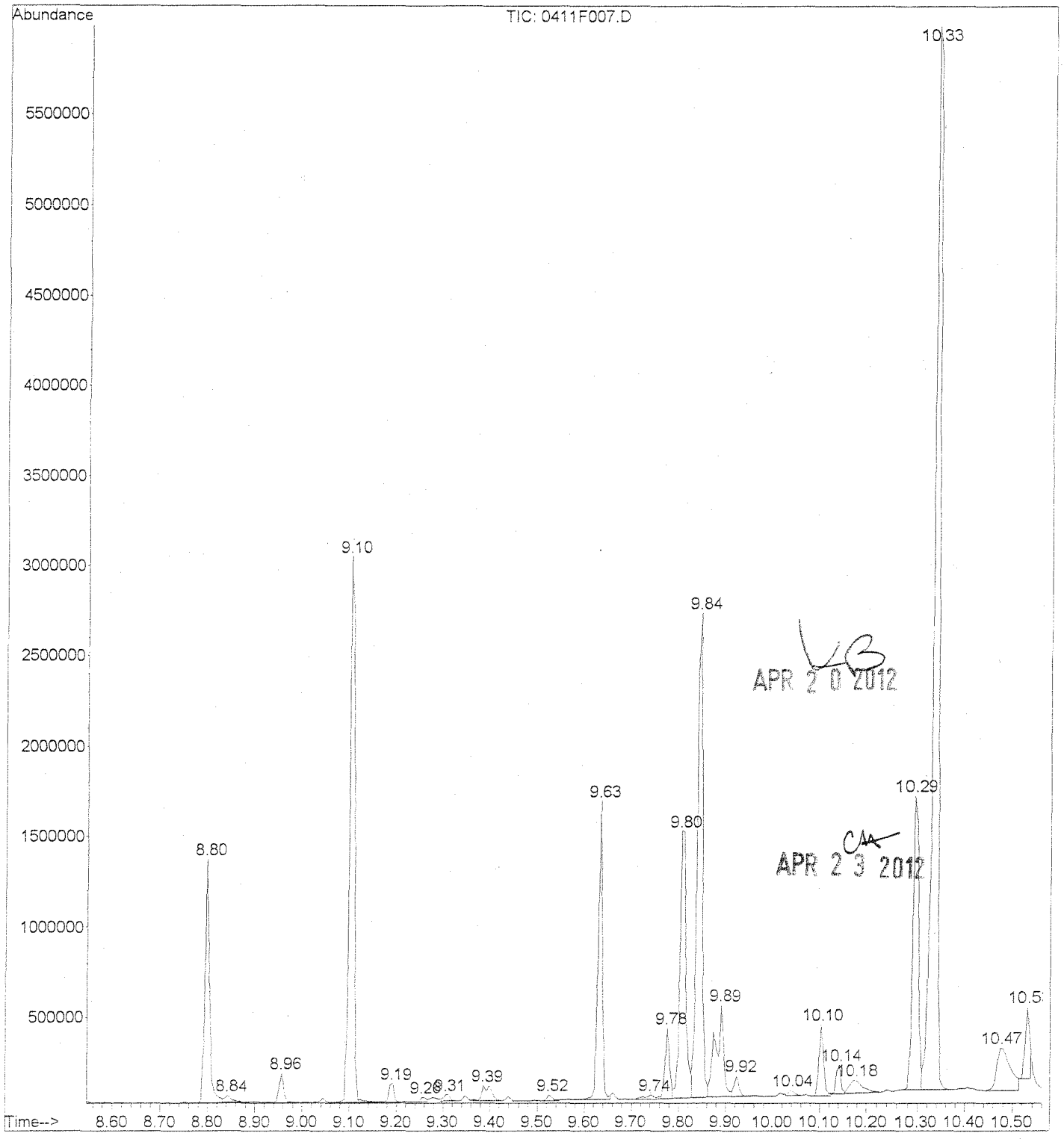
Ion	Exp%	Act%
266.00	100	100
264.00	0.00	64.74
268.00	0.00	62.17
165.00	0.00	57.67

APR 2 0 2012

APR 2 3 2012

0411F007.D A_DFTPP.M Fri Apr 20 15:55:57 2012

File : J:\MS26\DATA\041112\0411F007.D
Operator : KBailey
Acquired : 11 Apr 2012 10:41 am using AcqMethod TUNE14DX
Instrument : MS26
Sample Name: 3.0ug/mL DFTPP | SVM37-61C
Misc Info :
Vial Number: 1



1	3.791	rVB	0.069		33163	3.773	3.842
2	4.306	rVB	0.080		26100	4.288	4.368
3	4.849	rBV	0.040		24096	4.826	4.866
4	4.941	rVB	0.052		27968	4.918	4.969
5	5.278	rVB	0.034		23779	5.261	5.295
6	5.376	rBV	0.046		103298	5.353	5.398
7	5.507	rBV	0.080		90384	5.467	5.547
8	5.564	rBV	0.034		30855	5.547	5.582
9	5.650	rBV	0.046		27717	5.633	5.679
10	5.839	rVB	0.046		25401	5.816	5.862
11	6.142	rBV	0.040		24548	6.119	6.159
12	6.680	rVB	0.057		163712	6.657	6.714
13	7.264	rVB	0.069		28093	7.241	7.310
14	7.361	rBV	0.034		21076	7.344	7.378
15	8.196	rVB	0.097		37037	8.156	8.254
16	8.345	rVB	0.092		34196	8.305	8.397
17	8.797	rBV	0.063		919010	8.769	8.832
18	8.843	rVB	0.057		38087	8.832	8.889
19	8.957	rVB	0.063		113424	8.935	8.998
20	9.101	rBV	0.103		2248601	9.066	9.169
21	9.192	rVB	0.040		77660	9.169	9.209
22	9.255	rBV	0.034		23121	9.232	9.266
23	9.307	rVV	0.040		34046	9.295	9.335
24	9.387	rVB	0.063		113926	9.364	9.427
25	9.524	rBV	0.040		25688	9.507	9.547
26	9.633	rBV	0.063		1053543	9.593	9.656
27	9.741	rBV	0.046		38112	9.707	9.753
28	9.776	rVV	0.034		265686	9.753	9.787
29	9.804	rVV	0.040		1369413	9.787	9.827
30	9.844	rVV	0.034		2108008	9.827	9.862
31	9.890	rVV	0.052		617847	9.862	9.913
32	9.924	rVB	0.040	DDE	81597	9.913	9.953
33	10.039	rVB	0.034		24273	10.027	10.062
34	10.102	rBV	0.040		277908	10.085	10.125
35	10.142	rVV	0.029	DDD	114143	10.125	10.153
36	10.176	rVB	0.074		141948	10.153	10.228
37	10.291	rBV	0.040		1330979	10.268	10.308
38	10.331	rVB	0.063	DDT	4965607	10.308	10.371
39	10.474	rBV	0.069		484196	10.445	10.514
40	10.531	rBV	0.023		259658	10.514	10.537

Breakdown = 3.87.

LB
APR 20 2012

CK
APR 23 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F008.D Vial: 2
Acq On : 11 Apr 2012 11:00 am Operator: KBailey
Sample : IB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 11 11:27:32 2012 Quant Results File: 040412_DX.RES

Quant Method : J:\MS26\METHODS\SIM\040412_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	13330	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	0.00	96	0	0.00	ng/ml	
Spiked Amount 50.000			Recovery =	0.00%		

Target Compounds Qvalue

APR 2 0 2012

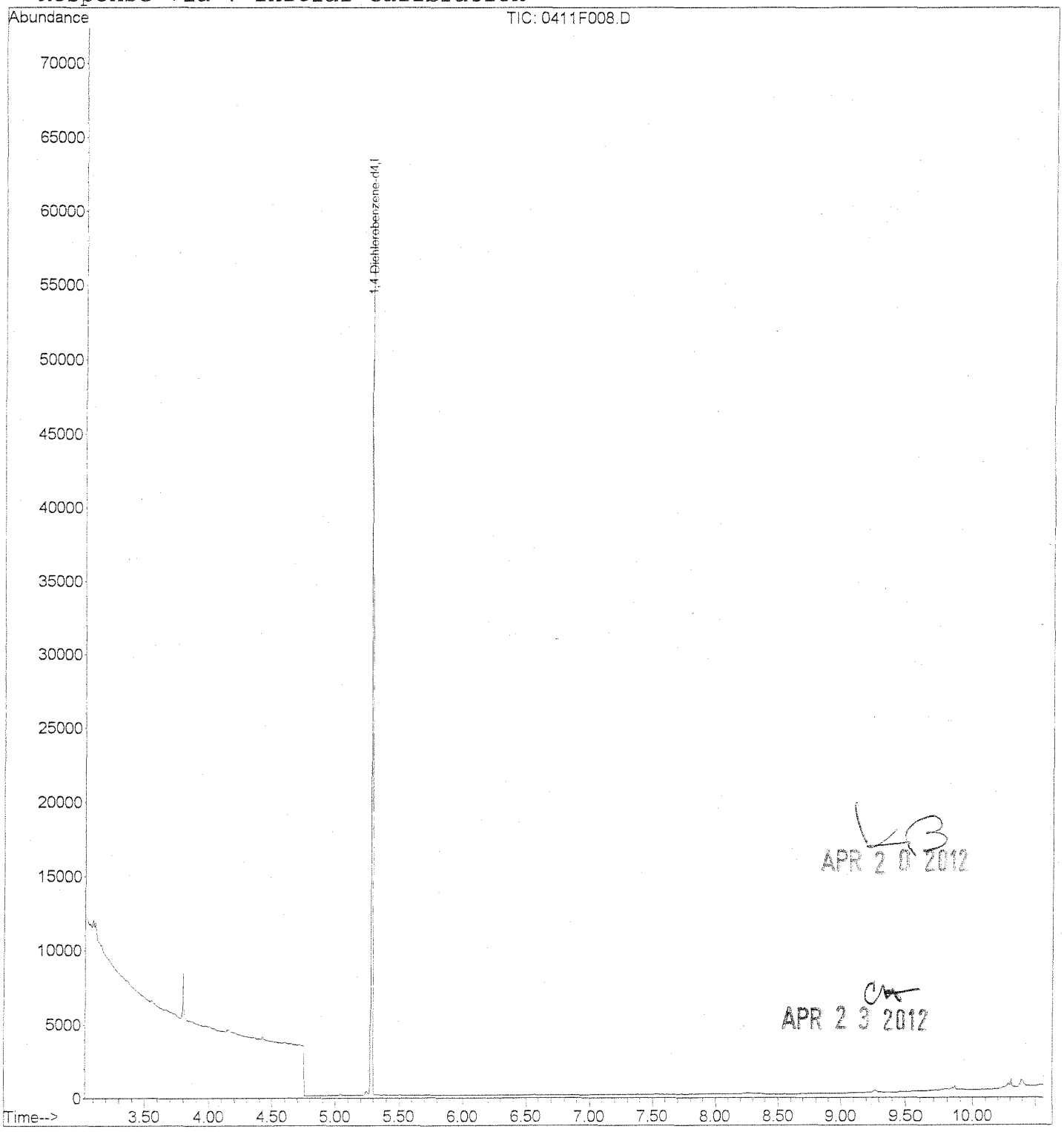
APR 2 3 2012

(#) = qualifier out of range (m) = manual integration
0411F008.D 040412_DX.M Fri Apr 20 15:56:43 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F008.D Vial: 2
Acq On : 11 Apr 2012 11:00 am Operator: KBailey
Sample : IB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 11 11:27 2012 Quant Results File: 040412_DX.RE

Method : J:\MS26\METHODS\SIM\040412_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration



APR 2 0 2012

APR 2 3 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:13 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14601	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	210m	1.99	ng/ml	0.00
Spiked Amount 50.000			Recovery =	3.98%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	202m	1.88	ng/ml	

APR 20 2012

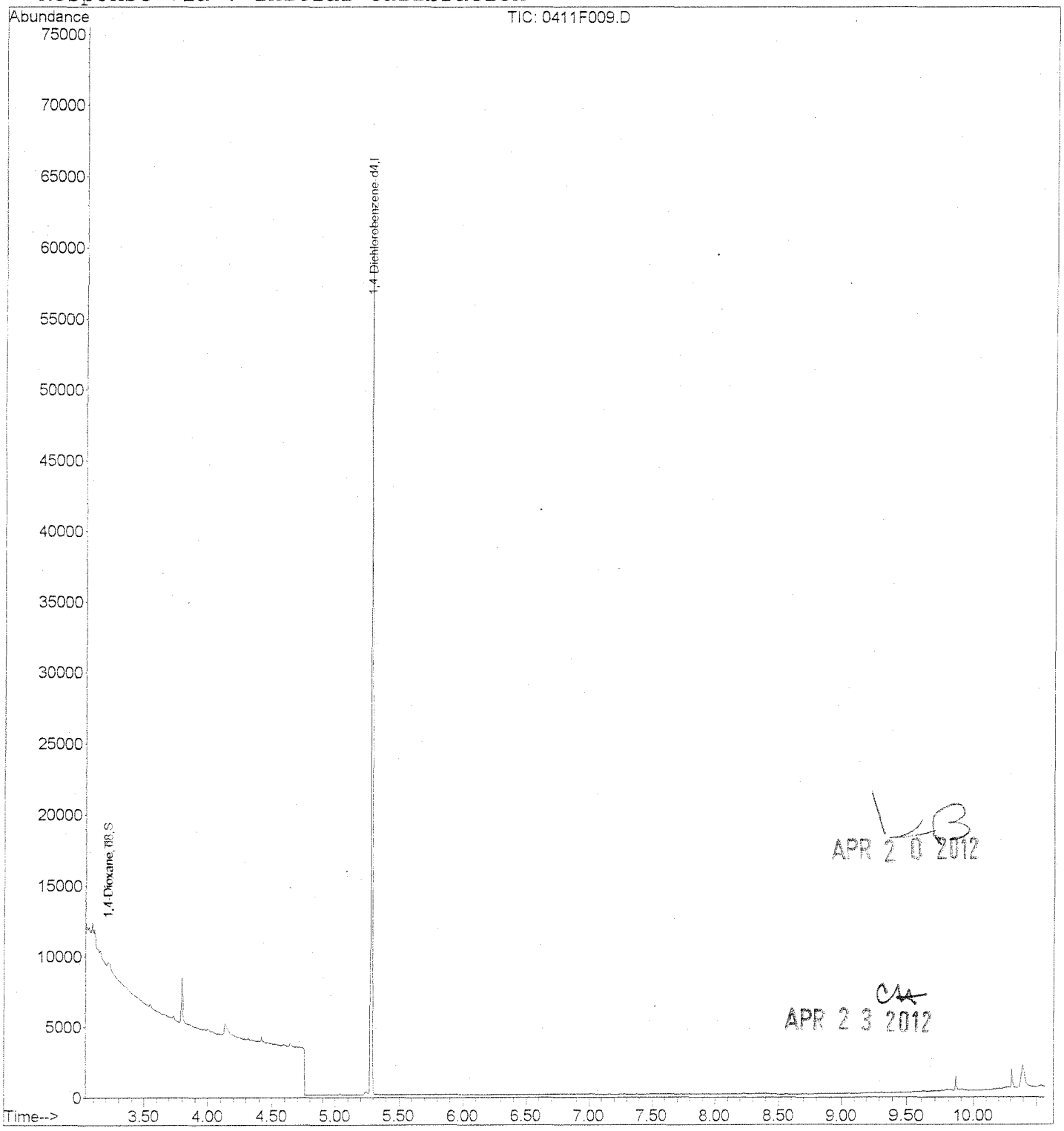
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F009.D 041112_DX.M Fri Apr 20 15:55:04 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: 041112_DX.RE

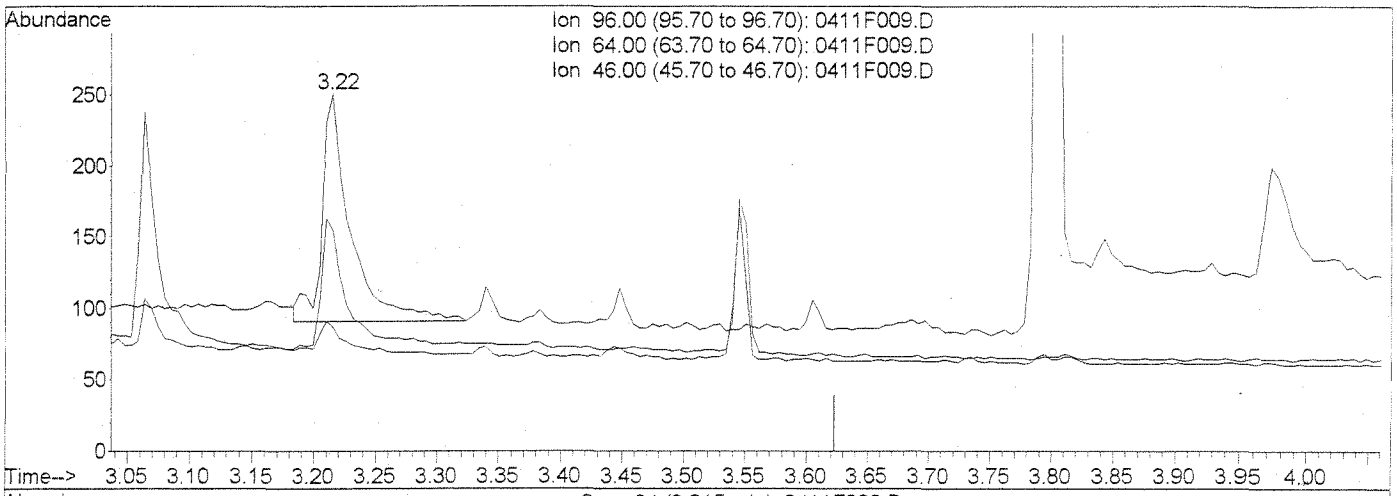
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration

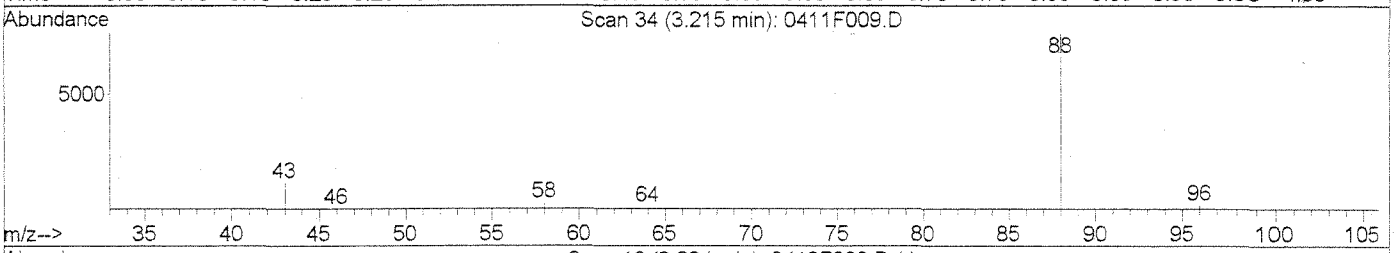


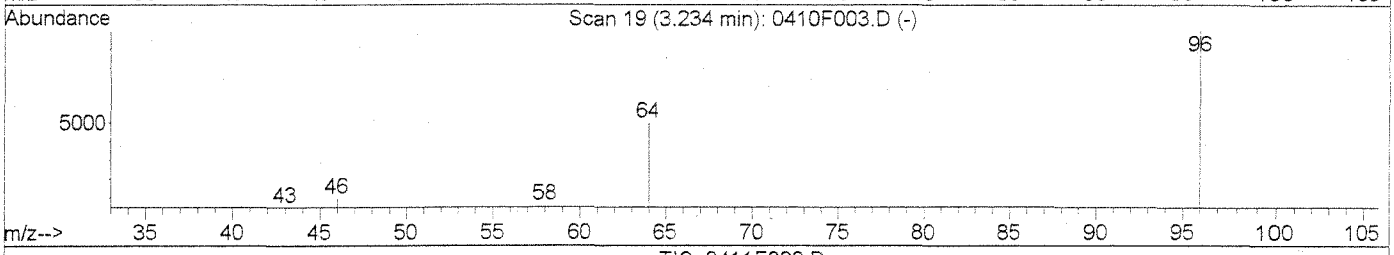
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F009.D

(2) 1,4-Dioxane-d8 (S)

3.22min 2.44ng/ml

response 258

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	52.50
46.00	9.50	11.88
0.00	0.00	0.00

Manual Integration:

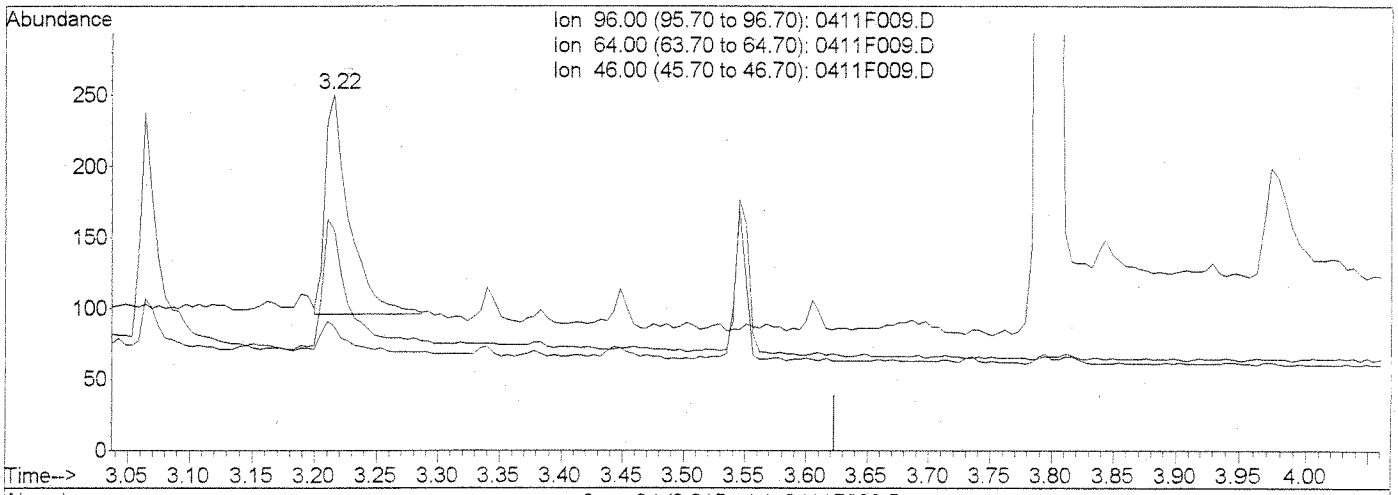
Before

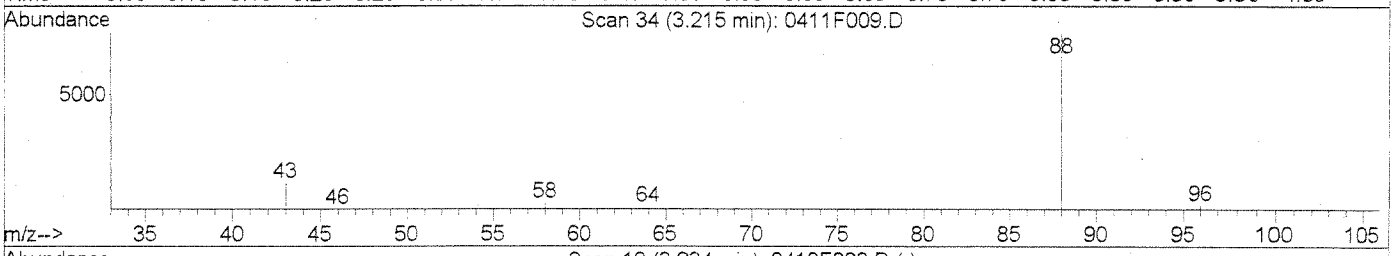
0411F009.D 041112_DX.M Thu Apr 19 19:36:34 2012

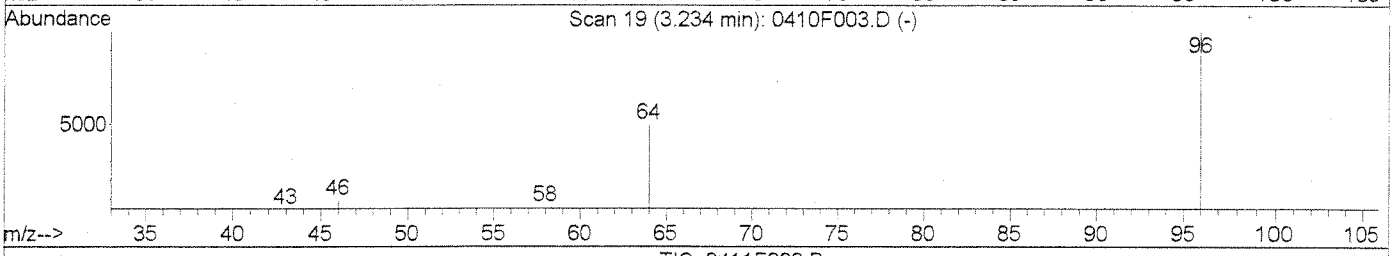
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F009.D

(2) 1,4-Dioxane-d8 (S)

3.22min 1.99ng/ml m

response 210

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	61.75
46.00	9.50	34.66#
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

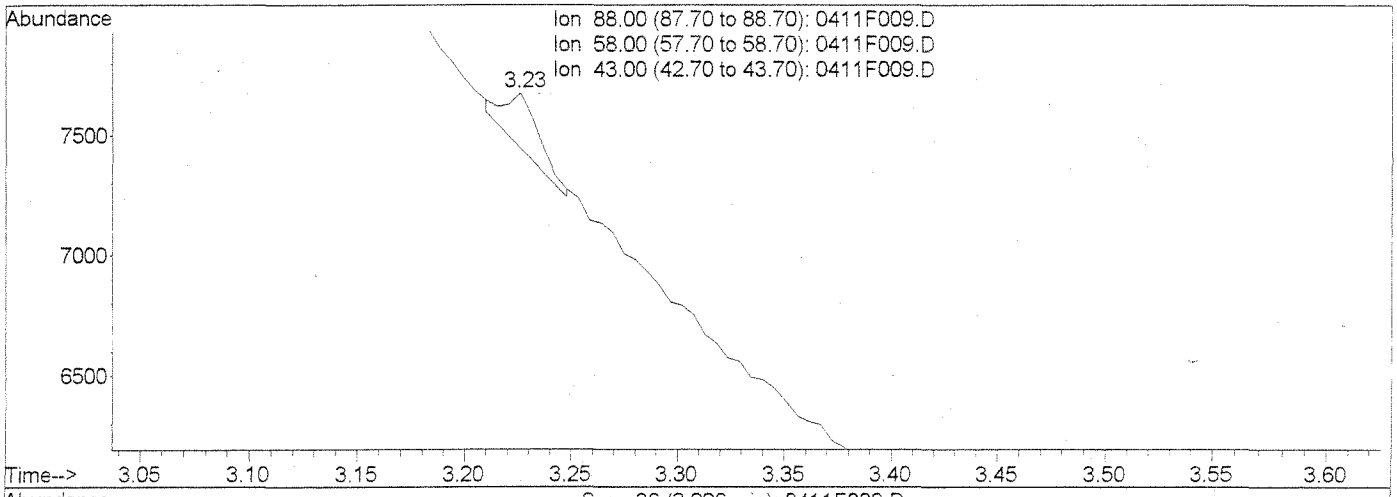
APR 2 3 2012

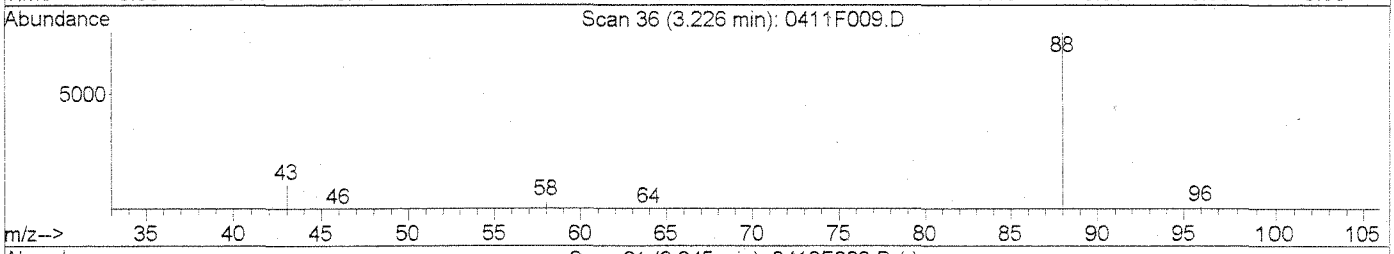
0411F009.D 041112_DX.M Thu Apr 19 19:36:43 2012

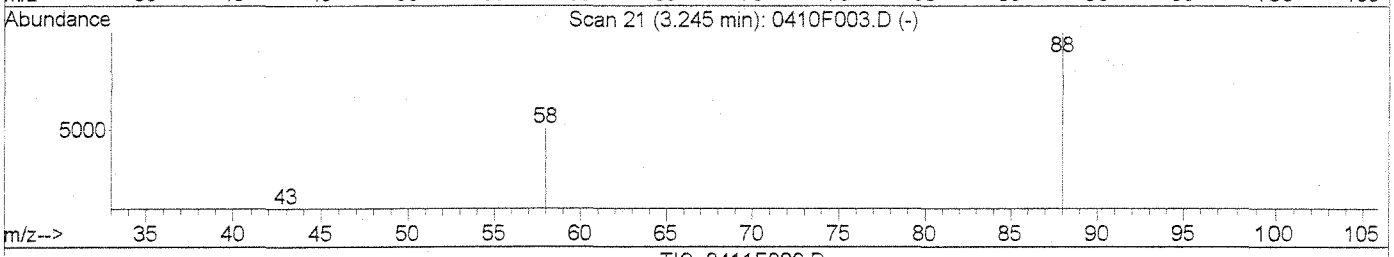
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F009.D

(3) 1,4-Dioxane (T)

3.23min 1.88ng/ml m

response 202

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	5.18
43.00	15.90	14.42
0.00	0.00	0.00

Manual Integration:

After

MP

04/19/12

LB

APR 23 2012

0411F009.D 041112_DX.M Thu Apr 19 19:37:10 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14818	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	412m	3.84	ng/ml	0.00
Spiked Amount 50.000			Recovery =	7.68%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	383m	3.52	ng/ml	

APR 20 2012

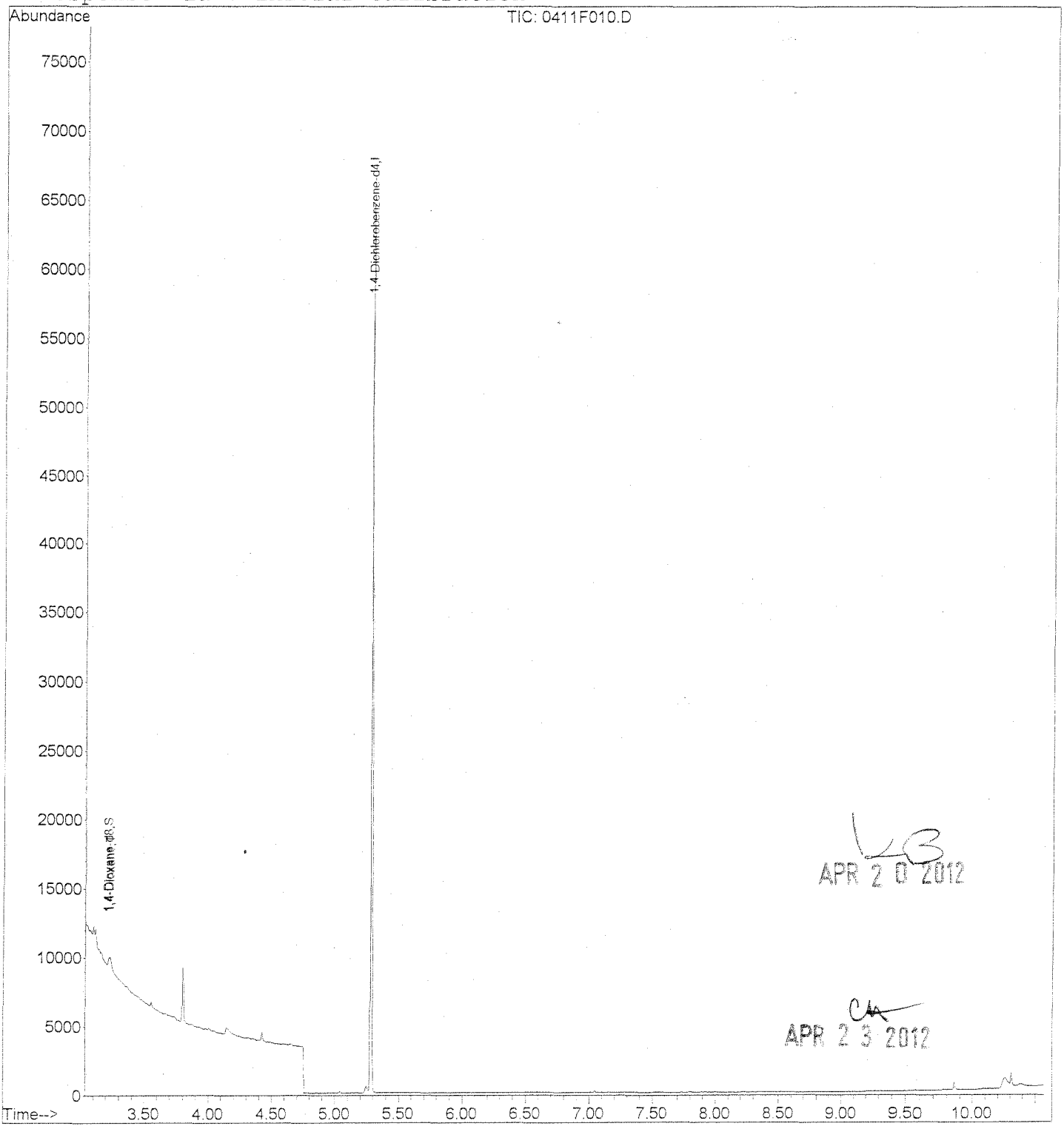
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F010.D 041112_DX.M Fri Apr 20 15:55:04 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



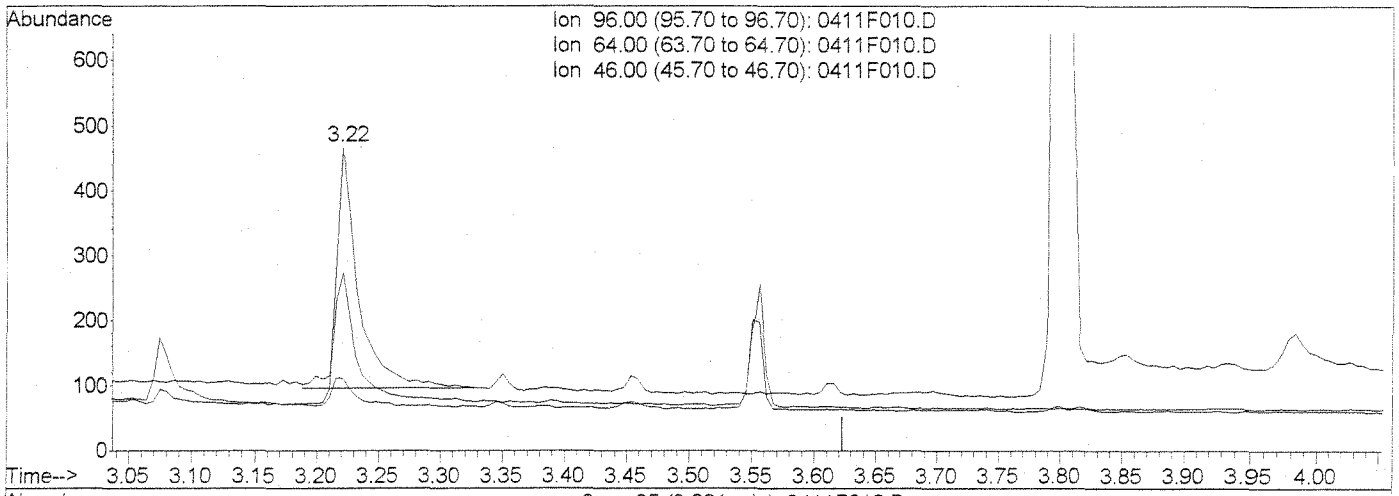
APR 20 2012

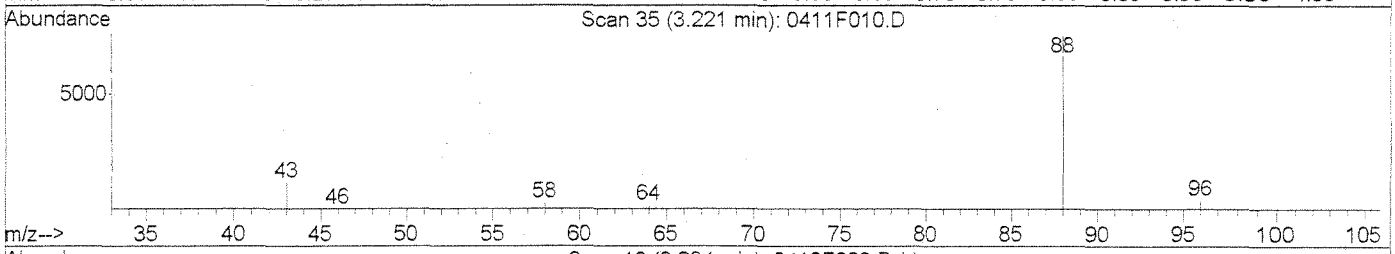
APR 23 2012

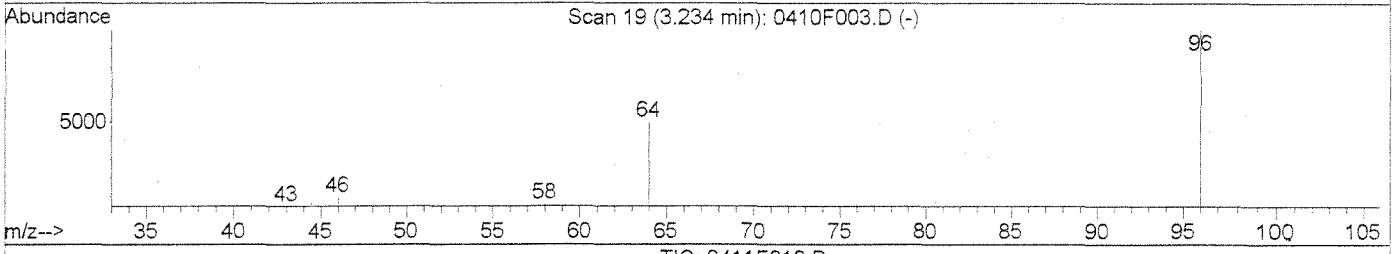
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F010.D

(2) 1,4-Dioxane-d8 (S)

3.22min 4.30ng/ml

response 461

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	54.18
46.00	9.50	11.59
0.00	0.00	0.00

Manual Integration:

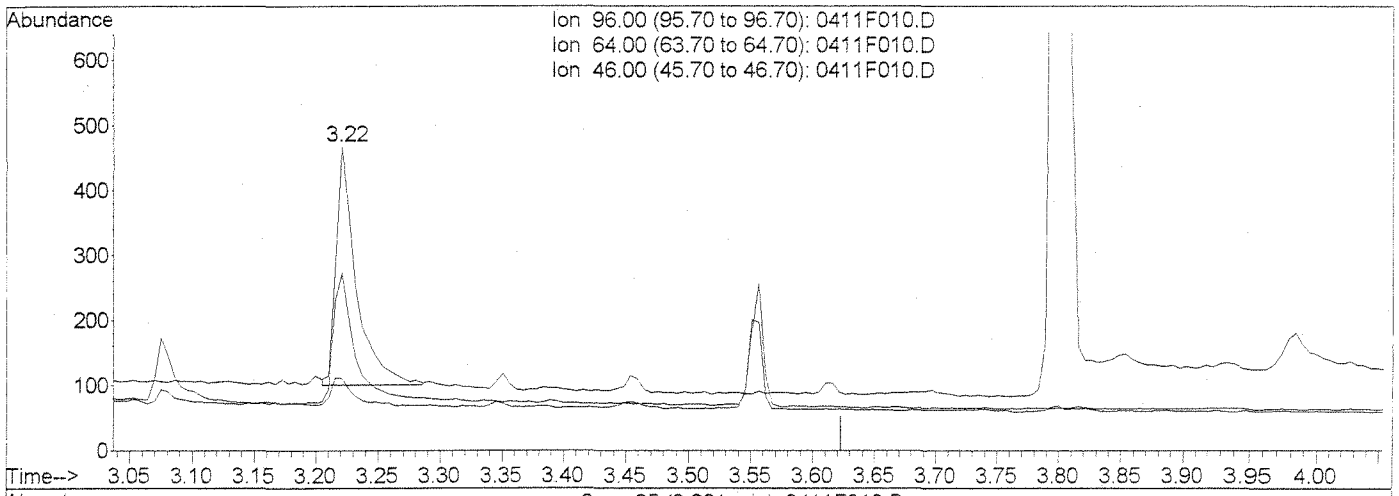
Before

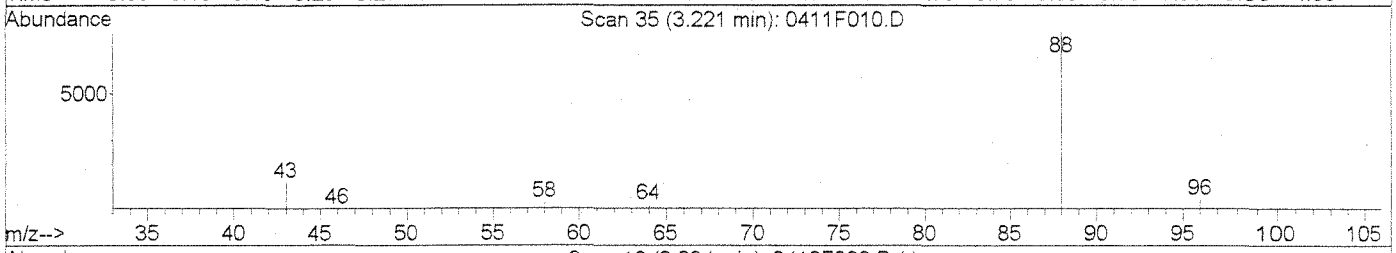
0411F010.D 041112_DX.M Thu Apr 19 19:37:22 2012

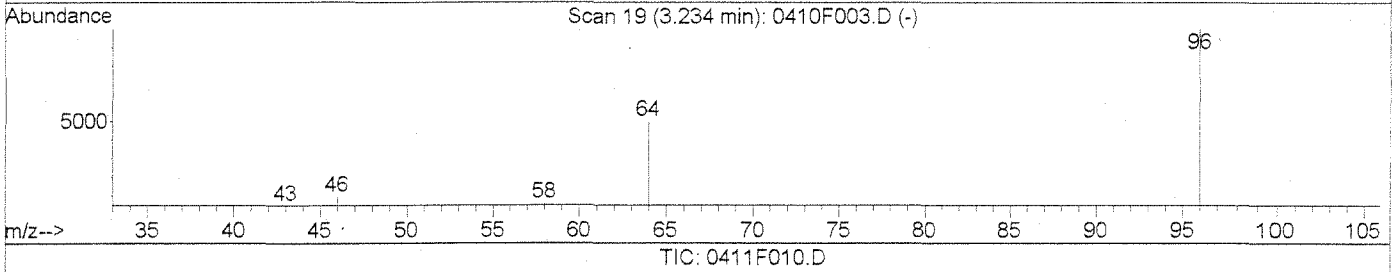
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F010.D

(2) 1,4-Dioxane-d8 (S)

3.22min 3.84ng/ml m

response 412

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	58.46
46.00	9.50	23.77
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

KB

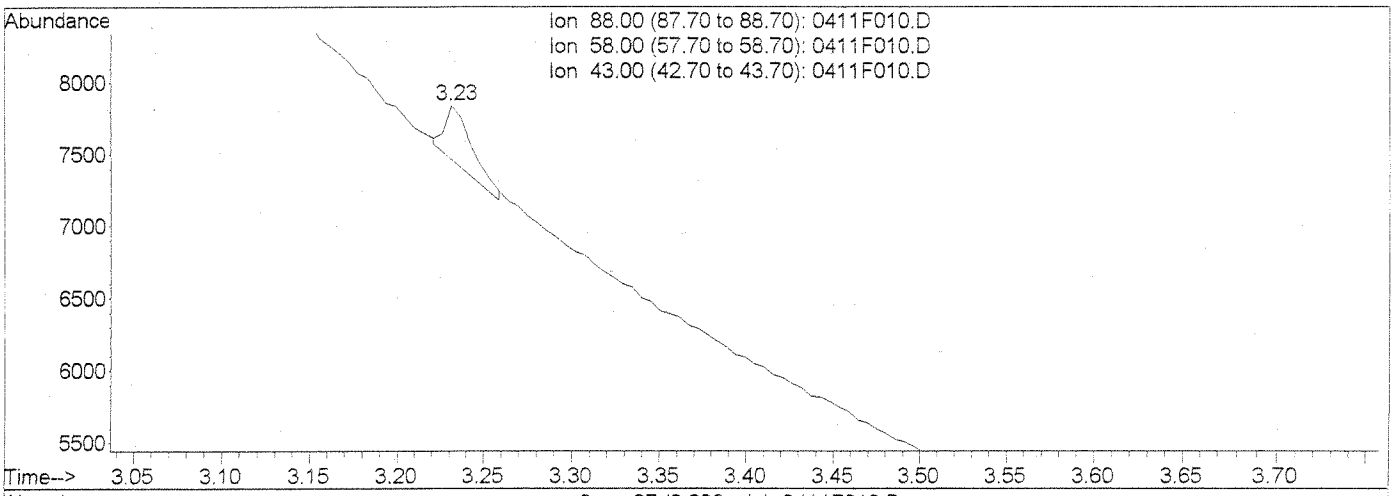
APR 2 3 2012

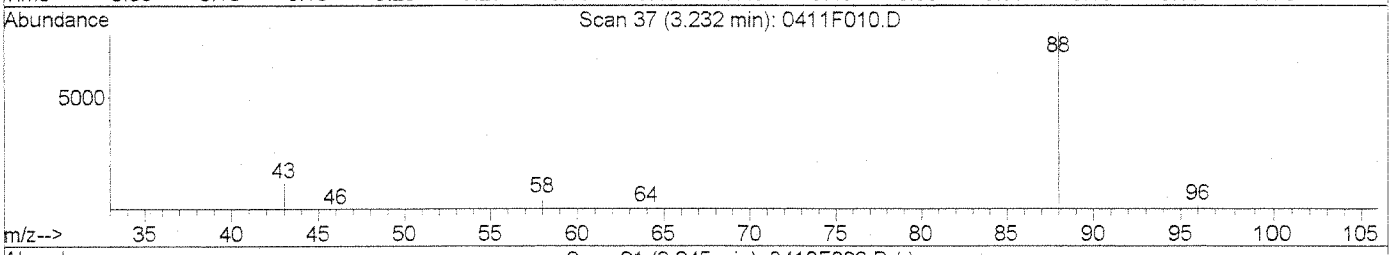
0411F010.D 041112_DX.M Thu Apr 19 19:37:28 2012

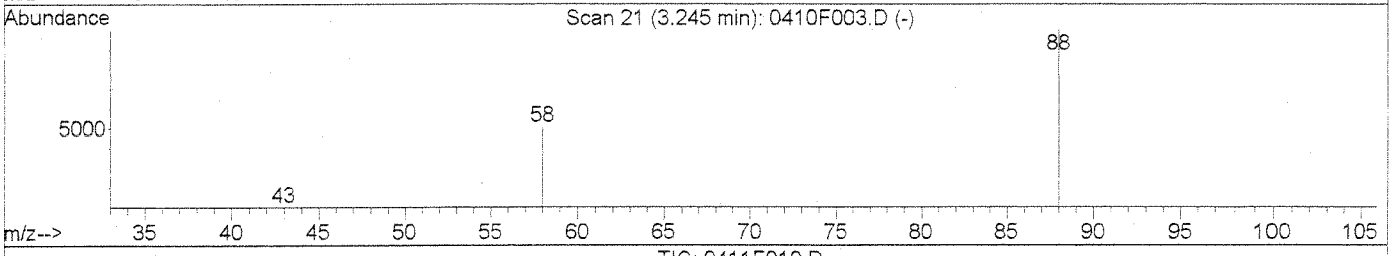
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F010.D

(3) 1,4-Dioxane (T)

3.23min 3.52ng/ml m

response 383

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	6.89
43.00	15.90	15.57
0.00	0.00	0.00

Manual Integration:

After

MP

04/19/12

LB

CA

APR 2 3 2012

0411F010.D 041112_DX.M Thu Apr 19 19:37:44 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	14921	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	1162	10.75	ng/ml	0.00
Spiked Amount 50.000			Recovery =	21.50%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.24	88	1150m	10.49	ng/ml	

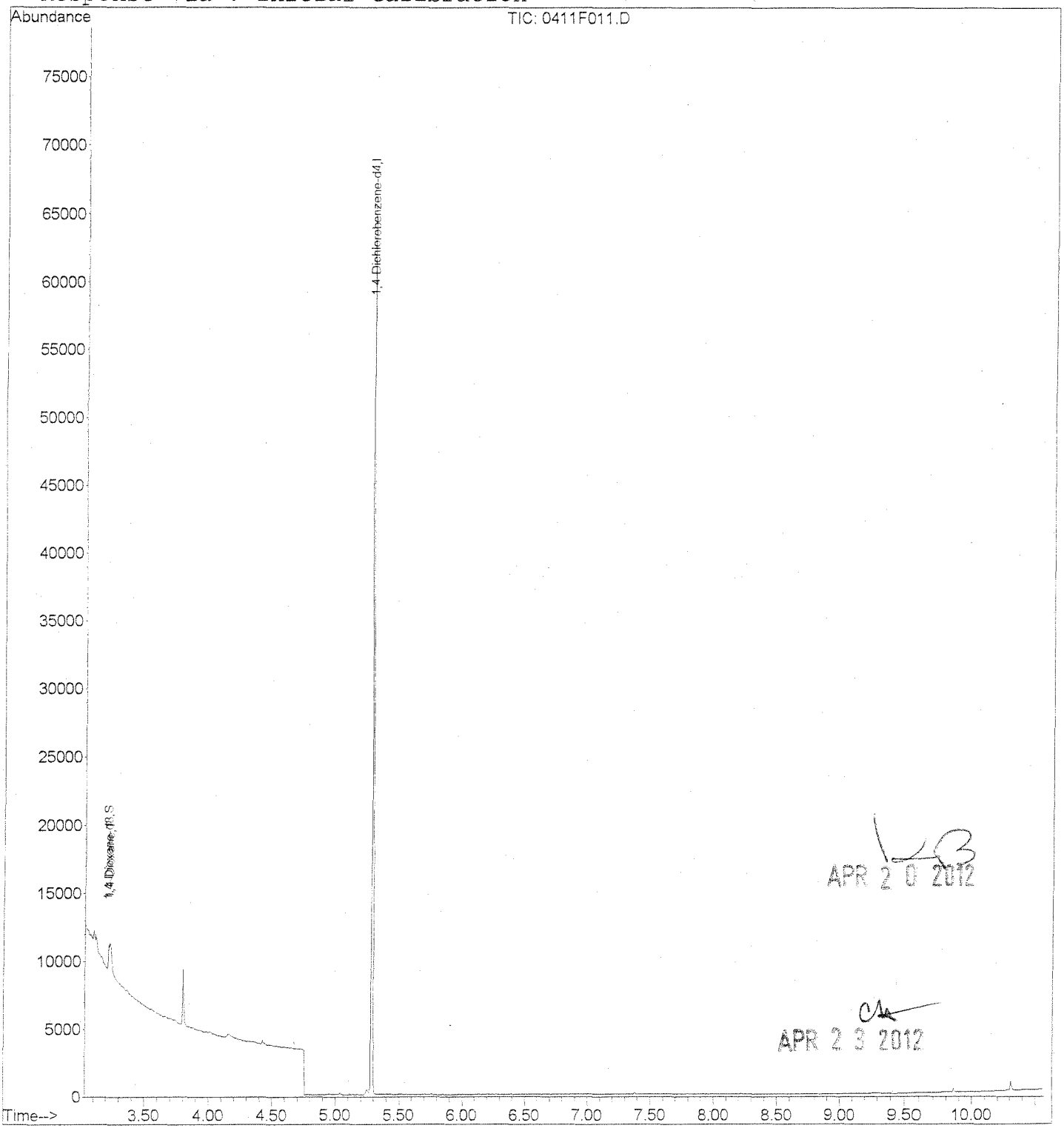
APR 20 2012

APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F011.D 041112_DX.M Fri Apr 20 15:55:05 2012 Page 1

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



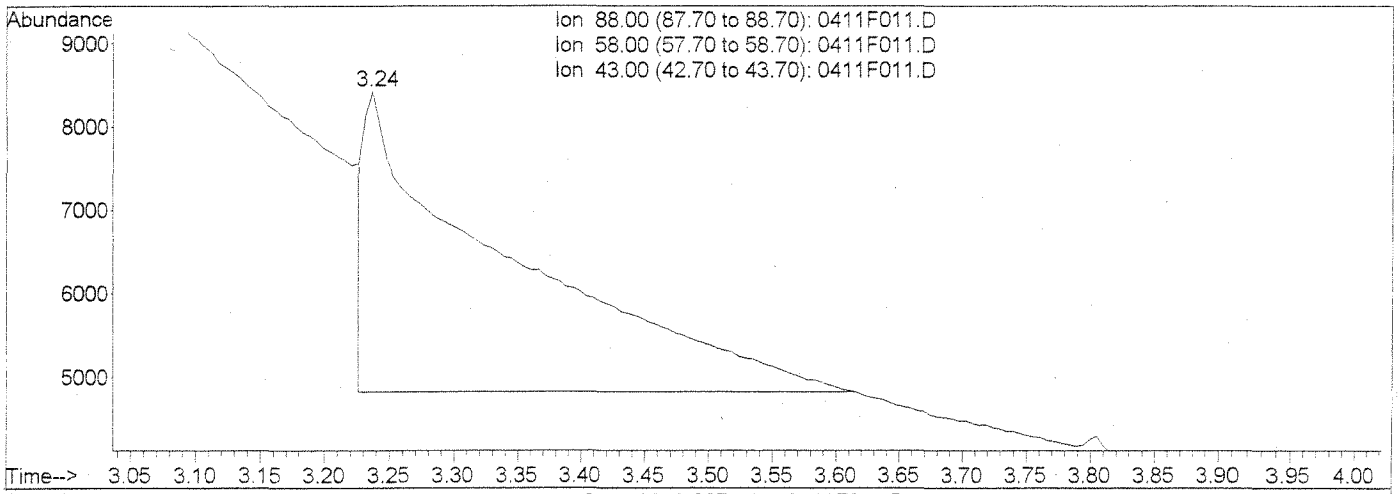
APR 20 2012

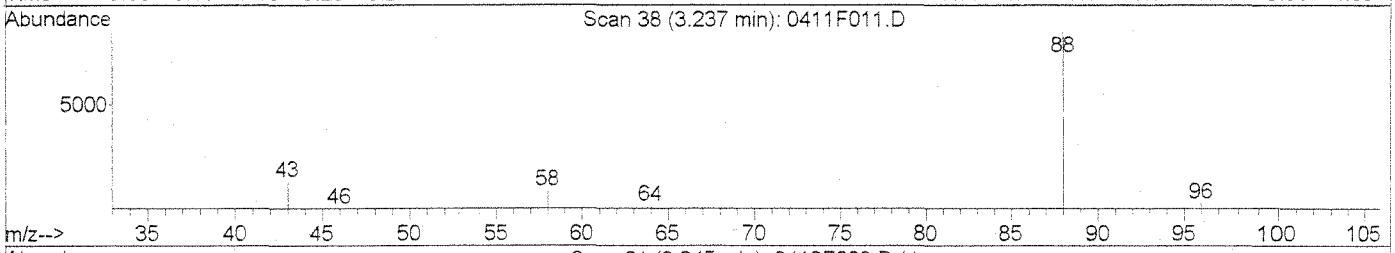
APR 23 2012

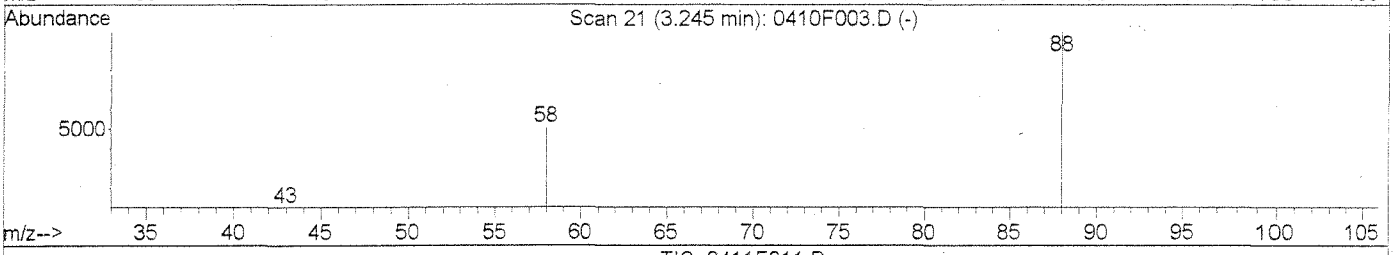
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F011.D

(3) 1,4-Dioxane (T)

3.24min 247.95ng/ml

response 27180

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	17.73
43.00	15.90	13.56
0.00	0.00	0.00

Manual Integration:

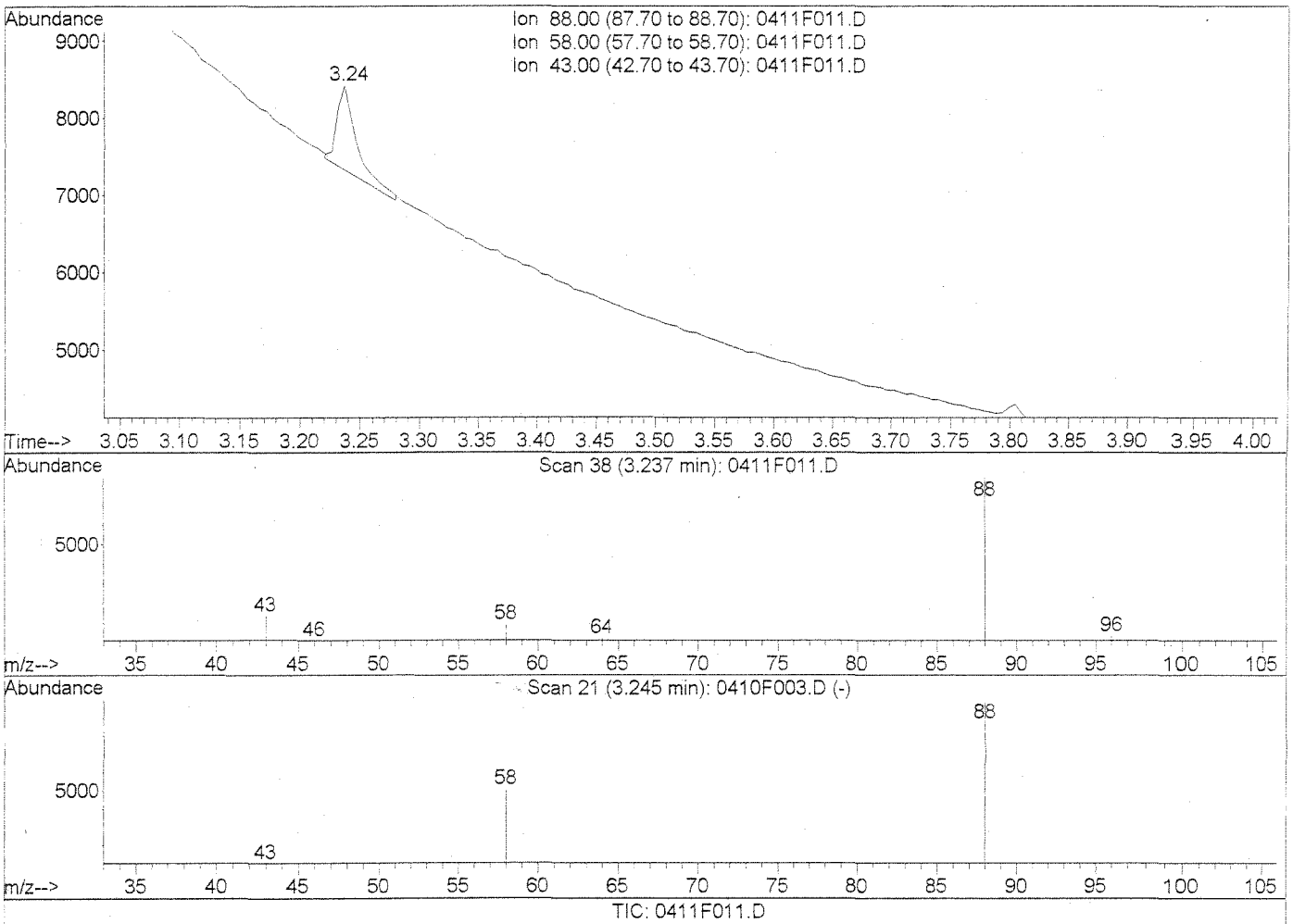
Before

0411F011.D 041112_DX.M Thu Apr 19 19:38:02 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F011.D

(3) 1,4-Dioxane (T)

3.24min 10.49ng/ml m

response 1150

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	10.69
43.00	15.90	15.92
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 23 2012

0411F011.D 041112_DX.M Thu Apr 19 19:38:10 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	15754	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.23	96	2418	21.19	ng/ml	0.00
Spiked Amount 50.000			Recovery = 42.38%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.24	88	2370m	20.48	ng/ml	

APR 20 2012

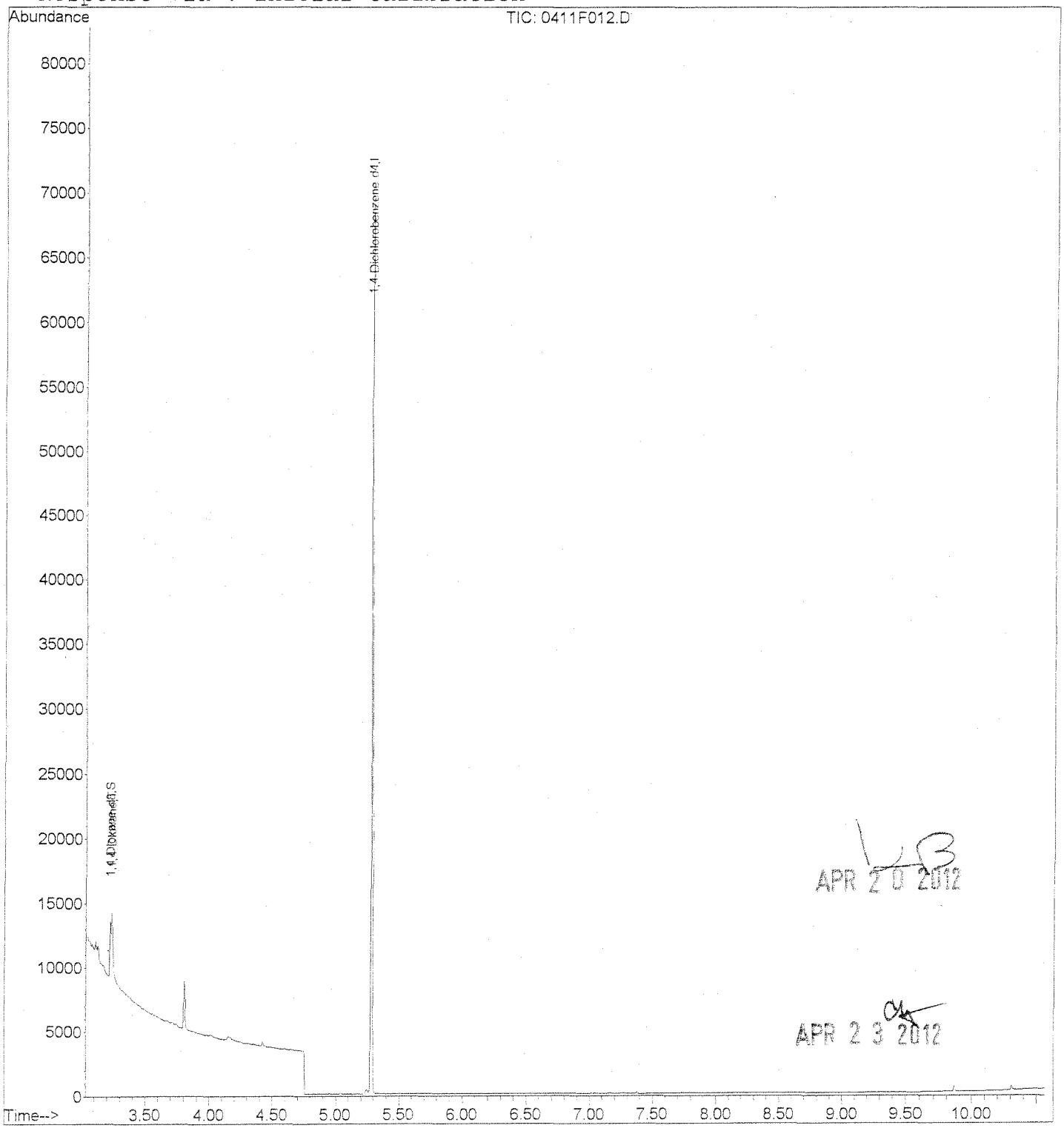
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F012.D 041112_DX.M Fri Apr 20 15:55:05 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



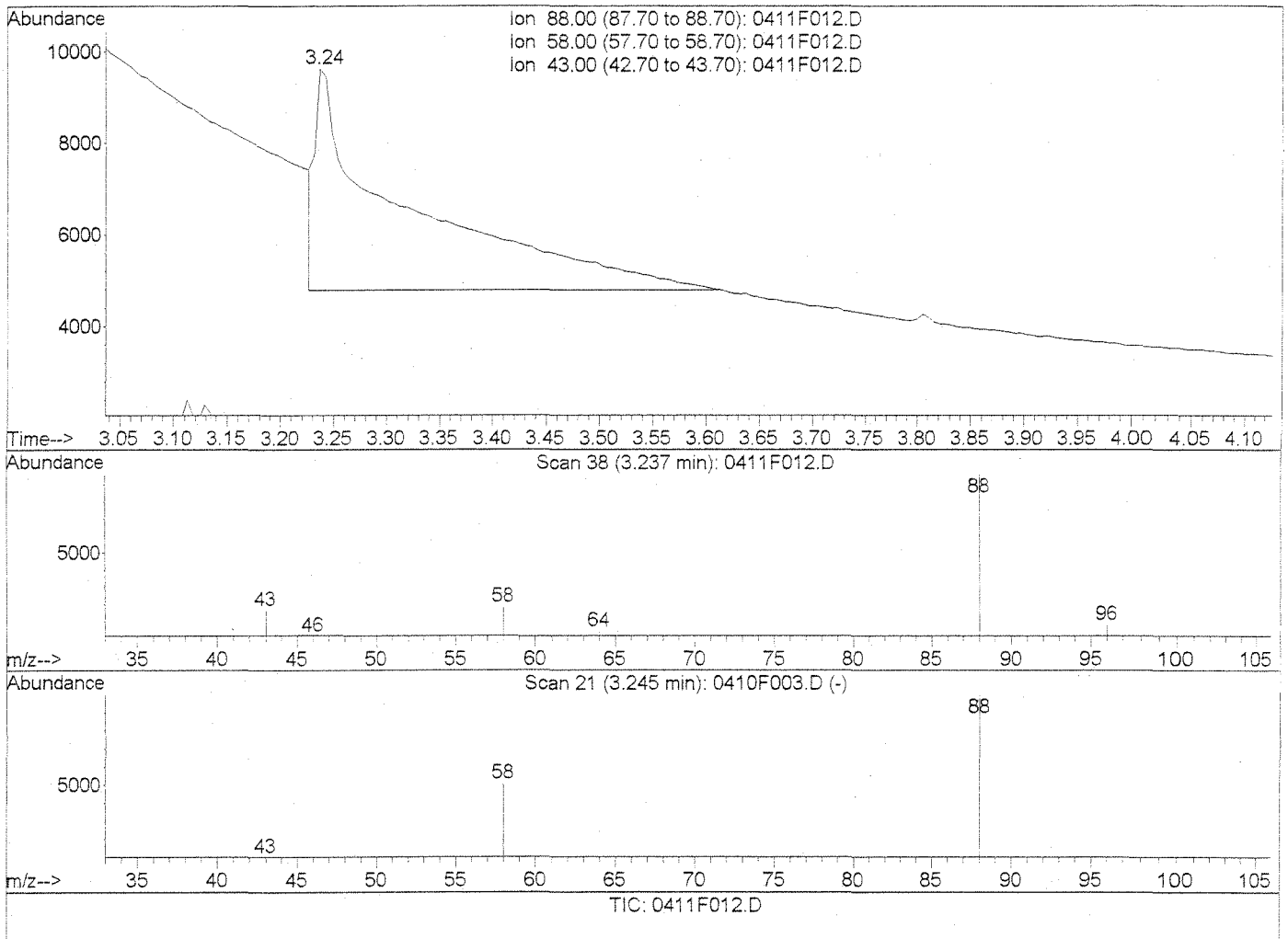
APR 20 2012

APR 23 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F012.D

(3) 1,4-Dioxane (T)

3.24min 244.22ng/ml

response 28266

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	32.06
43.00	15.90	16.64
0.00	0.00	0.00

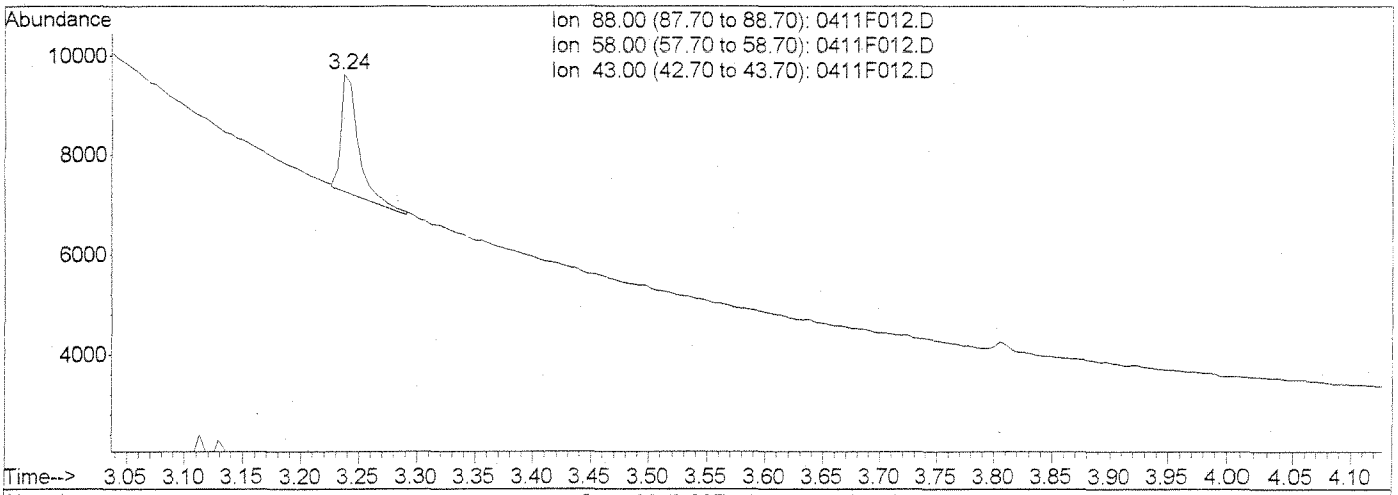
Manual Integration:

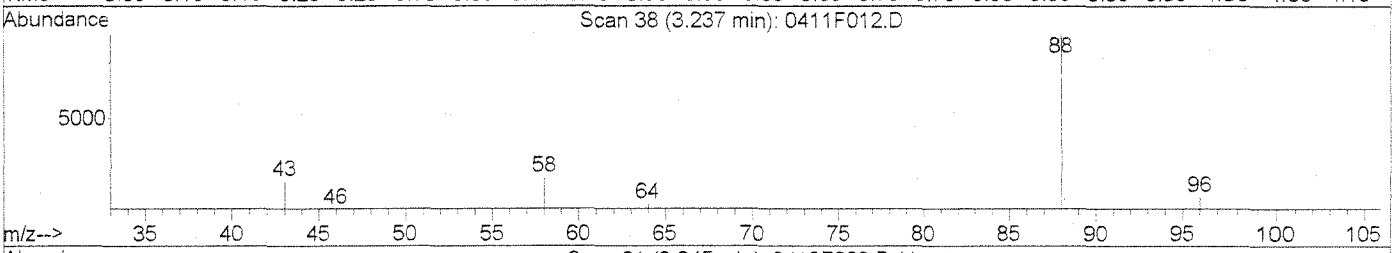
Before

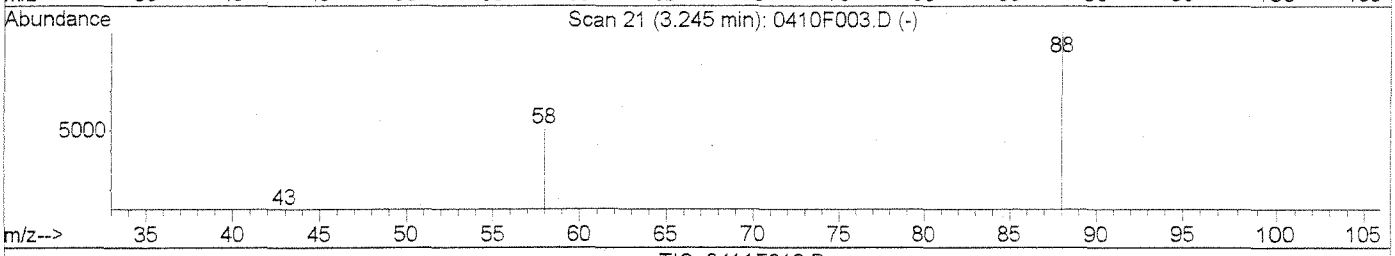
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F012.D

(3) 1,4-Dioxane (T)

3.24min 20.48ng/ml m

response 2370

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	18.82
43.00	15.90	16.96
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

KB

APR 23 2012

0411F012.D 041112_DX.M Thu Apr 19 19:38:26 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14927	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	5680	52.55	ng/ml	0.00
Spiked Amount 50.000			Recovery =	105.10%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.24	88	6061m	55.27	ng/ml	

APR 20 2012

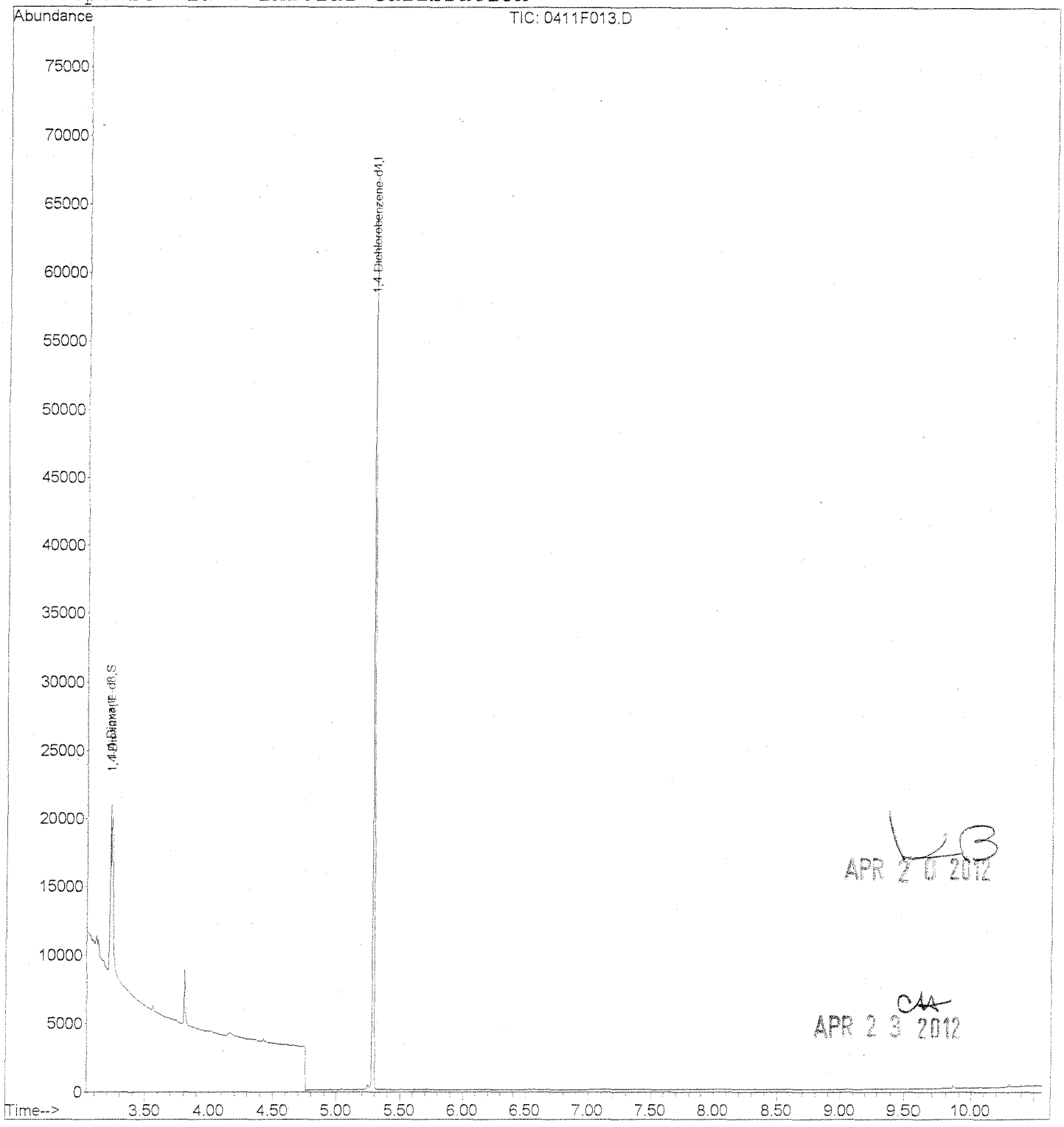
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F013.D 041112_DX.M Fri Apr 20 15:55:06 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



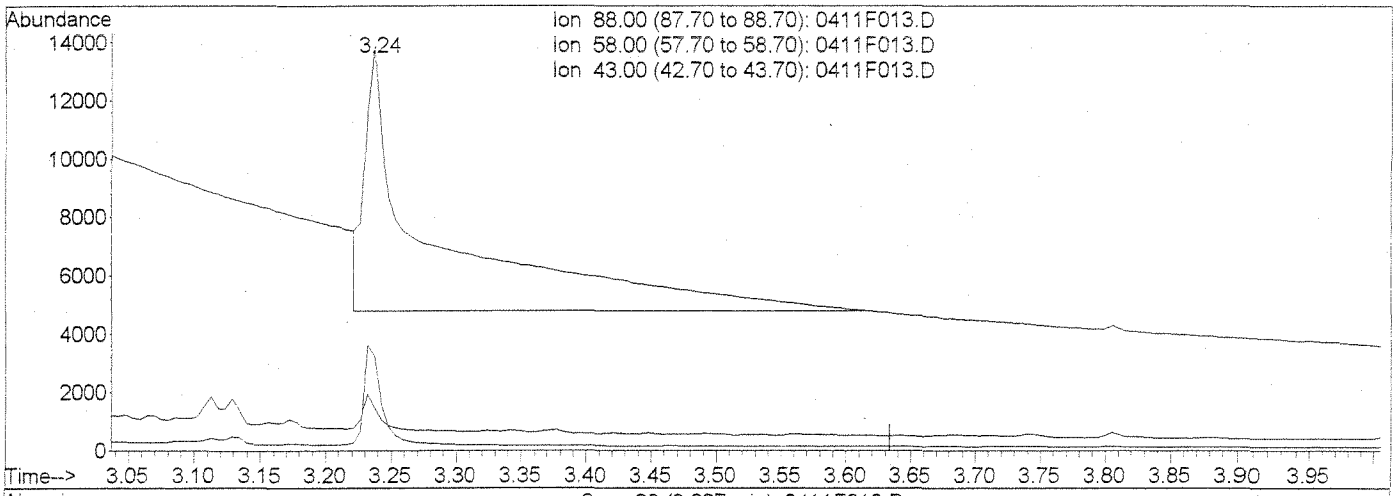
APR 20 2012

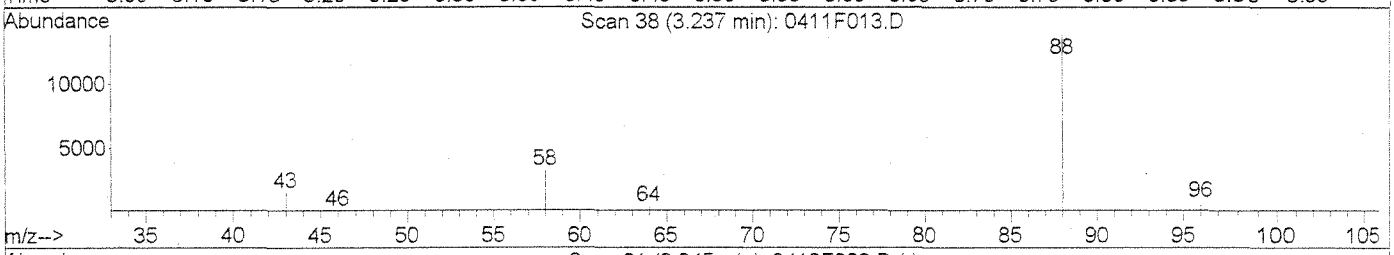
APR 23 2012

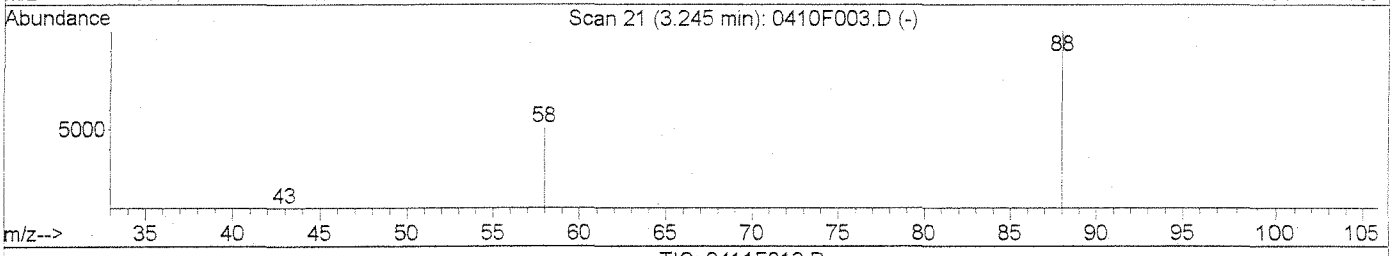
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F013.D

(3) 1,4-Dioxane (T)

3.24min 302.49ng/ml

response 33172

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	33.96
43.00	15.90	10.53
0.00	0.00	0.00

Manual Integration:

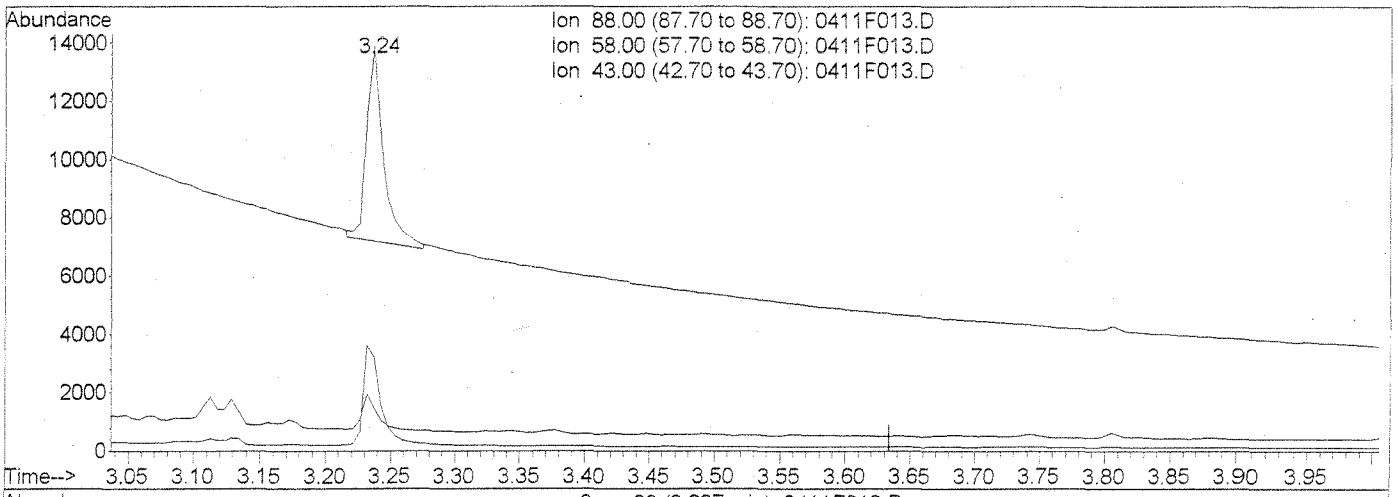
Before

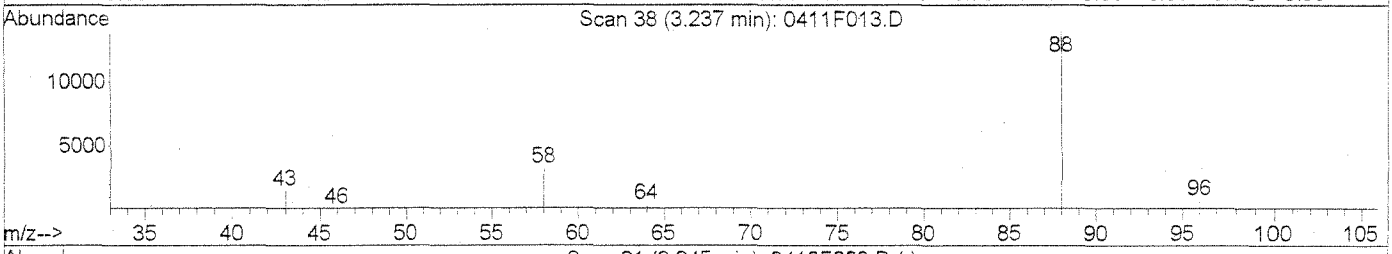
0411F013.D 041112_DX.M Thu Apr 19 19:38:33 2012

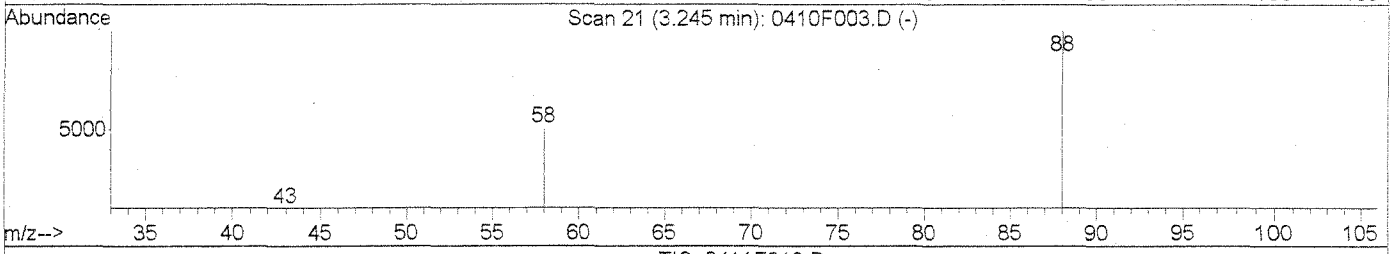
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F013.D

(3) 1,4-Dioxane (T)

3.24min 55.27ng/ml m

response 6061

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	23.28
43.00	15.90	10.69
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

LB

APR 23 2012

0411F013.D 041112_DX.M Thu Apr 19 19:38:38 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:15 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	15153	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	12332	112.38	ng/ml	0.00
Spiked Amount 50.000			Recovery =	224.76%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	12635m	113.50	ng/ml	

APR 20 2012

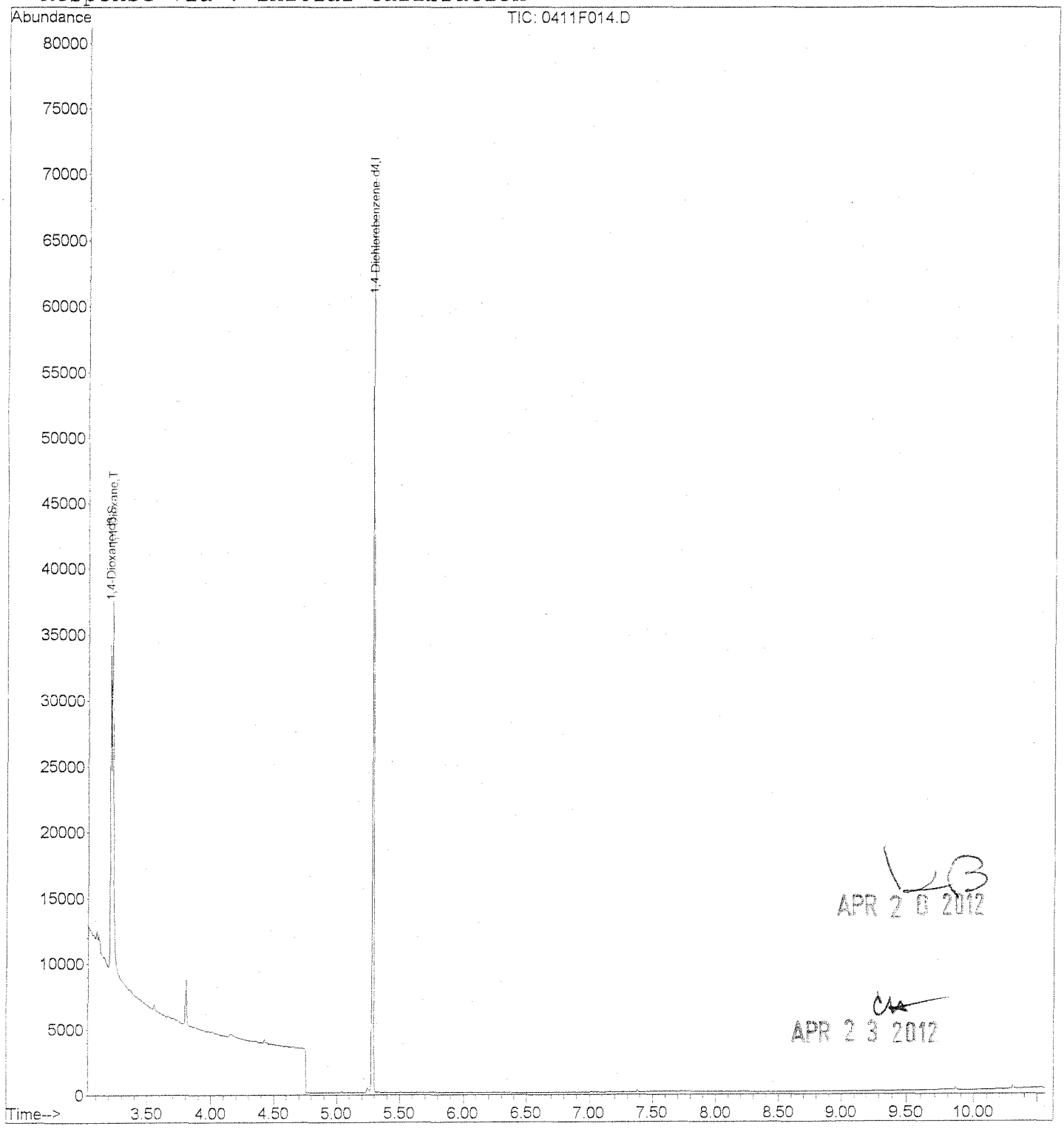
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F014.D 041112_DX.M Fri Apr 20 15:55:07 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



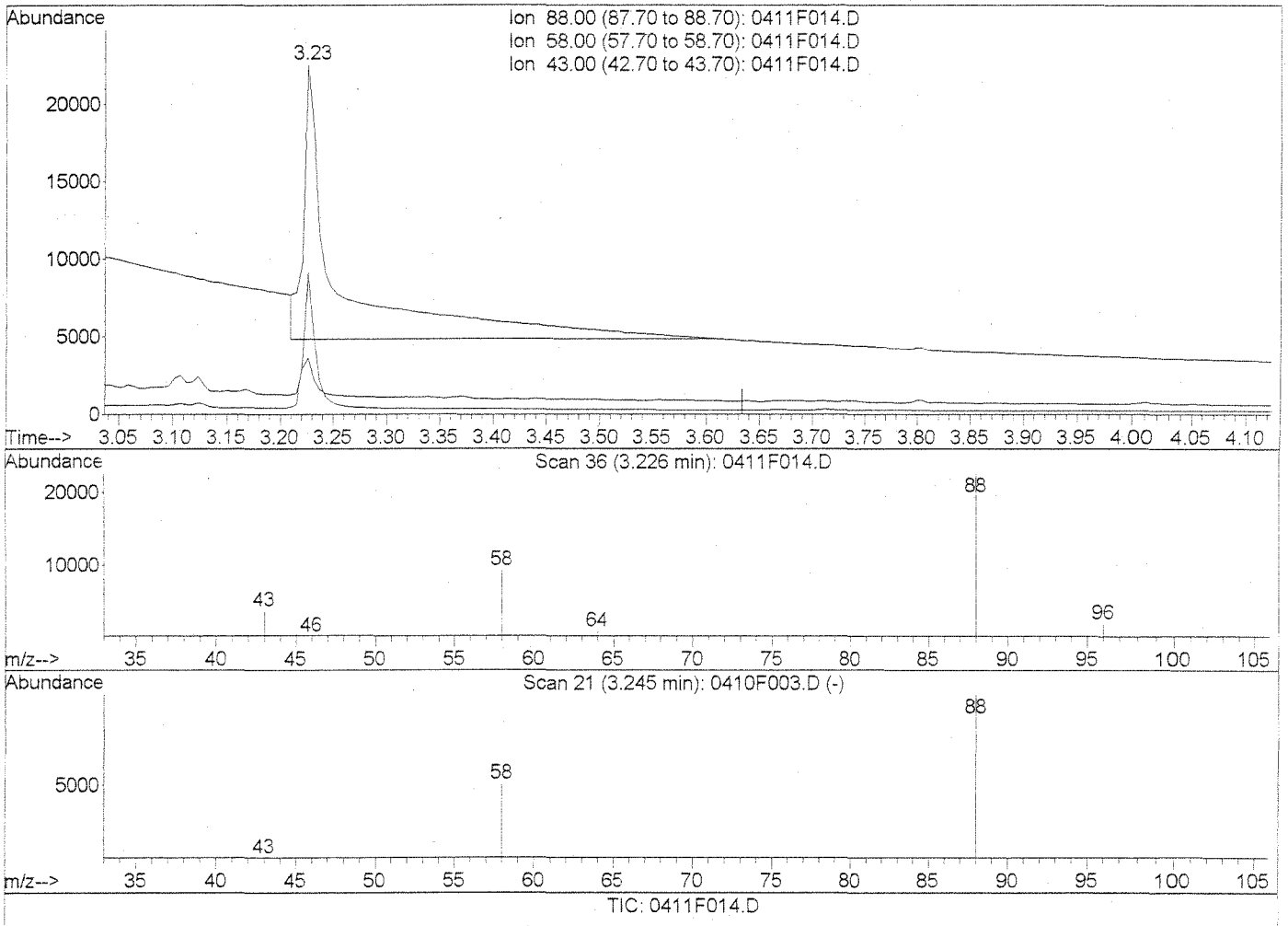
APR 2 0 2012

APR 2 3 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F014.D

(3) 1,4-Dioxane (T)

3.23min 371.62ng/ml

response 41370

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	50.15#
43.00	15.90	15.75
0.00	0.00	0.00

Manual Integration:

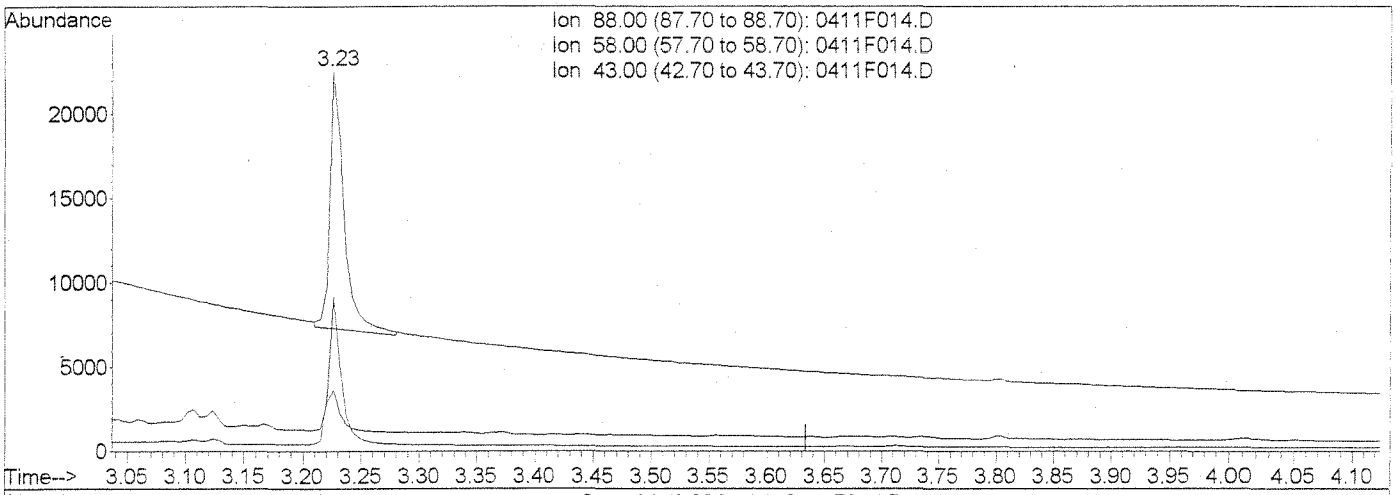
Before

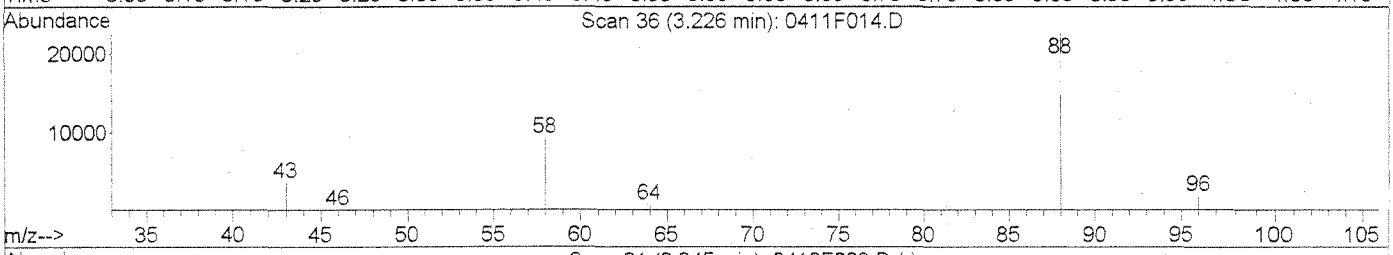
0411F014.D 041112_DX.M Thu Apr 19 19:38:45 2012

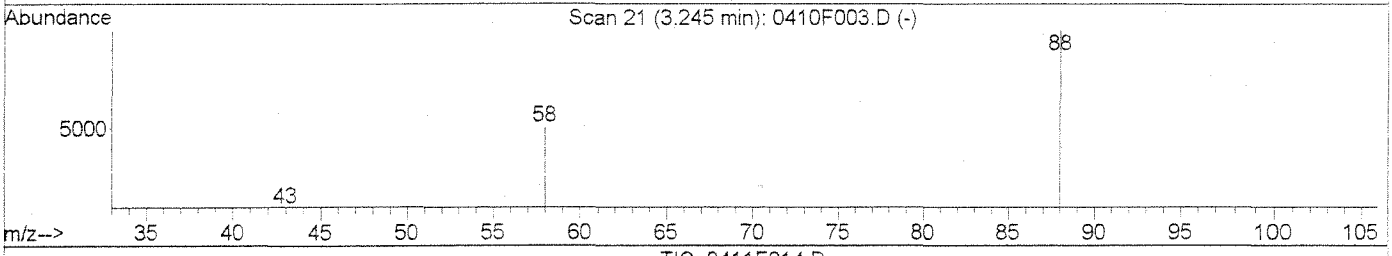
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F014.D

(3) 1,4-Dioxane (T)

3.23min 113.50ng/ml m

response 12635

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	40.65#
43.00	15.90	16.18
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

LB

CA

APR 2 3 2012

0411F014.D 041112_DX.M Thu Apr 19 19:39:00 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:15 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	16838	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.21	96	26537	217.63	ng/ml	-0.01
Spiked Amount 50.000			Recovery = 435.26%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	26999m	218.26	ng/ml	

APR 20 2012

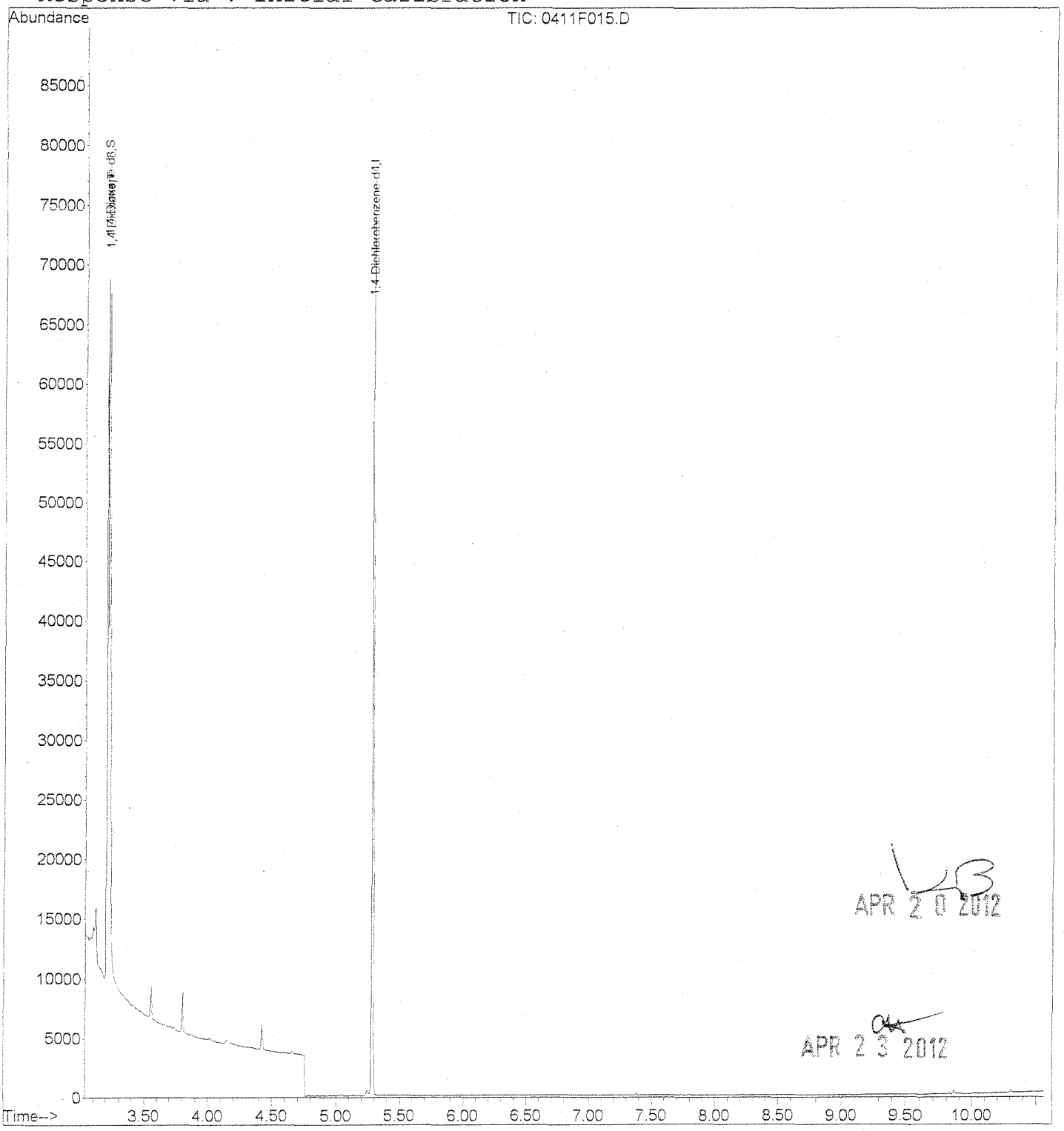
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F015.D 041112_DX.M Fri Apr 20 15:55:07 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:39 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



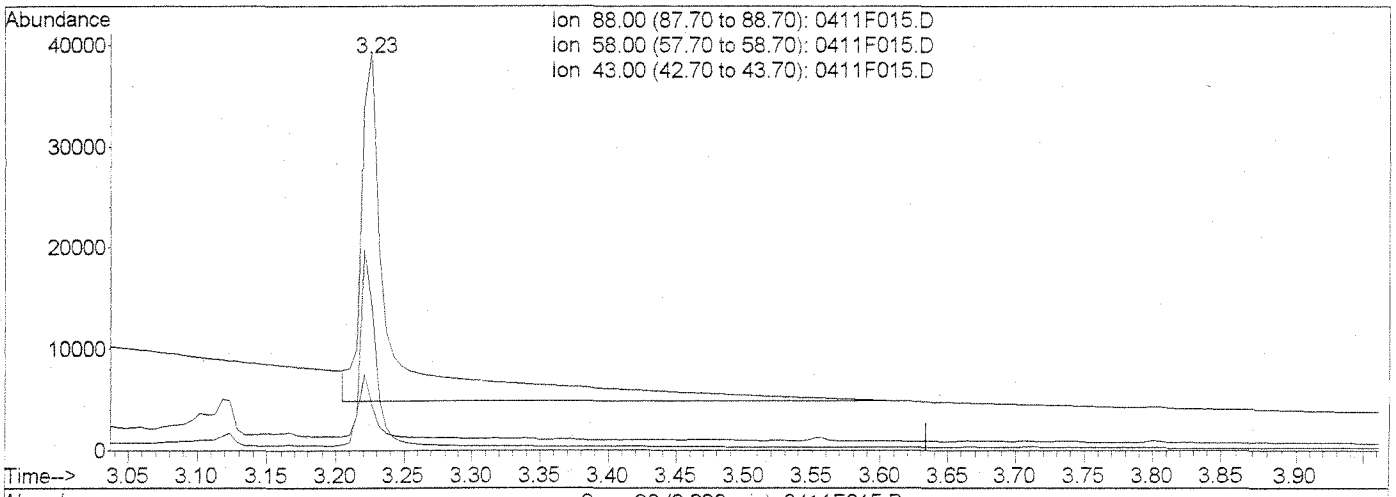
APR 20 2012

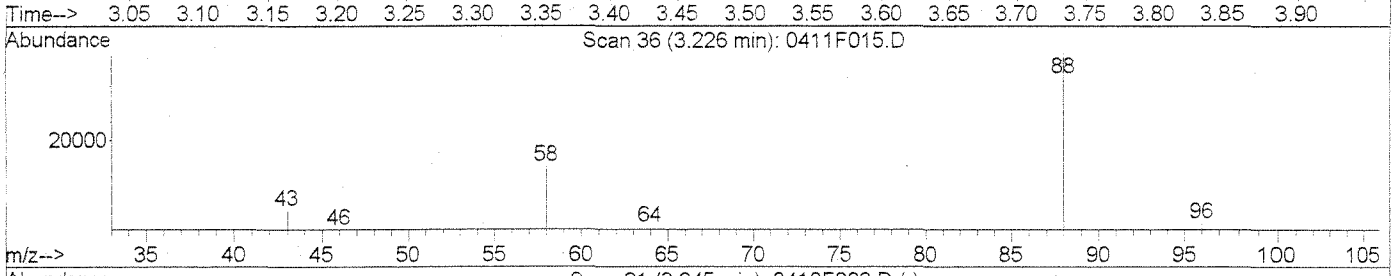
APR 23 2012

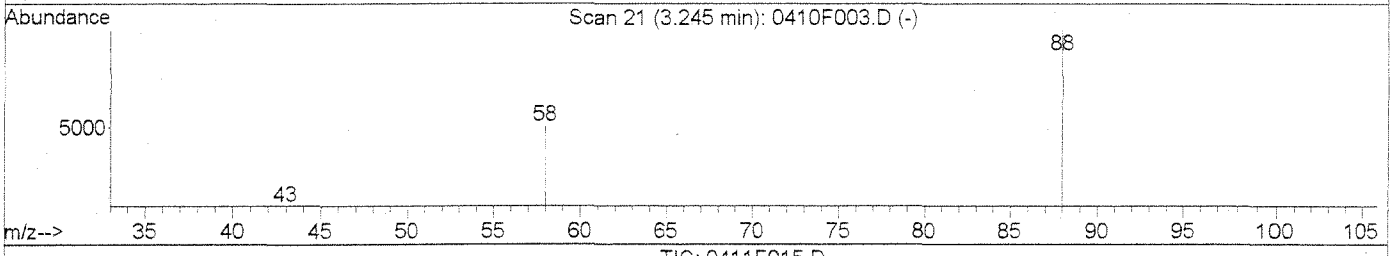
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F015.D

(3) 1,4-Dioxane (T)

3.23min 462.03ng/ml

response 57154

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	39.94#
43.00	15.90	10.01
0.00	0.00	0.00

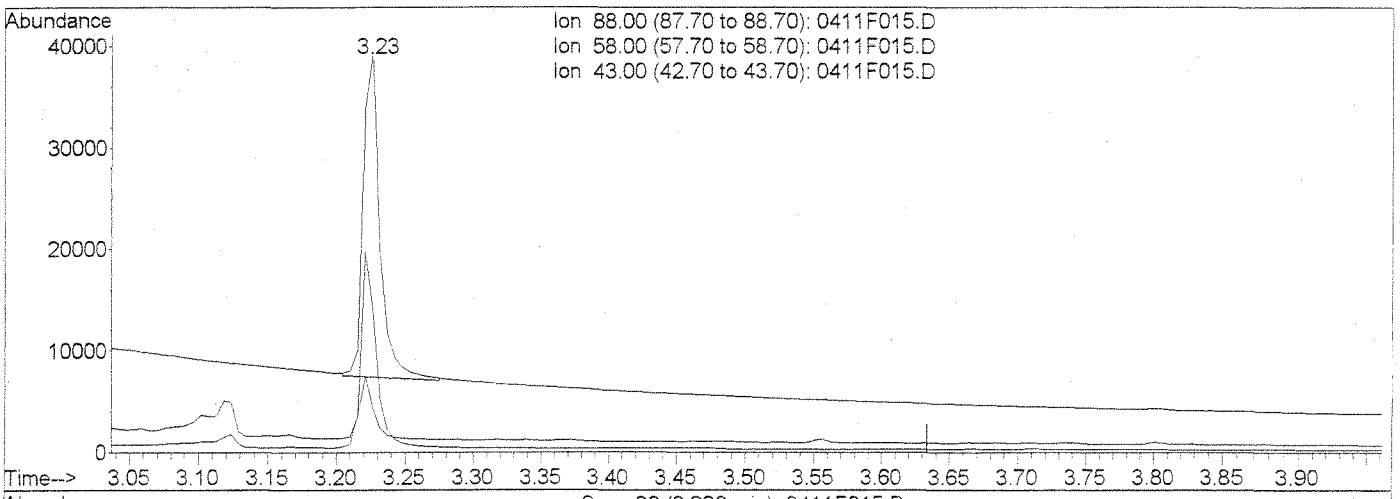
Manual Integration:

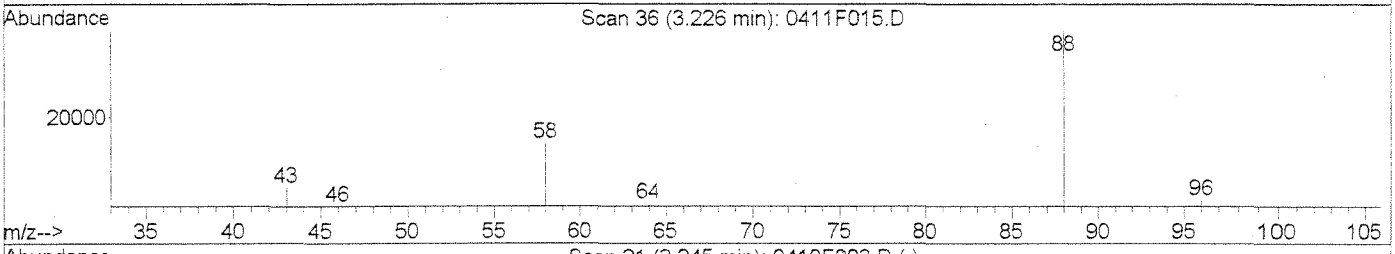
Before

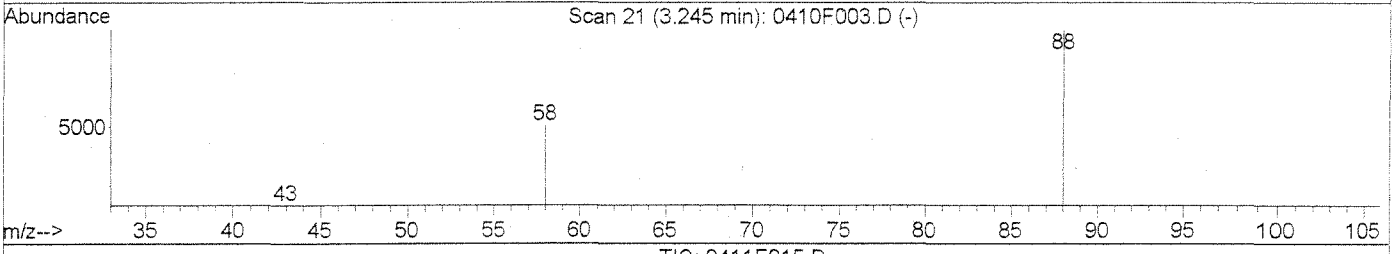
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:39 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F015.D

(3) 1,4-Dioxane (T)

3.23min 218.26ng/ml m

response 26999

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	35.79#
43.00	15.90	11.12
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F015.D 041112_DX.M Thu Apr 19 19:39:14 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:41:00 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14739	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	2243	20.01	ng/ml	-0.01
Spiked Amount 50.000			Recovery =	40.02%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	2384m	21.33	ng/ml	

APR 20 2012

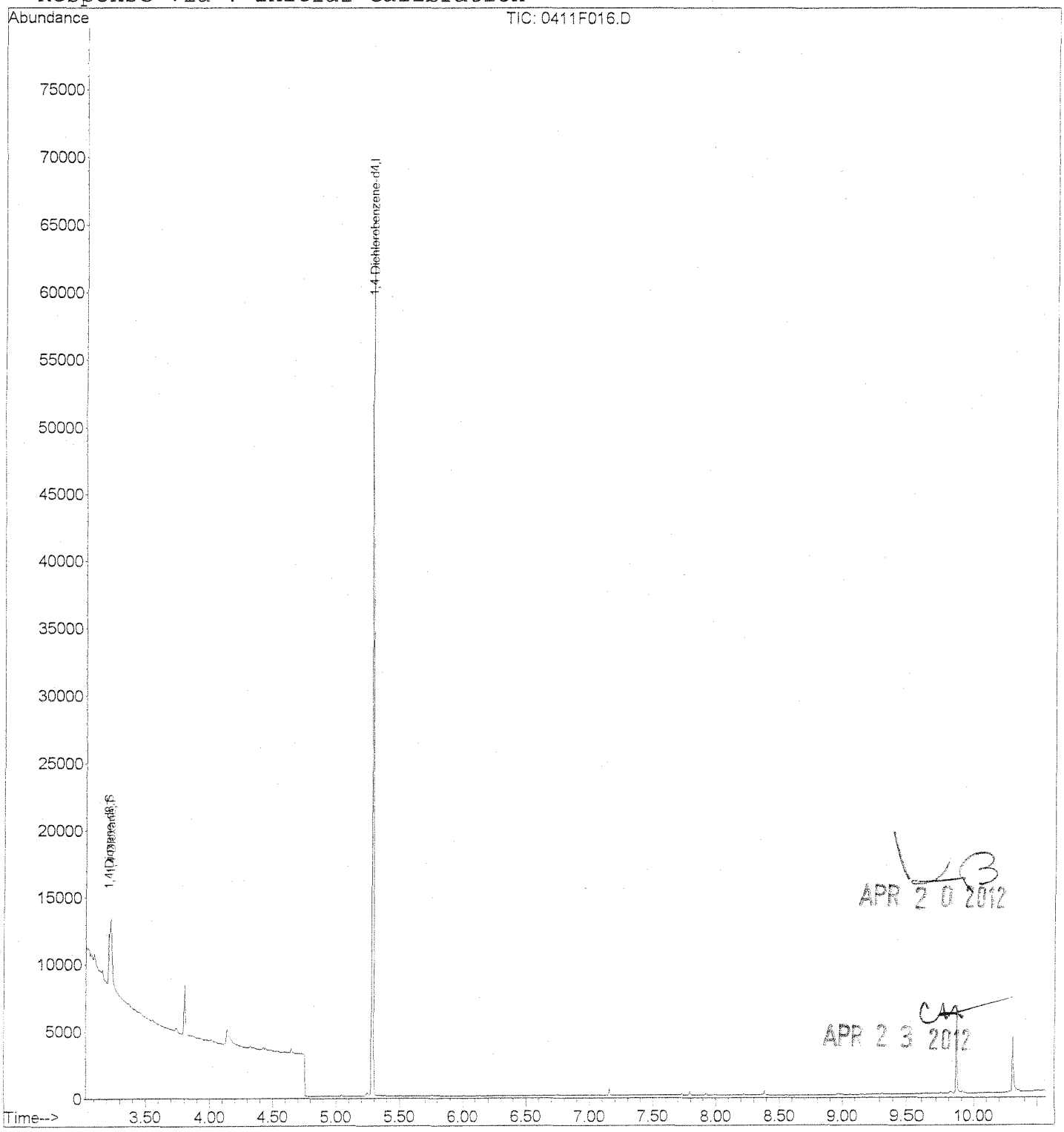
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F016.D 041112_DX.M Fri Apr 20 15:55:08 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:41 2012 Quant Results File: 041112_DX.RE

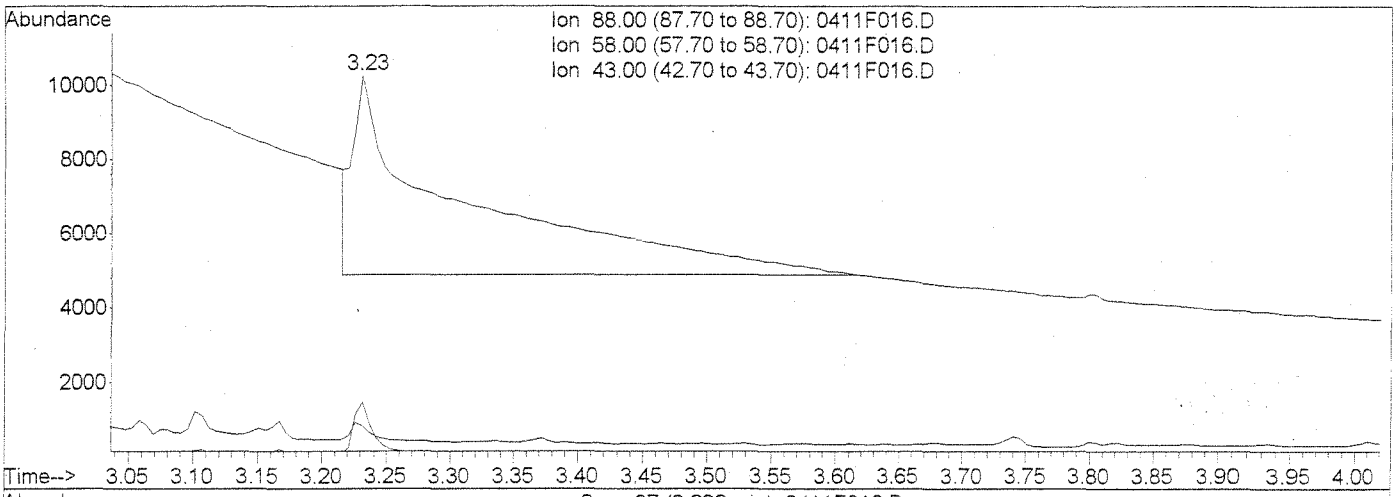
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration

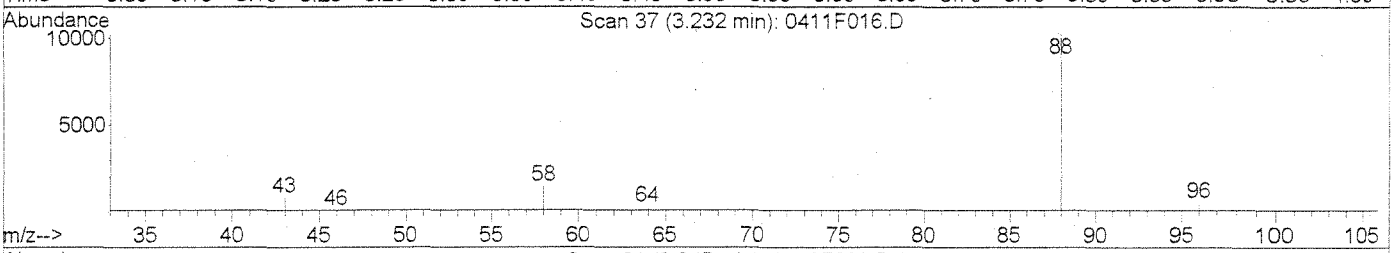


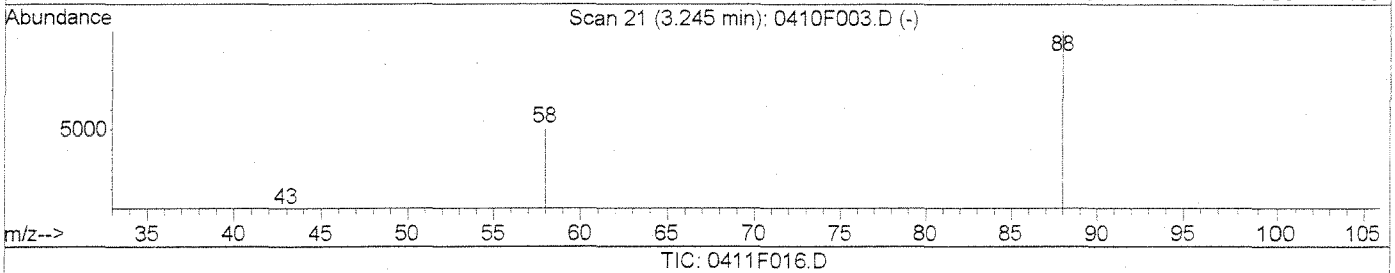
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:40 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0411F016.D

(3) 1,4-Dioxane (T)

3.23min 281.47ng/ml

response 31461

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	26.09
43.00	15.90	9.16
0.00	0.00	0.00

Manual Integration:

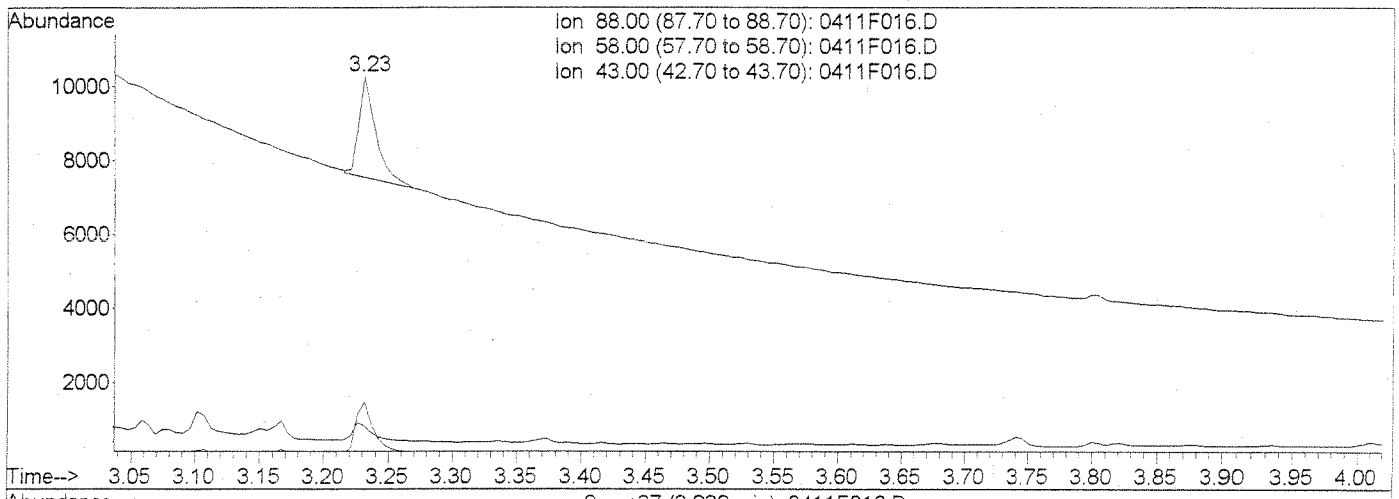
Before

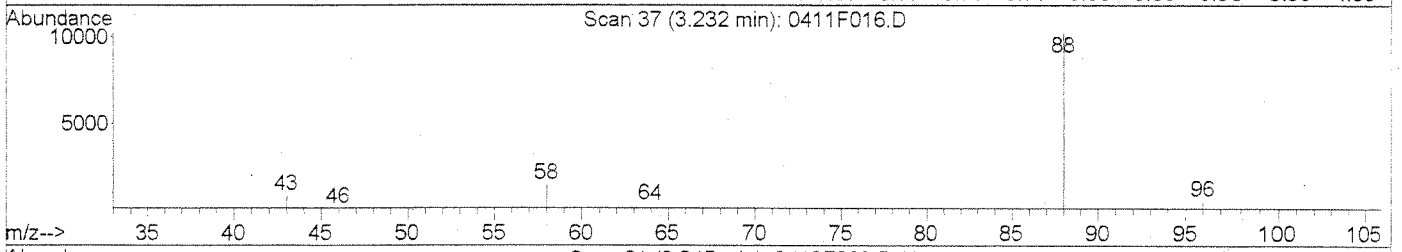
0411F016.D 041112_DX.M Thu Apr 19 19:41:12 2012

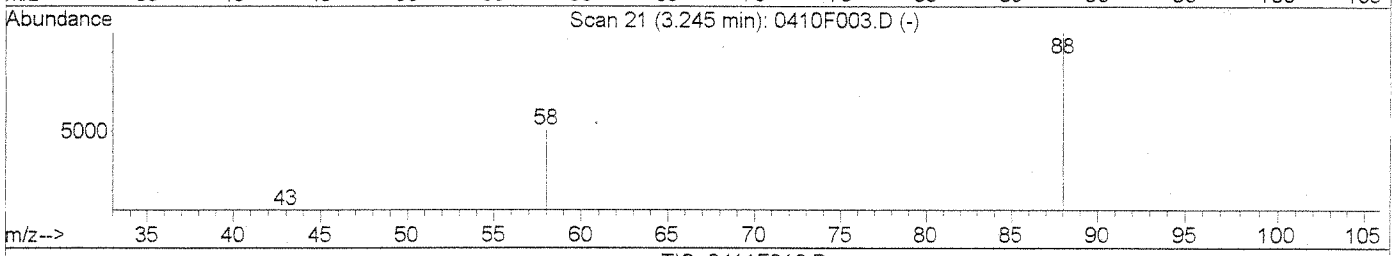
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:41 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0411F016.D

(3) 1,4-Dioxane (T)

3.23min 21.33ng/ml m

response 2384

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	14.30
43.00	15.90	8.05
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F016.D 041112_DX.M Thu Apr 19 19:41:44 2012

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201604
Date Analyzed: 05/03/2012

Continuing Calibration Verification Summary
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 04/11/2012
Calibration ID: CAL11446
Analysis Lot: KWG1204586
Units: ng/ml

File ID: J:\MS26\DATA\050312\0503F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	20	0.01	0.379	0.376	-1	NA	± 20 %	AverageRF
1,4-Dioxane-d8	20	17	0.01	0.380	0.314	-17	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Exception Report

Data File: J:\MS26\DATA\050312\0503F003.D
Lab ID: KWG1204586-2
RunType: CCV
Matrix: WATER

Date Acquired: 05/03/2012 16:29
Date Quantitated: 05/04/2012 08:45
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: MAY 04 2012

Secondary Review: 05.23.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F003.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 16:29	**Quant Date:**	05/04/2012 08:45	**Vial:**	3
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204586-2			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-DIOXA	**Collect Date:**		**Receive Date:**	05/04/2012

Analysis Lot:	KWG1204586	**Prep Lot:**		**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	-0.01?	152	14092	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.19			96	1771	16.53		48-118	NA

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.21			88	2122m	19.86			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:45:24 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

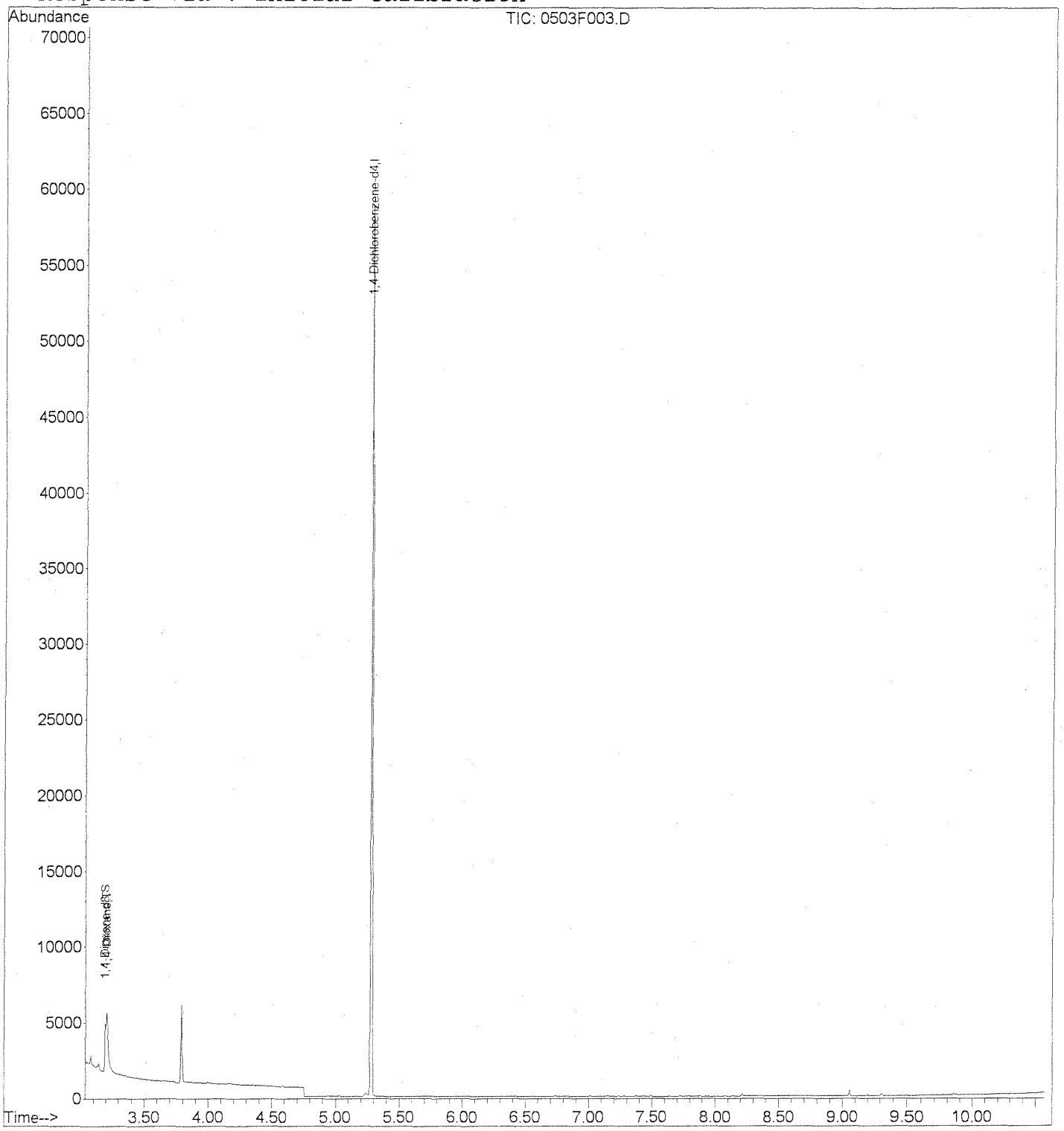
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	14092	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.19	96	1771	16.53	ng/ml	-0.03
Spiked Amount 50.000			Recovery = 33.06%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.21	88	2122m	19.86	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F003.D 041112_DX.M Fri May 04 08:45:51 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:45 2012 Quant Results File: 041112_DX.RE

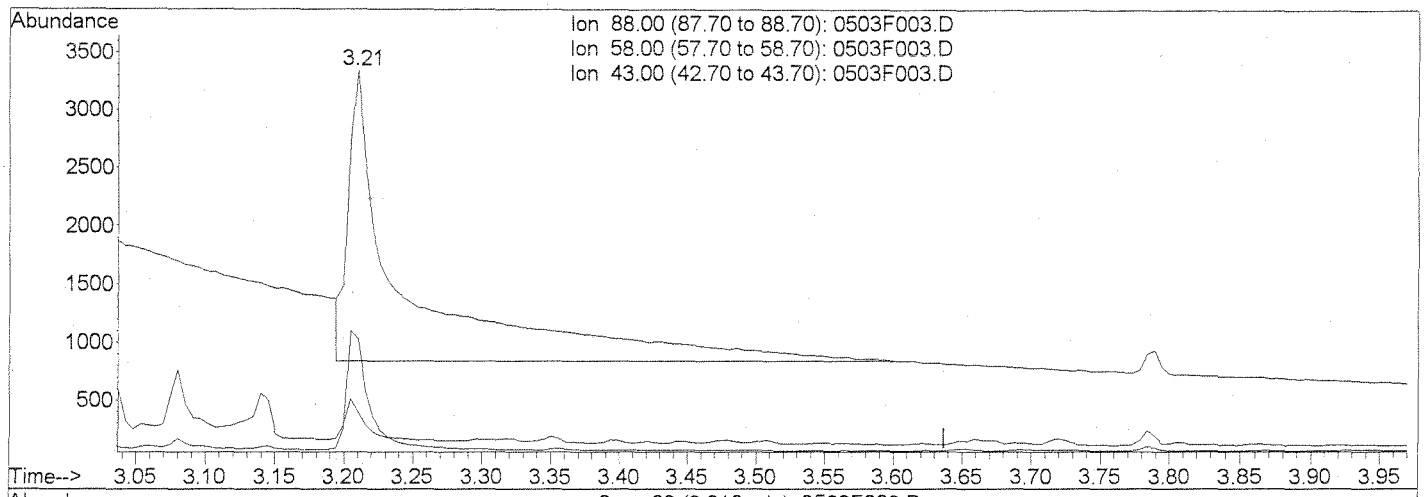
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration

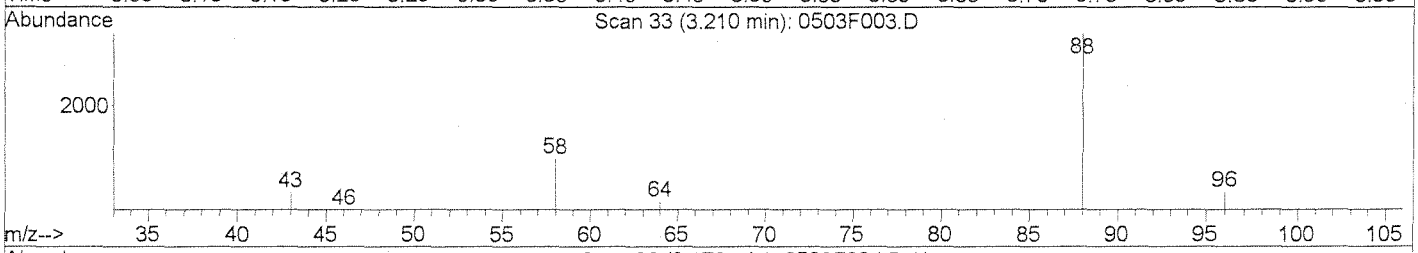


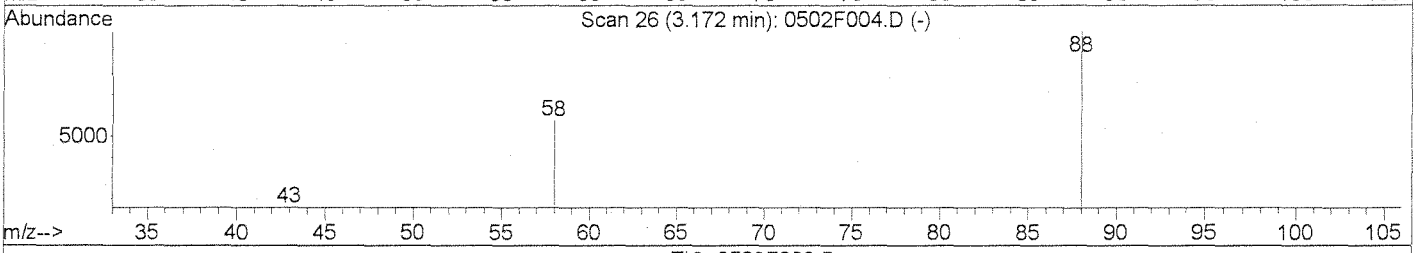
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:45 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0503F003.D

(3) 1,4-Dioxane (T)

3.21min 70.70ng/ml

response 7556

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	38.79#
43.00	15.90	11.57
0.00	0.00	0.00

Manual Integration:

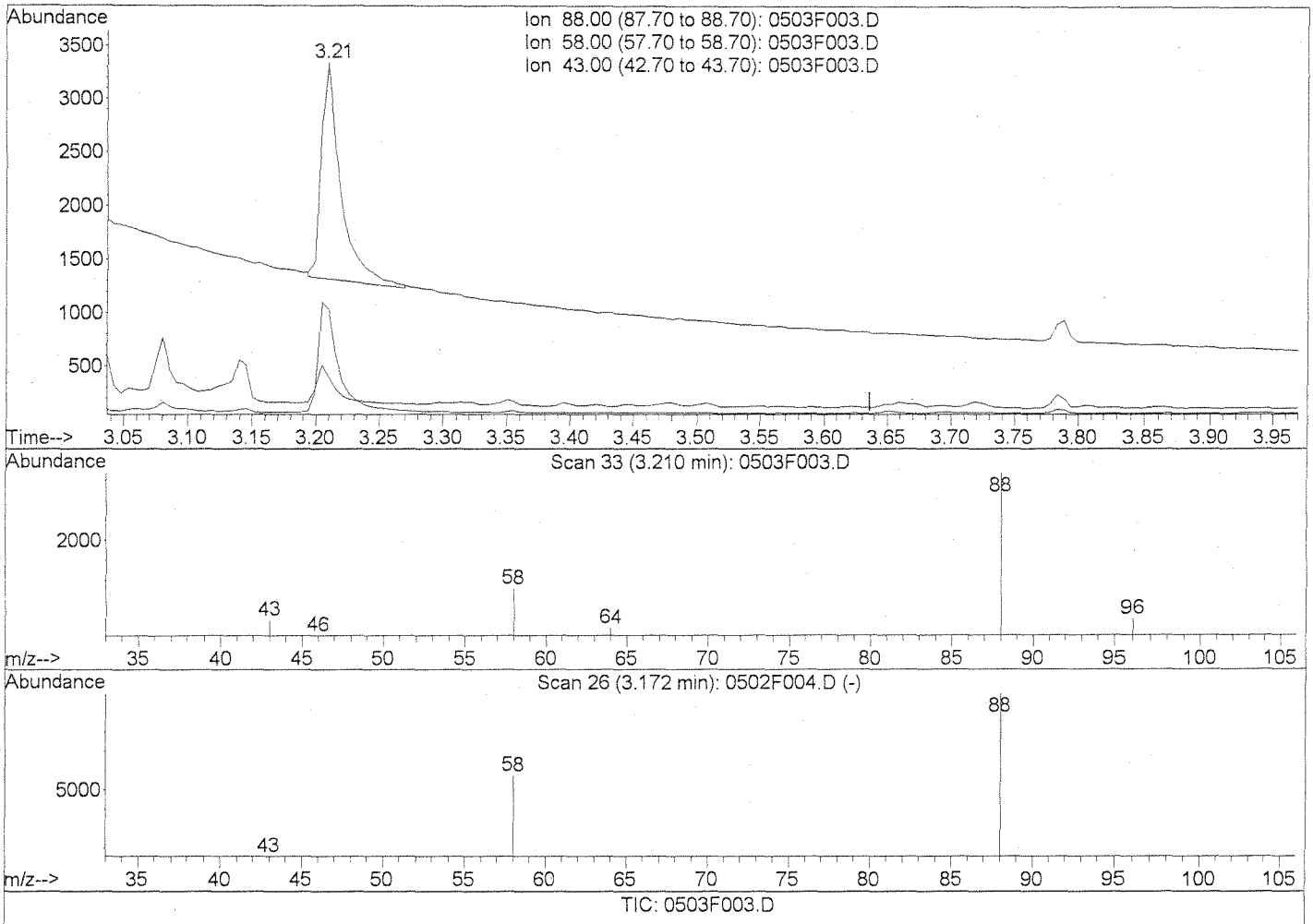
Before

0503F003.D 041112_DX.M Fri May 04 08:45:35 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:45 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration



TIC: 0503F003.D

(3) 1,4-Dioxane (T)

3.21min 19.86ng/ml m

response 2122

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	30.80
43.00	15.90	11.97
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

CH LB

0503F003.D 041112_DX.M Fri May 04 08:45:44 2012

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Sample Prep and Screen Data

Preparation Information

Group ID:	KWG1204380	**Prep Method:**	EPA 3510C	**Prep Date:**	04/30/12 00:00
Department:	Semivoa GCMS				

Lab Code	Client ID	Product	Matrix	Amt. Ext.	Final Vol.
K1203834-001	MW-1	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-002	MW-2	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-003	MW-3	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-004	EB-2	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-005	DUP-04	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203902-001	L571685-01	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-1	Matrix Spike	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-2	Duplicate Matrix Spike	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-3	Lab Control Sample	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-4	Duplicate Lab Control Sampl	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-5	Method Blank	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201573-002	MW-16	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201573-003	DUPE-8-2Q12	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201588-002	MW-13	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201604-005	MW-24-1	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201630-005	MW-4-1	8270D 1,4-Dioxane	WATER	100ml	50ml

Lab Code	Parent Lab Code	Comments
KWG1204380-1	K1203834-003	
KWG1204380-2	K1203834-003	

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
K1203834-001	1121253	SVM38-29C	50uL			HBailey
K1203834-002	1121254	SVM38-29C	50uL			HBailey
K1203834-003	1121255	SVM38-29C	50uL			HBailey
K1203834-004	1121256	SVM38-29C	50uL			HBailey
K1203834-005	1121257	SVM38-29C	50uL			HBailey
K1203902-001	1121252	SVM38-29C	50uL			HBailey
KWG1204380-1	1121263	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-2	1121264	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-3	1121265	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-4	1121266	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-5	1121267	SVM38-29C	50uL			HBailey
P1201573-002	1121259	SVM38-29C	50uL			HBailey
P1201573-003	1121260	SVM38-29C	50uL			HBailey

Comments:

IS: SVM37-41A

Started By: DHongel Assisted By: Training Yes No

Completed By: LBerg Assisted By: Yes No

Reviewed By: HBailey Date: 5/3/12 Storage: SVM LAB / MS2L

Chain of Custody

Relinquished By: Date: 5-2-12

Received By: LB Date: 5/3/12 Extracts Examined Yes No

Group ID:	KWG1204380	**Prep Method:**	EPA 3510C	**Prep Date:**	04/30/12 00:00
Department:	Semivoa GCMS				

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
P1201588-002	1121261	SVM38-29C	50uL			HBailey
P1201604-005	1121262	SVM38-29C	50uL			HBailey
P1201630-005	1121258	SVM38-29C	50uL			HBailey

Comments:

IS: SVM37-L1A

Started By: DHongel Assisted By: ——

Completed By: LBerg Assisted By: ——

Training: Yes / No

Yes / No

Reviewed By: HBailey Date: 5/3/12 Storage: SVM LAB/ HS2

Chain of Custody

Relinquished By: Date: 5.2.12

Received By: LB Date: 5/3/12

Extracts Examined: Yes / No

Preparation Information

Due: 5/1/12

Group ID: KWG1204380 **Prep Method:** EPA 3510C **Prep Date:** 04/30/12 00:00
Department: Semivoa GCMS

#	Lab Code	Client ID	B#	√	Product	Matrix	Amt. Ext. mL	pH	Int. Vol.	Final Vol. ml	Surr. Added	Spike Added
1	K1203834-001	MW-1	.01	✓	8270D 1,4-Dioxane	WATER	100	–	N/A	50	50µL	N/A
2	K1203834-002	MW-2	.01	✓	8270D 1,4-Dioxane	WATER	100	–		50		
3	K1203834-003	MW-3 4-30-12 DH EE	.13 ~~.01~~	✓	8270D 1,4-Dioxane	WATER	100	–		50		
4	K1203834-004	EB-2	.01	✓	8270D 1,4-Dioxane	WATER	100	–		50		
5	K1203834-005	DUP-04	.01	✓	8270D 1,4-Dioxane	WATER	100	–		50		
6	K1203902-001	L571685-01	.02	✓	8270D 1,4-Dioxane	WATER	100	–		50		↓
7	KWG1204380-1	Matrix Spike 3834-3MS	.01	✓	8270D 1,4-Dioxane	WATER	100	–		50		50µL
8	KWG1204380-2	Duplicate Matrix Spike 3834-3DMS	.01	✓	8270D 1,4-Dioxane	WATER	100	–		50		
9	KWG1204380-3	Lab Control Sample			8270D 1,4-Dioxane	WATER	100	–		50		
10	KWG1204380-4	Duplicate Lab Control Sample			8270D 1,4-Dioxane	WATER	100	–		50		↓
11	KWG1204380-5	Method Blank			8270D 1,4-Dioxane	WATER	100	–		50		N/A
12	P1201573-002	MW-16	.04	✓	8270D 1,4-Dioxane	WATER	100	–		50		
13	P1201573-003	DUPE-8-2Q12	.04	✓	8270D 1,4-Dioxane	WATER	100	–		50		
14	P1201588-002	MW-13	.04	✓	8270D 1,4-Dioxane	WATER	100	–		50		
15	P1201604-005	MW-24-1	.04	✓	8270D 1,4-Dioxane	WATER	100	–		50		
16	P1201630-005	MW-4-1	.04	✓	8270D 1,4-Dioxane	WATER	100	–	↓	50	↓	↓

Comments: Prep #156768

Surrogate ID: SVM38-29C, 50µg/mL, Exp: 10/4/12, 50µL (cpp)

Spike ID: SVM37-SD 50µg/mL, Exp: 6/21/12, 50µL (cpp)

Witness: [signature] 4/30/12

Started By: DHongel Assisted By: LB

Completed By: [signature] Assisted By:

Additional Prep Information For 1,4 Dioxane by EPA 3510

RE D H 4·30·12

Service Request K03834, K03902, ~~K4350~~ **Workgroup** 04380

P01573, P01568, P01609, P01630

Pre-Prep Information:

DCM Lot DFS97

Batch Start (Time/Date/Initial): 18:30/4·30·12/DH

Batch Stop (Time/Date/Initial): 21:10/4·30·12/DH

Sulfate Lot # 113858 Salt Lot # G38343 ~~Glass Wool Lot # 1971499~~ +Gl 5/2/10 EE

Extract Storage: As You Wish

Completed (Time/Date/Initial): 2045 5·2·12 dh

Comments/Observations:

Bench Sheet Review Check List	
☐	Hold Times Met (if no, Reason:)
☑	Prep date, dept, method, product code correct in stealth
☑	Spike Information correct
☑	Weights/Volumes and units correct on raw and final bench sheets
☑	Sample IDs have been checked—Bottle numbers appended if required
☑	Names present for: Started by, Completed by, relinquished by, and witnessed by.
☑	Training has been circled
☑	Extract Storage recorded
☑	Additional Prep Sheet completely filled out (NA or line out Blanks)
☑	All clean-ups have been noted on additional prep sheet
☑	Signed service request with Form V, if applicable, has been attached

Injection Log

Directory: J:\MS26\DATA\050312

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0503F001.d	1.	PR		3 May 2012 15:5
2	2	0503F002.d	1.	3.0ug/mL DFTPP | SVM38-66A		3 May 2012 16:1
3	3	0503F003.d	1.	20ng/mL CCV 1,4-Dioxane | SVM38-66B		3 May 2012 16:2
4	4	0503F004.d	1.	KWG1204380-5 | MB		3 May 2012 16:4
5	5	0503F005.d	1.	KWG1204380-3 | LCS		3 May 2012 17:0
6	6	0503F006.d	1.	KWG1204380-4 | DLCS		3 May 2012 17:2
7	7	0503F007.d	1.	KWG1204380-1 | MS K1203834-003MS		3 May 2012 17:4
8	8	0503F008.d	1.	KWG1204380-2 | DMS K1203834-003DMS		3 May 2012 18:0
9	9	0503F009.d	1.	K1203834-003		3 May 2012 18:2
10	10	0503F010.d	1.	K1203834-001		3 May 2012 18:4
11	11	0503F011.d	1.	K1203834-002		3 May 2012 19:0
12	12	0503F012.d	1.	K1203834-004		3 May 2012 19:2
13	13	0503F013.d	1.	K1203834-005		3 May 2012 19:4
14	14	0503F014.d	1.	K1203902-001		3 May 2012 20:0
15	15	0503F015.d	1.	P1201573-002		3 May 2012 20:1
16	16	0503F016.d	1.	P1201573-003		3 May 2012 20:3
17	17	0503F017.d	1.	P1201588-002		3 May 2012 20:5
18	18	0503F018.d	1.	P1201604-005		3 May 2012 21:1
19	19	0503F019.d	1.	P1201630-005		3 May 2012 21:3

Run # 290201

CAL 114A

LB

MAY 04 2012

LABORATORY REPORT

May 9, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL-GW-2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on April 25, 2012. For your reference, these analyses have been assigned our service request number P1201605.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 10:10 am, May 09, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL-GW-2Q12 / 100006114
Service Request No: P1201605

CASE NARRATIVE

The samples were received intact under chain of custody on April 25, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL-GW-2Q12 / 100006114
Service Request: P1201605

Date Received: 4/25/2012
Time Received: 14:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-9	P1201605-001	Water	4/25/2012	09:53	X
MW-1	P1201605-002	Water	4/25/2012	12:50	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P1201605

CAS Contact:

Company Name & Address (Reporting Information)
Battelle
505 King Ave
Columbus, OH. 43201

Project Name
JPL-GW-2Q12

Project Number
100006114

Project Manager
David Conner

P.O. # / Billing Information
265451 / Battelle
505 King Ave
Columbus, OH 43201

Phone 614 726-7311

Fax 614 458-6641

Email Address for Result Reporting
connerd@battelle.org

Sampler (Print & Sign)
David Loera

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted) TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 Hexavalent Cr 7196	Remarks
MW-9	1	4/25/12	0953	AQ	1P						X	
MW-1	2	4/25/12	1250	AQ	1P						X	

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge X
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 4-25-12	Time: 1300	Received by: (Signature)	Date: 4/25/12	Time: 1340	Wet Ice
Relinquished by: (Signature)	Date: 4/25/12	Time:	Received by: (Signature)	Date: 4/25/12	Time: 1414	Cooler (Blank) Ice / No Ice
Relinquished by: (Signature)	Date: 4/25/12	Time: 1430	Received by: (Signature)	Date: 4/25/12	Time: 1430	Temperature 3 °C

Chain of Custody Report

Client: Battelle **Service Request:** P1201605
Project: JPL-GW-2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201605-001.01					
	7196A				
		4/25/12	1446	SMO / MZAMORA	
		4/25/12	1447	P-37 / MZAMORA	
		4/25/12	1508	In Lab / EIBARRA	
		4/25/12	1929	P-37 / EIBARRA	
P1201605-002.01					
	7196A				
		4/25/12	1446	SMO / MZAMORA	
		4/25/12	1447	P-37 / MZAMORA	
		4/25/12	1507	In Lab / EIBARRA	
		4/25/12	1929	P-37 / EIBARRA	

Columbia Analytical Services
Now part of the ALS Group
2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Sample Acceptance Check Form

Client: Battelle Work order: P1201605

Project: JPL-GW-2Q12 / 100006114

Sample(s) received on: 4/25/12 Date opened: 4/25/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201605-001.01	125mL Plastic NP					
P1201605-002.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL-GW-2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201605
Date Collected : 04/25/12
Date Received : 04/25/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-9	P1201605-001	0.010	0.003	1	NA	04/25/12 18:20	ND	
MW-1	P1201605-002	0.010	0.003	1	NA	04/25/12 18:20	ND	
Method Blank	P1201605-MB	0.010	0.003	1	NA	04/25/12 18:20	ND	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1201605
Project:	JPL-GW-2Q12 / 100006114	**Date Analyzed:**	04/25/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Rya Date: 5/9/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL-GW-2Q12 / 100006114

Service Request: P1201605
Date Analyzed: 04/25/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0504	101	90-110
CCV1	0.0500	0.0513	103	90-110
CCV2	0.0500	0.0504	101	90-110

Approved By: Karen Ryan Date: 5/9/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201605
Project Name :	JPL-GW-2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	04/25/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201605-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0398	100	92-110	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL-GW-2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201605
Date Collected : 04/25/12
Date Received : 04/25/12
Date Extracted : NA
Date Analyzed : 04/25/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-9
Lab Code : P1201605-001MS P1201605-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0486	0.0477	97	95	69-119	2	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P1201604 ; P1201605

Time: 1530

Sample	VWR lot #	Exp.
pH 2 Buffer	S24-05201101	Dec 2012
pH 4 Buffer	S24-10241101	2/28/13
pH 7 Buffer	S24-10211101	Jul 2013
pH 10 Buffer	S24-10241103	2/28/13

Slope	Prep.Run #
98.8%	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C	Sample	#	pH	Temp. °C
pH 2.000	3	2.003	22.6				
pH 4.000		4.005	23.1				
pH 7.000		7.007	22.9				
pH 10.000		10.001	22.9				
Ref#: pH 7.38 Exp 8/13 S24-10241102		7.389 1007	23.1				
DI		2.031	22.9			SPACE NOT	USED
P1201604-1.01		2.185	16.7				
-2.01		2.103	16.6				
-3.01		2.080	16.4				
-4.01		2.210	16.9				
-5.01		2.190	16.6				
pH 2.000		2.023	22.5				
P1201604-6.01		2.251	16.9				
-7.01		1.997	17.6				
P1201605-1.01		2.240	17.8				
-2.01		2.195	18.3				
pH 2.000		2.026	22.5				

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 49284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 4/23/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: EI Date: 4/25/12

Reviewer: KR Date: 4/26/12

pH

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

48

Service Request#(s): P1201604 ; P1201605 Run#: 78948 6

Stock#: 524-0223120 1 TV=10PPM Exp 8/23/12 Prep Run#:

ICV/CCV#: 524-0327120 1 TV=100PPM Exp 7/2013 Conc. H_2SO_4 Lot#: EMD 44284 Exp 11/20/14

Coloring Reagent Ref#: 524-04160103 EXP: 6/16/12

Working Curve:

Prep Dilution	*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L	*0.00*	*0.01*	*0.05*	*0.1*	0.999998123
Absorbance @ 540 nm	0.000	0.011	0.057	0.113	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10mL	—	✓	0.000	0.000	0.000	0.0000356	<0.003
2	ICV 0.05 PPM		—	✓	0.000	0.057	0.057	0.0504	101%
3	MB		—	✓	0.000	0.000	0.000	0.0000356	<0.003
4	LCS 0.04 PPM		—	✓	0.000	0.045	0.045	0.0398	100%
5	P1201604-1.01		—	✓	0.000	0.001	0.001	0.0000356	<0.003
6	-1.01 VS 0.03 PPM		—	✓	0.000	0.035	0.035	0.0309	103%
7	-2.01		—	✓	0.002	0.004	0.002	0.00180	<0.003
8	-3.01		—	✓	0.002	0.002	0.000	0.0000356	<0.003
9	-4.01		—	✓	0.001	0.002	0.001	0.000914	<0.003
10	-5.03		—	✓	0.000	0.000	0.000	0.0000356	<0.003
11	-5.03 MS 0.05 PPM		—	✓	0.000	0.048	0.048	0.0424	85% RPD
12	-5.03 MSD		—	✓	0.000	0.050	0.050	0.0442	88% 4%
13	CCV1 0.05 PPM		—	✓	0.000	0.058	0.058	0.0513	103%
14	CCB1		—	✓	0.000	0.000	0.000	0.0000356	<0.003
15	P1201604-6.01		—	✓	0.003	0.004	0.001	0.000919	<0.003
16	-7.01		—	✓	0.000	0.000	0.000	0.0000356	<0.003
17	P1201605-1.01		—	✓	0.001	0.002	0.001	0.000919	<0.003

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of 524-0327120 1 @1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-0223120 1 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: EI Date/Time: 4/25/12 @ 1800

Analyzed By: EI Date/Time: 4/25/12 @ 1820

Reviewed By: KL Date: 4/28/12

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201604 ; P1201605 Run#: 291486

Stock#: 524-02231201 TV=10PPM Exp 8/13/12 Prep Run#: —

ICV/CCV#: 524-03271201 TV=100PPM Exp 7/2013 Conc. H_2SO_4 Lot#: EMD 44284 Exp 11/20/14

Coloring Reagent Ref#: 524-04161203 EXP: 5/16/12

Working Curve:

Prep Dilution	*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L	*0.00*	*0.01*	*0.05*	*0.1*	0.99998123
Absorbance @ 540 nm	0.000	0.011	0.057	0.113	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	P1201605 - 1.01 MS 0.05 PPM	10mL	—	✓	0.001	0.056	0.055	0.0486	97% RPD
2	- 1.01 MSD		—	✓	0.001	0.055	0.054	0.0477	95% 2%
3	- 2.01		—	✓	0.000	0.000	0.000	0.0000356	< 0.003
4	- 2.01 VS 0.03 PPM		—	✓	0.000	0.034	0.034	0.0301	100%
5	CCV 2 0.05 PPM		—	✓	0.000	0.057	0.057	0.0504	101%
6	CCB 2		—	✓	0.000	0.000	0.000	0.0000356	< 0.003
7									
8									
9									
10						SPACE NOT USED			
11									
12									
13									
14									
15									
16									
17									

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of 524-03271201 @ 1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-02231201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of _____ ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @ 1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments: _____

Prepared By: EI Date/Time: 4/25/12 @ 1800

Analyzed By: EI Date/Time: 4/25/12 @ 1870

Reviewed By: [signature] Date: 4/26/12

5/19/11 JR

S24-05191103 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JR5044 exp: 6/15/16) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 449184 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JR

S24-05201101 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT # 110225
EXP: 12/2013

5/20/11 JR

~~S24-05201103~~ pH 4.000 BUFFER
Purchased
JT Baker CAT # 5657-01 500mL
LOT # J36503
EXP: 9/30/13

5/20/11 JR

~~S24-05201103~~ pH 7.~~00~~ BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT # 1103361
EXP: 3/2013

10/17/11 SR

S24-10171102 1000PPM NH3

0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL

w/ S24-10171101 (0.1N HCl Std EXP. 10/17/12)

EXP: 4/17/12

10/17/11 SR

S24-10171103 ICP Eluent

100 mL of S24-09201103 (10x conc Eluent; EXP: 9/20/12)

↑ 1L w/ DI. DEGASSED.

EXP. 10/31/11

10/21/11 SR

S24-10211101 pH 7.000 Buffer

Purchased

BDH Cat NO: BDH5046-500mL

LOT # 1107491

EXP: 7/2013

10/24/11 SR

S24-10241101 pH 4.000 Buffer

Purchased

JT Baker Cat No: 5657-01 500ml

LOT # K04505

EXP: 2/28/13

10/24/11 SR

S24-10241102 pH 7.38 Buffer

Purchased

BDH Cat No BDH5058-500ml

LOT # 1109034

EXP: 8/2013

10/24/11 SR

524-1024/103 pH 10.000 Buffer
Purchased
JT Baker Cat no: 5655-01
Lot # K07507
EXP: 2/28/13

10/25/11 SR

524-1025/101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 951211 475mL
Lot # PN1 P/N 270475-A01
EXP: 10/25/12

10/25/11 SR

524-1025/102 A, B, C, D, E pH Filling Sln
Purchased
Thermo Scientific Orion 810007 5/pkg
Lot: PS1
EXP: 10/25/12

11/1/11 SR

524-1101/101 IC02 Eluent
100 mL 524-0920/103 (10x conc eluent EXP: 9/20/13) TO 1L W/ DI H2O DEGASSED
EXP: 11/15/11

11/1/11 SR

524-1101/102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J0564) exp: 6/15/19 in 100 mL Methanol (B&J AC932 exp: 10/12/16)
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H2SO4 (EMD [illegible] exp: [illegible]). Bring

2/9/13 SR 524-0209/202 NEA Sol'n
0.250g N-1-Naphthylethylenediamine Dihydrochloride (JT Baker; lot IK2587 EXP 10/19/14) ↑ 250mL w/ DI
EXP: 8/9/13

2/9/13 SR 524-0209/203 ICA Eluent
100mL 524-0920 1103 (for Con Eluent, exp 9/20/13) ↑ 8/9/13 1 L w/ DI H2O. Degassed
2/23/13

2/9/13 SR 524-0209/204 ICA PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JC5641 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 10/10/16) Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49284 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 2/14/13

2/10/13 SR 524-0210/201 795 ~~1000~~ ppm Cr6+
Purchased
INORGANIC VENTURES CGCR(6)1-1
LOT: 62-CR03049
EXP: 3/1/13

2/13/13 SR 524-0213/201
5.6mL Conc H_2SO_4 (EMD 49184, EXP: 11/20/14) ↑
dil to 1 L H_2O
EXP: 2/13/13

2/14/12 SA 524-021412O3 pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 111214G
EXP: 11/2013

2/20/12 SA 524-0220/201 500ppm NO_2 STOCK
Purchased
RICCA CHEMICAL CO Cat# 5444.5-4 120ml Amber Gl
LOT# 1262290
EXP: 8/12

2/22/12 SA 524-0222/201 Alkaline DIGESTION Sol
30.0g ~~NaOH~~ Na_2HPO_4 (EMD 4632715; EXP: 10/14/12) + 20.0g $NaOH$ (EMD 4702713C; EXP: 10/4/12) ↑ 1L w/ DI
EXP: 3/22/12

2/23/12 SA 524-0223/201 10ppm Cr6+ Std
1.0ml 524-0210/201 (1000ppm Cr6+; EXP: 3/1/13)
↑ 100ml w/ DI H_2O
EXP: 8/23/12

2/27/12 SA 524-0227/201 0.1N H_2SO_4
5.6ml Conc H_2SO_4 (EMD 4928-4; EXP: 11/20/1
↑ 2L w/ DI H_2O
EXP: 2/27/13

3/23/12 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 110934
EXP: 8/2013

3/27/12 524-0327/201 100 PPM Cr6+ ICV
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
LOT # 120701
EXP: 7/2013

3/28/12 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # 104514 500ml plastic
EXP: 1/31/14

3/28/12 524-0328/202 Methylene Blue 1% Aq Sol
100ml Purchased
Alfa Aesar Stock # 42771
LOT # H04X026
EXP: 3/28/13

4/16/12 S24-0416/201 IC02 Eluent

100mL S24-0314/201 (10x Conc eluent, EXP: 10/11)
↑ 1L w/ DI H2O. Degassed
EXP: 4/30/12

4/16/12 S24-0416/202 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ J.T. Baker JC5641 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 2/27/17). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4G7384 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 4/21/12

4/16/12 S24-0416/203 Cr6+ Coloring Reagent

0.2500g 1,5-Diphenylcarbohydrazide Powder (JT Baker JC5641; EXP: 6/15/15) ↑ 50mL w/ Acetone (EMD Lot 47154; EXP 9/24/12)
EXP: 5/16/12

4/16/12 S24-0416/204 12.5 N NaOH

100g NaOH (EMD 47027713; EXP 10/1/12
+100mL DI H2O.
EXP: 10/11/12

0430 4/30/12

4/30/12 S24-~~0314~~/201 IC02 Eluent

100mL S24-0314/201 (10x conc eluent; EXP: 10/11/12) ↑ 1L w/ DI H2O. Degassed.
EXP: 5/14/12

LABORATORY REPORT

May 16, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon. 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on April 26, 2012. One of the samples was sent out for partial analysis to our Kelso facility. Please find their report attached. For your reference, these analyses have been assigned our service request number P1201630.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 2:11 pm, May 16, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon. 2Q12 / 100006114
Service Request No: P1201630

CASE NARRATIVE

The samples were received intact under chain of custody on April 26, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon. 2Q12 / 100006114
Service Request: P1201630

Date Received: 4/26/2012
Time Received: 14:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6	521 - Nitrosamines	8270D - 1,4-Dioxane
MW-4-5	P1201630-001	Water	4/26/2012	08:30	X		
MW-4-4	P1201630-002	Water	4/26/2012	09:00	X		
MW-4-3	P1201630-003	Water	4/26/2012	09:27	X		
MW-4-2	P1201630-004	Water	4/26/2012	10:02	X		
MW-4-1	P1201630-005	Water	4/26/2012	12:07	X	X	X
EB-4-4/26/12	P1201630-006	Water	4/26/2012	11:51	X		

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P120163 D

CAS Contact:

Company Name & Address (Reporting Information)	Project Name	Project Number
BATTELLE 3990 OLD TOWN AVE., C-205 SAN DIEGO, CA 92110	JPL GW MON. 2012	100006114

Project Manager	Phone	Fax	P.O. # / Billing Information
DAVID CONNER	(619) 726-7311	(619) 458-6641	#285651 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE COLUMBUS, OH 43201

Email Address for Result Reporting: Conner d@battelle.org

Sampler (Print & Sign): CHARLIE BRADSON

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 CrVI (7196A)	0 1,4-DIOXANE (8270 SIM)	7 NDMA (521)	Remarks
MW-4-5		4/26/12	0830	GW	1							X			
MW-4-4			0900		1							X			QC IV
MW-4-3			0927		1							X			
MW-4-2			1002		1							X			
MW-4-1			1207		4							X	X	X	
EB-4-4/26/12		4/26/12	1151	GW	1							X			EQUIP BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____
MRL required Yes / No
MDL / PQL / J required Yes / No
EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	4/26/12	1842			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
					1943
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	4/26/12	1930		4/26/12	1930

Cooler / Blank / Ice / No Ice
Wet Ice
Temperature 3.0C °C

5 of 329

Columbia Analytical Services, Inc.
Now part of the ALS Group
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Chain of Custody Report

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201630

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201630-001.01					
	7196A				
		4/26/12	1456	SMO / MZAMORA	
		4/26/12	1456	P-37 / MZAMORA	
		4/26/12	1736	In Lab / EIBARRA	
		4/26/12	1736	P-37 / EIBARRA	
P1201630-002.01					
	7196A				
		4/26/12	1456	SMO / MZAMORA	
		4/26/12	1456	P-37 / MZAMORA	
		4/26/12	1736	In Lab / EIBARRA	
		4/26/12	1736	P-37 / EIBARRA	
P1201630-003.01					
	7196A				
		4/26/12	1456	SMO / MZAMORA	
		4/26/12	1456	P-37 / MZAMORA	
		4/26/12	1736	In Lab / EIBARRA	
		4/26/12	1736	P-37 / EIBARRA	
P1201630-004.01					
	7196A				
		4/26/12	1456	SMO / MZAMORA	
		4/26/12	1456	P-37 / MZAMORA	
		4/26/12	1736	In Lab / EIBARRA	
		4/26/12	1736	P-37 / EIBARRA	
P1201630-005.01					
	521				
		4/26/12	1456	SMO / MZAMORA	
		4/26/12	1456	SUBBED / MZAMORA	
		4/27/12	1152	K-Delilah-75 / SWOLF	
		4/30/12	0907	Custodian / SDAVIS	
		4/30/12	0907	In Lab / RHAYES	
		4/30/12	1626	K-Delilah-75 / DMOORE	
P1201630-005.02					
		4/26/12	1456	SMO / MZAMORA	
		4/26/12	1456	SUBBED / MZAMORA	
		4/27/12	1152	K-Delilah-75 / SWOLF	
P1201630-005.03					
	7196A				
		4/26/12	1456	SMO / MZAMORA	
		4/26/12	1456	P-37 / MZAMORA	
		4/26/12	1735	In Lab / EIBARRA	
		4/26/12	1736	P-37 / EIBARRA	
P1201630-005.04					

Chain of Custody Report

Client: Battelle **Service Request:** P1201630
Project: JPL GW Mon. 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
	8270D				
		4/26/12	1456	SMO / MZAMORA	
		4/26/12	1456	SUBBED / MZAMORA	
		4/27/12	1152	K-Delilah-75 / SWOLF	
		4/30/12	1507	Custodian / DMOORE	
		4/30/12	1507	In Lab / DHONGEL	
		4/30/12	1853	K-Delilah-75 / KSMITH	
P1201630-006.01					
	7196A				
		4/26/12	1456	SMO / MZAMORA	
		4/26/12	1456	P-37 / MZAMORA	
		4/26/12	1736	In Lab / EIBARRA	
		4/26/12	1736	P-37 / EIBARRA	

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Sample Acceptance Check Form

Client: Battelle Work order: P1201630

Project: JPL GW Mon. 2Q12 / 100006114

Sample(s) received on: 4/26/12 Date opened: 4/26/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☒	☐
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201630-001.01	125mL Plastic NP					
P1201630-002.01	125mL Plastic NP					
P1201630-003.01	125mL Plastic NP					
P1201630-004.01	125mL Plastic NP					
P1201630-005.01	1000ml AG NP					
P1201630-005.02	1000ml AG NP					
P1201630-005.03	125mL Plastic NP					
P1201630-005.04	500mL AG NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

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Sample Acceptance Check Form

Client: Battelle Work order: P1201630

Project: JPL GW Mon. 2Q12 / 100006114

Sample(s) received on: 4/26/12 Date opened: 4/26/12 by: MZAMORA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201630-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon. 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201630
Date Collected : 04/26/12
Date Received : 04/26/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-4-5	P1201630-001	0.010	0.003	1	NA	04/26/12 17:35	ND	
MW-4-4	P1201630-002	0.010	0.003	1	NA	04/26/12 17:35	ND	
MW-4-3	P1201630-003	0.010	0.003	1	NA	04/26/12 17:35	ND	
MW-4-2	P1201630-004	0.010	0.003	1	NA	04/26/12 17:35	ND	
MW-4-1	P1201630-005	0.010	0.003	1	NA	04/26/12 17:35	ND	
EB-4-4/26/12	P1201630-006	0.010	0.003	1	NA	04/26/12 17:35	ND	
Method Blank	P1201630-MB	0.010	0.003	1	NA	04/26/12 17:35	ND	

Approved By Kam Rya Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12 / 100006114	**Date Analyzed:**	04/26/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 5/9/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon. 2Q12 / 100006114

Service Request: P1201630
Date Analyzed: 04/26/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0504	101	90-110
CCV1	0.0500	0.0495	99	90-110
CCV2	0.0500	0.0495	99	90-110

Approved By: Karen Rya Date: 5/9/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201630
Project Name :	JPL GW Mon. 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	04/26/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201630-LCS	Basis :	NA

Test Notes :

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0424	106	92-110	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201630
Project Name :	JPL GW Mon. 2Q12	**Date Collected :**	04/26/12
Project Number :	100006114	**Date Received :**	04/26/12
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	04/26/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name :	MW-4-1		Units :	mg/L (ppm)
Lab Code :	P1201630-005MS	P1201630-005DMS	Basis :	NA
Test Notes :				

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0477	0.0486	95	97	69-119	2	

Approved By Karen Rya Date : 5/9/12

Report By:SAnderson

Columbia Analytical Services

pH Run Log

Service Request #(s): P1201630 ; P1201631

Time: 1350

Sample	VWR lot #	Exp.
pH 2 Buffer	S24 - 0520111 01	12/2012
pH 4 Buffer	S24 - 1024 1101	2/28/2013
pH 7 Buffer	S24 - 1021 1101	07/2013
pH 10 Buffer	S24 - 1024 1103	2/28/2013

Slope	Prep.Run #
98.7%	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3	2.003	22.6
pH 4.000		4.003	23.2
pH 7.000		7.003	22.8
pH 10.000		10.002	23.1
Ref#: pH 7.38 Exp 8/13 S24-1024 1102		7.384	23.3
DI		2.051	22.3
pH 2.000		1.999	23.2
TIME		1510	
pH 2.000		2.010	23.8
P1201630-1.01		1.964	11.3
-2.01		2.132	10.7
-3.01		2.134	10.8
-4.01		2.122	11.5
-5.01		2.143	12.5
-6.01		1.980	12.5
P1201631-1.01		2.108	12.8
-2.01		2.059	12.6

Sample	#	pH	Temp. °C
P1201631-3.01	3	1.971	13.6
pH 2.000		2.026	22.8

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 49284 EXP: 11/30/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

_____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 4/23/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: ET Date: 4/26/12

Reviewer: KR Date: 4/27/12

pH

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

50

Service Request#(s): P1201630; P1201631 Run#: 289487

Stock#: S24-0223120I TV=10PPM Exp 8/23/12 Prep Run#:

ICV/CCV#: S24-0327120I TV=100PPM Exp 7/2013 Conc. H_2SO_4 Lot#: EM9 49284 Exp 9/20/14

Coloring Reagent Ref#: S24-04161203

Working Curve:

Prep Dilution	NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L	0.00	0.01	0.05	0.1	0.9998173
Absorbance @ 540 nm	0.000	0.011	0.057	0.113	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10mL	-	✓	0.000	0.000	0.000	0.0000356	<0.003
2	ICV 0.05 PPM		-	✓	0.000	0.057	0.057	0.0504	101%
3	MB		-	✓	0.000	0.000	0.000	0.0000356	<0.003
4	LCS 0.04 PPM		-	✓	0.000	0.048	0.048	0.0424	106%
5	P1201630-1.01		-	✓	0.003	0.003	0.000	0.0000356	<0.003
6	-1.01 VS 0.03 PPM		-	✓	0.003	0.036	0.033	0.0292	97%
7	-2.01		-	✓	0.007	0.009	0.002	0.00180	<0.003
8	-3.01		-	✓	0.002	0.005	0.003	0.00269	<0.003
9	-4.01		-	✓	0.005	0.007	0.002	0.00180	<0.003
10	-5.03		-	✓	0.000	0.000	0.000	0.0000356	<0.003
11	-5.03MS 0.05 PPM		-	✓	0.000	0.054	0.054	0.0477	95% RPD
12	-5.03MSD		-	✓	0.000	0.055	0.055	0.0486	97% 2%
13	CCV1 0.05 PPM		-	✓	0.000	0.056	0.056	0.0495	99%
14	CCB1		-	✓	0.000	0.000	0.000	0.0000356	<0.003
15	P1201630-6.01		-	✓	0.000	0.000	0.000	0.0000356	<0.003
16	P1201631-1.01		-	✓	0.001	0.003	0.002	0.00180	<0.003
17	-1.01 VS 0.03 PPM		-	✓	0.001	0.034	0.033	0.0292	97%

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.150 ml of S24-0327120I @ 1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-0223120I ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @ 1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: EI Date/Time: 4/26/12 @ 17:15

Analyzed By: EI Date/Time: 4/26/12 @ 17:35

Reviewed By: KK Date: 4/27/12

Cr6LIQ.xls

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201630 , P1201631

Run#: 289487

Stock#: S24-0223120I TV=10PPM Exp 8/23/12

Prep Run#: /

ICV/CCV#: S24-0327120I TV=100PPM Exp 7/2013

Conc. H_2SO_4 Lot#: EMD 49284 Exp 11/2014

Coloring Reagent Ref#: S24-0416120B

Working Curve:

Prep Dilution	*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L	*0.00*	*0.01*	*0.05*	*0.1*	0.9999981123
Absorbance @ 540 nm	0.000	0.011	0.057	0.113	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	P1201631-2.01	10mL	-	✓	0.000	0.001	0.001	0.000919	<0.003
2	-2.01 MS 0.05 PPM		-	✓	0.000	0.051	0.051	0.0451	90% } RPD
3	-2.01 MSD		-	✓	0.000	0.051	0.051	0.0451	90% } 0
4	-3.01		-	✓	0.000	0.002	0.002	0.00180	<0.003
5	CCV 2 0.05 PPM		-	✓	0.000	0.056	0.056	0.0495	99%
6	CCB 2		-	✓	0.000	0.000	0.000	0.000000356	<0.003
7									
8									
9									
10									
11									
12					SPACE NOT USED				
13									
14									
15									
16									
17									

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of S24-0327120I @1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-0223120I ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of _____ ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments: _____

Prepared By: EJ Date/Time: 4/26/12 @ 17:15

Analyzed By: EJ Date/Time: 4/26/12 @ 17:35

Reviewed By: KL Date: 4/27/12

Cr6LIQ.xls

5/19/11 JC

S24-0519110 3 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J36504 exp: 6/15/14) in 100 mL Methanol (B&J AD806 exp: 5/13/10). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49284 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JC

S24-0520110 1 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT # 110225
EXP: 12/2012

5/20/11 JC

S24-0520110 3 pH 4.000 BUFFER
Purchased
JT Baker CAT # 5657-01 500mL
LOT # J36503
EXP: 9/30/13

5/20/11 JC

S24-0520110 3 pH 7.~~3~~ BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT # 1103361
EX: 3/2013

10/17/11 SZ

S24-10171102 1000PPM NH3
0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL
w/ S24-10171101 (0.1M H_2SO_4 EXP. 10/17/12)
EXP: 4/17/12

10/17/11 SZ

S24-10171103 IC Eluent
100 mL of S24-09201103 (10x conc Eluent; EXP: 9/20/12)
↑ 1L w/ DI. DEGASSED.
EXP. 10/31/11

10/21/11 SZ

S24-10211101 pH 7.000 Buffer
Purchased
BDH Cat No: BDH5046-500mL
LOT # 1107491
EXP: 7/2013

10/24/11 SZ

S24-10241101 pH 4.000 Buffer
Purchased
JT Baker Cat No: 5657-01 500ml
LOT # K04505
EXP: 2/28/13

10/24/11 SZ

S24-10241102 pH 7.38 Buffer
Purchased
BDH Cat No BDH5058-500ml
LOT # 1109034
EXP: 8/2013

10/24/11 SR

524-10241103 pH 10.000 Buffer
Purchased
JT Baker Cat no: 5655-01
LOT # K07507
EXP: 2/28/13

10/25/11 SR

524-10251101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 951211 475mL
LOT # PN1 P/N 27475-A01
EXP: 10/25/12

10/25/11 SR

524-10251102 A,B,C,D,E pH Filling Sln
Purchased
Thermo Scientific Orion 810007 5pack 60mL
LOT: PS1
EXP: 10/25/12

11/1/11 SR

524-11011101 IC02 Eluent
100 mL 524-09201103 (10X conc eluent EXP: 9/20/13) T (L W/ DI H2O DEGASSED
EXP: 11/15/11

11/1/11 SR

524-11011102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JO564) exp: 6/15/15 in 100 mL Methanol (B&J AG932 exp: 10/12/16
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H2SO4 (EMD [illegible] exp: [illegible]). Bring

2/9/12 SR 524-0209/202 Nitrite Soln
0.250g N-1-Naphthylethylenediamine Dihydrochloride (JT Baker; lot # 22487 EXP 10/19/14) ↑ 250mL w/ DI
EXP: 8/9/12

2/9/12 SR 524-0209/203 ICO2 Effluent
100mL 524-0920/1103 (Inorganic Effluent, EXP 9/20/12) ↑ SR 2/9/12 1L w/ DI H2O. Degassed.
2/23/12

2/9/12 SR 524-0209/204 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JT0564-1 exp: 6/15/15) in 100 mL Methanol (B&J DE532 exp: 10/10/16) Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49284 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 2/14/12

2/10/12 SR 524-02/0120/1 995 ~~1000~~ ppm SR 2/10/12 Cr6+ Purchased INORGANIC VENTURES CGCR(6)1-1
LOT: 62-CR03049
EXP: 3/1/13

2/13/12 SR 524-0213/201
5.6mL Conc H_2SO_4 (EMD 49184, EXP: 11/20/14) ↑
6 drops to 1L DI H2O
EXP: 2/13/13

2/14/12 SA — 524-021412O3 pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 111214G
EXP: 11/2013

2/20/12 SA — 524-0220/201 500ppm NO_2 STOCK
Purchased
RICCA CHEMICAL CO Cat# 5444.5-4 120ml Amber Gl
LOT# 1262290
EXP: 8/12

2/22/12 SA — 524-0222/201 Alkaline DIGESTION Sol
30.0g ~~NaOH~~ $NaNO_3$ (EMD 4632715; EXP: 10/11/12) + 20.0g NaOH (EMD 4702713C; EXP: 10/11/12) ↑ 1L w/ DI
EXP: 3/22/12

2/23/12 SA — 524-0223/201 10ppm Cr6+ Std
1.0ml 524-021012O1 (1000ppm Cr6+; EXP: 3/1/13)
↑ 100ml w/ DI H_2O
EXP: 8/23/12

2/27/12 SA — 524-0227/201 0.1N H_2SO_4
5.6ml Conc H_2SO_4 (EMD 4928-4; EXP: 11/20/1
↑ 2L w/ DI H_2O
EXP: 2/27/13

3/23/12 SA 534-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
Lot#: 110934
Exp: 8/2013

3/27/12 SA 534-0327/201 100 PPM Cr^{6+} ION
Purchased
Ricca Chemical Company Cat No 2695-16
500ml Plastic
Lot # 120701
Exp: 7/2013

3/28/12 SA 534-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
Lot # L04514 500ml plastic
Exp: 1/31/14

3/28/12 SA 534-0328/202 Methylene Blue 1% Aq Sol
100ml Purchased
Alfa Aesar Stock # 42771
Lot # H04X026
Exp: 3/28/13

4/16/12 S24-0416/201 IC02 Eluent
100mL S24-0314/201 (10X Conc eluent, EXP: 10/11/12) ↑ 1L w/ DI H2O. Degassed
EXP: 4/30/12

4/16/12 S24-0416/202 IC02 PCR
Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker JC5641 exp: 6/15/15) in 100 mL Methanol (B&J DC932 exp: 2/27/17). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4913847 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 4/21/12

4/16/12 S24-0416/203 Cr6+ Coloring Reagent
0.250g 1,5-Diphenylcarbohydrazide Powder (JT Baker JC5641; EXP: 6/15/15) ↑ 50mL w/ Acetone (EMD lot 47154; EXP 9/24/12)
EXP: 5/16/12

4/16/12 S24-0416/204 12.5 N NaOH
100g NaOH (EMD 47022713; EXP 10/1/12 + 100mL DI H2O
EXP: 10/11/12

0430 4/30/12

4/30/12 S24-0314/201 IC02 Eluent
100mL S24-0314/201 (10X conc eluent, EXP: 10/11/12) ↑ 1 W/DI H2O. Degassed.
EXP: 5/14/12

Columbia Analytical Services
1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

May 11, 2012 Analytical Report for Service Request No: P1201630

Sue Anderson
Columbia Analytical Services
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

RE: JPL GW Mon. 2Q12/100006114

Dear Sue:

Enclosed are the results of the samples submitted to our laboratory on April 26, 2012. For your reference, these analyses have been assigned our service request number P1201630.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3364. You may also contact me via Email at Howard.Holmes@alsglobal.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Howard Holmes
Project Chemist

HH/ln

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc. - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Louisiana DHH	Not available	LA110003
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
New Mexico ED	http://www.nmenv.state.nm.us/dwb/Index.htm	-
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.caslab.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	ALS/CAS Simi Valley, CA	**Service Request No.:**	P1201630
Project:	Battelle/JPL GW Mon 2Q12	**Date Received:**	4/26/12
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water sample was received for analysis at Columbia Analytical Services on 4/26/12. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Nitrosamines by EPA 521

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for NDMA in the replicate matrix spike analyses of sample MW-16 was outside control criteria. In general, the RPD was relatively high for all spiked compounds, which indicates a low bias in the Matrix Spike (MS)/Matrix Spike Duplicate (MSD). All spike recoveries in the MS, DMS, and associated Laboratory Control Sample (LCS) were within acceptance limits, indicating the analytical batch was in control. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

1,4-Dioxane by EPA Method 8270 SIM

No anomalies associated with the analysis of these samples were observed.

Approved by Howard Holmes **Date** 5-11-12

Chain of Custody

Intra-Network Chain of Custody

2655 Park Center Drive, Suite A • Simi Valley, CA 93065 • 805-526-7161 • FAX 805-526-7270

CAS Contact: Sue Anderson

Project Name: JPL GW Mon. 2Q12
Project Number: 100006114
Project Manager: David Conner
Company: Battelle

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	14_DIOXANE 8270C SIM	Nitrosamines 521
P1201630-005	MW-4-1		Water	4/26/12	1207	4/26/12	KELSO	**IV**	**IV**

Test Comments

Nitrosamines - 521	P1201630-005	NDMA

∞

Special Instructions/Comments	Turnaround Requirements	Report Requirements	Invoice Information
	_____**RUSH** (Surcharges Apply) **PLEASE CIRCLE WORK DAYS** 1 2 3 4 5 ____ **STANDARD** Requested FAX Date: _____ Requested Report Date: 05/11/12	____ I. Results Only ____ II. Results + QC Summaries ____ III. Results + QC and Calibration Summaries ____ IV. Data Validation Report with Raw Data PQL/MDL/J Y EDD Y	PO# P1201630 Bill to

Relinquished By: [signature] 4/26/12 1525 Received By: [signature] AES 4/27/12 0940 Airbill Number:

PC H2

Cooler Receipt and Preservation Form

lient / Project: Simi Valley Service Request K12 P1630

eceived: 4/27/12 Opened: 4/27/12 By: AJ Unloaded: 4/27/12 By: AJ

Samples were received via? *Mail* *Fed Ex* *(UPS)* *DHL* *PDX* *Courier* *Hand Delivered*

Samples were received in: (circle) *(Cooler)* *Box* *Envelope* *Other*_____ *NA*

Were custody seals on coolers? NA Y (N) If yes, how many and where?_____

If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.5	-	297		1Z8890SR0142081168	

Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *(Wet Ice)* *Dry Ice* *Sleeves* _____

Were custody papers properly filled out (ink, signed, etc.)?	NA	(Y)	N
Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.*	NA	(Y)	N
). Were all sample labels complete (i.e analysis, preservation, etc.)?	NA	(Y)	N
. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.*	NA	(Y)	N
2. Were appropriate bottles/containers and volumes received for the tests indicated?	NA	(Y)	N
3. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below*	(NA)	Y	N
4. Were VOA vials received without headspace? *Indicate in the table below.*	(NA)	Y	N
5. Was C12/Res negative?	(NA)	Y	N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

*lotes, Discrepancies, & Resolutions:*_____

Nitrosamines

Organic Analysis:
Nitrosamines by EPA 521

Summary Package

Sample and QC Results

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201630

Cover Page - Organic Analysis Data Package
Nitrosamines by EPA 521

Sample Name	Lab Code	Date Collected	Date Received
MW-4-1	P1201630-005	04/26/2012	04/26/2012

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Christina Colman

Date: 5/10/12 Title: Scientist

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630
Date Collected: 04/26/2012
Date Received: 04/26/2012

Nitrosamines by EPA 521

Sample Name: MW-4-1
Lab Code: P1201630-005

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	91	70-130	05/02/12	Acceptable

Comments:

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630
Date Collected: NA
Date Received: NA

Nitrosamines by EPA 521

Sample Name: Method Blank
Lab Code: KWG1204391-4

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	102	70-130	05/02/12	Acceptable

Comments:

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630

Surrogate Recovery Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	P1201573-002	98
MW-4-1	P1201630-005	91
Method Blank	KWG1204391-4	102
Batch QCMS	KWG1204391-1	93
Batch QCDMS	KWG1204391-2	96
Lab Control Sample	KWG1204391-3	87

Surrogate Recovery Control Limits (%)

Sur1 = N-Nitrosodimethylamine-d6 70-130

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/01/2012
Time Analyzed: 17:04

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-2
Analysis Lot: KWG1204793

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	32,908	20.53
	Upper Limit ==>	42,780	20.93
	Lower Limit ==>	23,036	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	28,060	20.52
Batch QCDMS	KWG1204391-2	26,255	20.53
MW-4-1	P1201630-005	28,351	20.53

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/02/2012
Time Analyzed: 01:33

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501013.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-3
Analysis Lot: KWG1204793

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	32,882	20.53
Upper Limit ==>	42,747	20.93
Lower Limit ==>	23,017	20.13
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.
Now part of the ALS Group
QA/QC Report

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Analyzed:**	05/02/2012
		Time Analyzed:	17:19

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID:	J:\MS16\DATA\050212-521\0502001.D	**Lab Code:**	KWG1204794-2
Instrument ID:	MS16	**Analysis Lot:**	KWG1204794
Analysis Method:	521		

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	30,450	20.53
	Upper Limit ==>	39,585	20.93
	Lower Limit ==>	21,315	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Method Blank	KWG1204391-4	24,438	20.55
Batch QC	P1201573-002	29,832	20.55
Batch QCMS	KWG1204391-1	25,407	20.55

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/02/2012
Time Analyzed: 22:16

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050212-521\0502008.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204794-3
Analysis Lot: KWG1204794

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	27,043	20.55
Upper Limit ==>	35,156	20.95
Lower Limit ==>	18,930	20.15
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/08/2012
Time Analyzed: 21:22

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050812-521\0508013.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204795-2
Analysis Lot: KWG1204795

		-Nitrosodi-n-propylamine-d
		Area	RT
	Results ==>	28,678	20.51
	Upper Limit ==>	37,281	20.91
	Lower Limit ==>	20,075	20.11
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	32,827	20.50
Batch QCDMS	KWG1204391-2	31,082	20.51

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/09/2012
Time Analyzed: 08:53

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050812-521\0508024.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204795-3
Analysis Lot: KWG1204795

	-Nitrosodi-n-propylamine-d
	Area	**RT**
Results ==>	27,403	20.51
Upper Limit ==>	35,624	20.91
Lower Limit ==>	19,182	20.11
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630
Date Extracted: 04/30/2012
Date Analyzed: 05/01/2012 - 05/02/2012

Matrix Spike/Duplicate Matrix Spike Summary
Nitrosamines by EPA 521

Sample Name: Batch QC
Lab Code: P1201573-002

Units: ng/L
Basis: NA

Extraction Method: METHOD
Analysis Method: 521

Level: Low
Extraction Lot: KWG1204391

Analyte Name	Sample Result	Batch QCMS KWG1204391-1 Matrix Spike			Batch QCDMS KWG1204391-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
N-Nitrosodimethylamine	0.96	24.2	20.0	116	17.5	20.0	83	70-130	32 *	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012

Lab Control Spike Summary
Nitrosamines by EPA 521

Extraction Method:	METHOD	**Units:**	ng/L
Analysis Method:	521	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1204391

	Lab Control Sample KWG1204391-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
N-Nitrosodimethylamine	15.6	20.0	78	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/02/2012
		Time Analyzed:	18:02

Method Blank Summary
Nitrosamines by EPA 521

Sample Name:	Method Blank	**Instrument ID:**	MS16
Lab Code:	KWG1204391-4	**File ID:**	J:\MS16\DATA\050212-521\0502002.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050112-521\0501004.D	05/01/12	19:12
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-4-1	P1201630-005	J:\MS16\DATA\050112-521\0501011.D	05/02/12	00:09
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050812-521\0508016.D	05/08/12	23:29
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012
		Time Analyzed:	19:12

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050112-521\0501004.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-4-1	P1201630-005	J:\MS16\DATA\050112-521\0501011.D	05/02/12	00:09
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

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Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/08/2012
		Time Analyzed:	23:29

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050812-521\0508016.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-4-1	P1201630-005	J:\MS16\DATA\050112-521\0501011.D	05/02/12	00:09
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Level ID	File ID
A	J:\MS16\DATA\031112-521\0311005.D
B	J:\MS16\DATA\031112-521\0311006.D
C	J:\MS16\DATA\031112-521\0311007.D
D	J:\MS16\DATA\031112-521\0311008.D
E	J:\MS16\DATA\031112-521\0311009.D
F	J:\MS16\DATA\031112-521\0311010.D
G	J:\MS16\DATA\031112-521\0311011.D
H	J:\MS16\DATA\031112-521\0311012.D
I	J:\MS16\DATA\031112-521\0311013.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
N-Nitrosodimethylamine-d6							C	1.0	1.28	D	2.0	2.08	E	5.0	2.86
	F	7.0	3.66	G	10	4.73	H	15	4.42	I	20	5.18			
N-Nitrosodimethylamine				B	0.50	1.18	C	1.0	1.63	D	2.0	2.42	E	5.0	2.51
	F	7.0	3.11	G	10	3.75	H	15	3.50	I	20	3.88			

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
N-Nitrosodimethylamine-d6	SURR	Quadratic	COD	0.992		≥ 0.99	3.46		
N-Nitrosodimethylamine	MS	Quadratic	COD	0.994		≥ 0.99	2.75		

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Calibration Date: 03/11/2012
Date Analyzed: 03/12/2012

Second Source Calibration Verification
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration ID: CAL11326
Units: ug/L

File ID: J:\MS16\DATA\031112-521\0311014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine	10	7.7	2.75	2.42	NA	-23	± 30 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/01/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	0.98		3.46	0.816	NA	-2	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	0.89		2.75	1.53	NA	-11	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	4.3		3.46	2.75	NA	-15	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	5.4		2.75	3.21	NA	8	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.3		3.46	1.80	NA	25	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.3		2.75	2.78	NA	30	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502008.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.1		3.46	3.43	NA	1	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.3		2.75	3.88	NA	27	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/08/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.2		3.46	1.72	NA	23	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.2		2.75	2.36	NA	16	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/09/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508024.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.5		3.46	3.84	NA	10	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.6		2.75	4.04	NA	31	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201630

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1204793
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
521\0501.D	GC/MS Tuning - Decafluorotriphenylp	KWG1204793-1	5/1/2012	16:22		5/1/2012	16:48
\0501001.D	Continuing Calibration Verification	KWG1204793-2	5/1/2012	17:04		5/1/2012	17:30
\0501004.D	Lab Control Sample	KWG1204391-3	5/1/2012	19:12		5/1/2012	19:38
\0501007.D	Batch QCDMS	KWG1204391-2	5/1/2012	21:19		5/1/2012	21:45
\0501008.D	ZZZZZZ	ZZZZZZ	5/1/2012	22:01		5/1/2012	22:27
\0501009.D	ZZZZZZ	ZZZZZZ	5/1/2012	22:44		5/1/2012	23:10
\0501010.D	ZZZZZZ	ZZZZZZ	5/1/2012	23:26		5/1/2012	23:52
\0501011.D	MW-4-1	P1201630-005	5/2/2012	00:09		5/2/2012	00:35
\0501013.D	Continuing Calibration Verification	KWG1204793-3	5/2/2012	01:33		5/2/2012	01:59

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521

Analysis Lot: KWG1204794
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
521\0502.D	GC/MS Tuning - Decafluorotriphenylp	KWG1204794-1	5/2/2012	16:37		5/2/2012	17:03
\0502001.D	Continuing Calibration Verification	KWG1204794-2	5/2/2012	17:19		5/2/2012	17:45
\0502002.D	Method Blank	KWG1204391-4	5/2/2012	18:02		5/2/2012	18:28
\0502004.D	Batch QC	P1201573-002	5/2/2012	19:26		5/2/2012	19:52
\0502005.D	Batch QCMS	KWG1204391-1	5/2/2012	20:09		5/2/2012	20:35
\0502008.D	Continuing Calibration Verification	KWG1204794-3	5/2/2012	22:16		5/2/2012	22:42

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201630

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1204795
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
\0508012.D	GC/MS Tuning - Decafluorotriphenylp	KWG1204795-1	5/8/2012	20:39		5/8/2012	21:05
\0508013.D	Continuing Calibration Verification	KWG1204795-2	5/8/2012	21:22		5/8/2012	21:48
\0508016.D	Lab Control Sample	KWG1204391-3	5/8/2012	23:29		5/8/2012	23:55
\0508019.D	Batch QCDMS	KWG1204391-2	5/9/2012	01:36		5/9/2012	02:02
\0508024.D	Continuing Calibration Verification	KWG1204795-3	5/9/2012	08:53		5/9/2012	09:19

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630
Date Extracted: 04/30/2012

Extraction Prep Log
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Extraction Lot: KWG1204391
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MW-4-1	P1201630-005	04/26/12	04/26/12	500ml	1ml	NA	
Method Blank	KWG1204391-4	NA	NA	500ml	1ml	NA	
Batch QCMS	KWG1204391-1	NA	NA	500ml	1ml	NA	
Batch QCDMS	KWG1204391-2	NA	NA	500ml	1ml	NA	
Batch QC	P1201573-002	NA	NA	500ml	1ml	NA	
Lab Control Sample	KWG1204391-3	NA	NA	500ml	1ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

QC Reports

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630

Surrogate Recovery Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	P1201573-002	98
MW-4-1	P1201630-005	91
Method Blank	KWG1204391-4	102
Batch QCMS	KWG1204391-1	93
Batch QCDMS	KWG1204391-2	96
Lab Control Sample	KWG1204391-3	87

Surrogate Recovery Control Limits (%)

Sur1 = N-Nitrosodimethylamine-d6 70-130

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/01/2012
Time Analyzed: 17:04

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-2
Analysis Lot: KWG1204793

		-Nitrosodi-n-propylamine-d
		Area	RT
	Results ==>	32,908	20.53
	Upper Limit ==>	42,780	20.93
	Lower Limit ==>	23,036	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	28,060	20.52
Batch QCDMS	KWG1204391-2	26,255	20.53
MW-4-1	P1201630-005	28,351	20.53

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/02/2012
Time Analyzed: 01:33

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050112-521\0501013.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204793-3
Analysis Lot: KWG1204793

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	32,882	20.53
Upper Limit ==>	42,747	20.93
Lower Limit ==>	23,017	20.13
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/02/2012
Time Analyzed: 17:19

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050212-521\0502001.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204794-2
Analysis Lot: KWG1204794

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	30,450	20.53
	Upper Limit ==>	39,585	20.93
	Lower Limit ==>	21,315	20.13
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Method Blank	KWG1204391-4	24,438	20.55
Batch QC	P1201573-002	29,832	20.55
Batch QCMS	KWG1204391-1	25,407	20.55

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Analyzed:**	05/02/2012
		Time Analyzed:	22:16

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID:	J:\MS16\DATA\050212-521\0502008.D	**Lab Code:**	KWG1204794-3
Instrument ID:	MS16	**Analysis Lot:**	KWG1204794
Analysis Method:	521		

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	27,043	20.55
Upper Limit ==>	35,156	20.95
Lower Limit ==>	18,930	20.15
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.
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QA/QC Report

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Analyzed:**	05/08/2012
		Time Analyzed:	21:22

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID:	J:\MS16\DATA\050812-521\0508013.D	**Lab Code:**	KWG1204795-2
Instrument ID:	MS16	**Analysis Lot:**	KWG1204795
Analysis Method:	521		

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	28,678	20.51
	Upper Limit ==>	37,281	20.91
	Lower Limit ==>	20,075	20.11
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1204391-3	32,827	20.50
Batch QCDMS	KWG1204391-2	31,082	20.51

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/09/2012
Time Analyzed: 08:53

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\050812-521\0508024.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1204795-3
Analysis Lot: KWG1204795

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	27,403	20.51
Upper Limit ==>	35,624	20.91
Lower Limit ==>	19,182	20.11
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630
Date Extracted: 04/30/2012
Date Analyzed: 05/01/2012 - 05/02/2012

Matrix Spike/Duplicate Matrix Spike Summary
Nitrosamines by EPA 521

Sample Name: Batch QC
Lab Code: P1201573-002

Units: ng/L
Basis: NA

Extraction Method: METHOD
Analysis Method: 521

Level: Low
Extraction Lot: KWG1204391

Analyte Name	Sample Result	Batch QCMS KWG1204391-1 Matrix Spike Result	Matrix Spike Expected	Matrix Spike %Rec	Batch QCDMS KWG1204391-2 Duplicate Matrix Spike Result	Duplicate Matrix Spike Expected	Duplicate Matrix Spike %Rec	%Rec Limits	RPD	RPD Limit
N-Nitrosodimethylamine	0.96	24.2	20.0	116	17.5	20.0	83	70-130	32 *	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630
Date Extracted: 04/30/2012
Date Analyzed: 05/01/2012

Lab Control Spike Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG1204391

Analyte Name	Lab Control Sample KWG1204391-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
N-Nitrosodimethylamine	15.6	20.0	78	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/02/2012
		Time Analyzed:	18:02

Method Blank Summary
Nitrosamines by EPA 521

Sample Name:	Method Blank	**Instrument ID:**	MS16
Lab Code:	KWG1204391-4	**File ID:**	J:\MS16\DATA\050212-521\0502002.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050112-521\0501004.D	05/01/12	19:12
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-4-1	P1201630-005	J:\MS16\DATA\050112-521\0501011.D	05/02/12	00:09
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Lab Control Sample	KWG1204391-3	J:\MS16\DATA\050812-521\0508016.D	05/08/12	23:29
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/01/2012
		Time Analyzed:	19:12

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050112-521\0501004.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-4-1	P1201630-005	J:\MS16\DATA\050112-521\0501011.D	05/02/12	00:09
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/08/2012
		Time Analyzed:	23:29

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1204391-3	**File ID:**	J:\MS16\DATA\050812-521\0508016.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1204391

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050112-521\0501007.D	05/01/12	21:19
MW-4-1	P1201630-005	J:\MS16\DATA\050112-521\0501011.D	05/02/12	00:09
Method Blank	KWG1204391-4	J:\MS16\DATA\050212-521\0502002.D	05/02/12	18:02
Batch QC	P1201573-002	J:\MS16\DATA\050212-521\0502004.D	05/02/12	19:26
Batch QCMS	KWG1204391-1	J:\MS16\DATA\050212-521\0502005.D	05/02/12	20:09
Batch QCDMS	KWG1204391-2	J:\MS16\DATA\050812-521\0508019.D	05/09/12	01:36

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Raw Data

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	04/26/2012
Sample Matrix:	Water	**Date Received:**	04/26/2012

Nitrosamines by EPA 521

Sample Name:	MW-4-1	**Units:**	ng/L
Lab Code:	P1201630-005	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	91	70-130	05/02/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050112-521\0501011.D
Lab ID: P1201630-005
RunType: SMPL
Matrix: WATER

Date Acquired: 05/02/2012 00:09
Date Quantitated: 05/09/2012 11:56
Batch ID: KWG1204793
Analysis Method: 521
ListJoinID: LJ11419

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501011.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 00:09	**Quant Date:**	05/09/2012 11:56	**Vial:**	12
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201630-005			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**	04/26/2012	**Receive Date:**	04/26/2012

Analysis Lot:	KWG1204793	**Prep Lot:**	KWG1204391	**Report Group:**	P1201630
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121337	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:	Nitrosamines by EPA 521	**Report List ID:**	LJ11419
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	0.00	97	28351	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.82	-0.03	0.00	50	20741	9.14	91	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine				47	0**d**		0.32	U	

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501011.D Vial: 12
Acq On : 02 May 2012 00:09 Operator: SVO-DW
Sample : P1201630-005 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:17:00 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

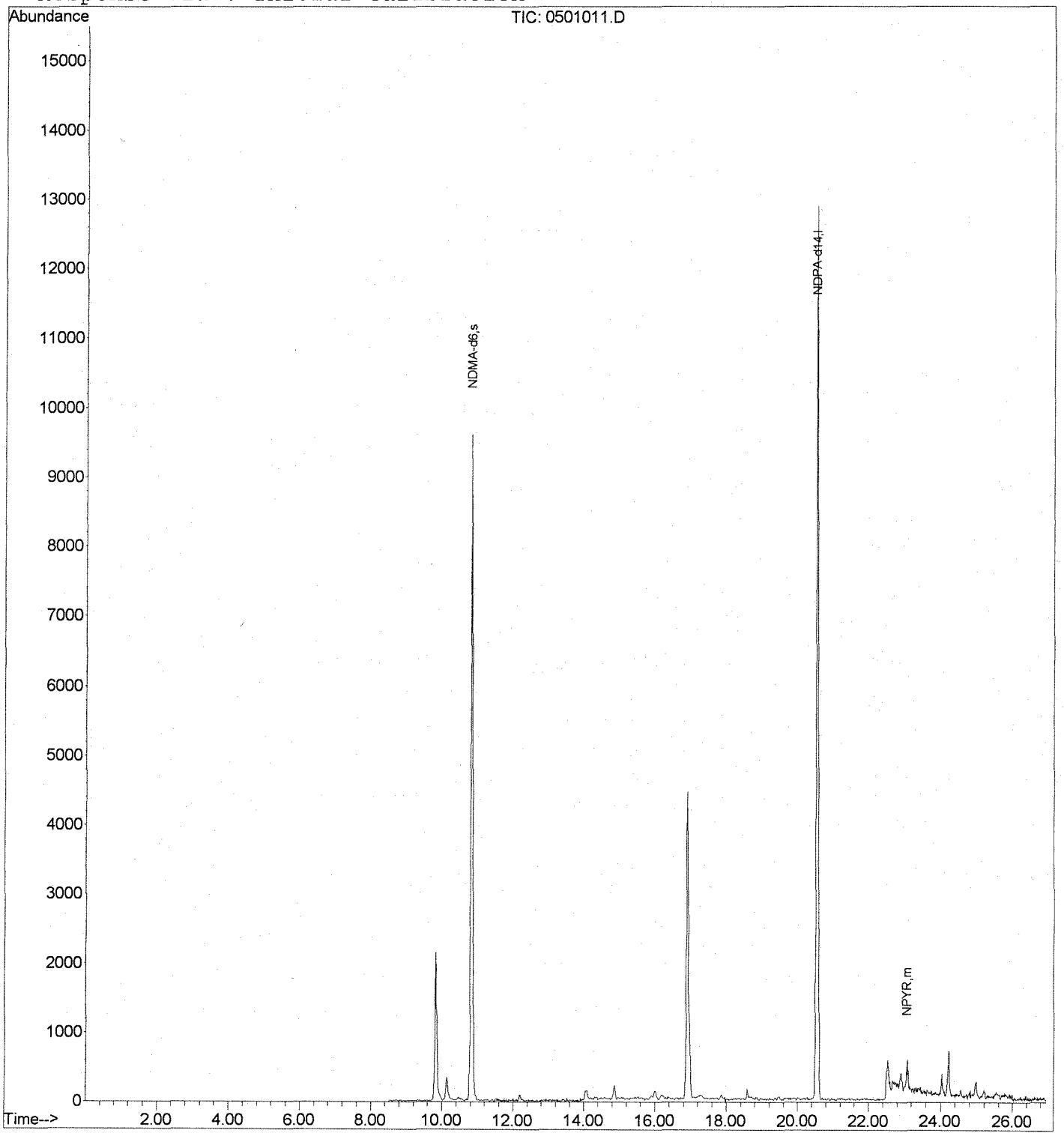
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	28351	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.82	50	20741	9.14	ug/L	-0.13
Target Compounds						Qvalue
8) NPYR	23.08	55	529	0.74	ug/L	94

(#) = qualifier out of range (m) = manual integration
0501011.D 031112_D14.M Wed May 09 11:58:50 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501011.D Vial: 12
Acq On : 02 May 2012 00:09 Operator: SVO-DW
Sample : P1201630-005 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 11:56 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1204391-4	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	ND	U	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	102	70-130	05/02/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050212-521\0502002.D
Lab ID: KWG1204391-4
RunType: MB
Matrix: WATER

Date Acquired: 05/02/2012 18:02
Date Quantitated: 05/09/2012 12:02
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502002.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 18:02	**Quant Date:**	05/09/2012 12:02	**Vial:**	4
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1204391-4			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204794	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121345	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050212-521\0502.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	0.02	97	24438	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.85	0.02	0.00	50	20604	10.20	102	70-130	OK

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine				47	0d		0.32	U	
1	N-Nitrosomethylethylamine				61	0		0.50	U	
1	N-Nitrosodiethylamine				75	0		0.76	U	
1	N-Nitrosodi-n-propylamine				89	0		0.76	U	
1	N-Nitrosopyrrolidine	23.09	-0.13	-0.01	55	225	0.6700	1.34	J	
1	N-Nitrosopiperidine				69	0		0.55	U	
1	N-Nitrosodi-n-butylamine				57	0		0.77	U	

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502002.D Vial: 4
Acq On : 02 May 12 18:02 Operator: SVO-DW
Sample : 043012-MB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:49:03 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	24438	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.85	50	20604	10.20	ug/L	-0.10
Target Compounds						Qvalue
8) NPYR	23.09	55	225	0.67	ug/L	94

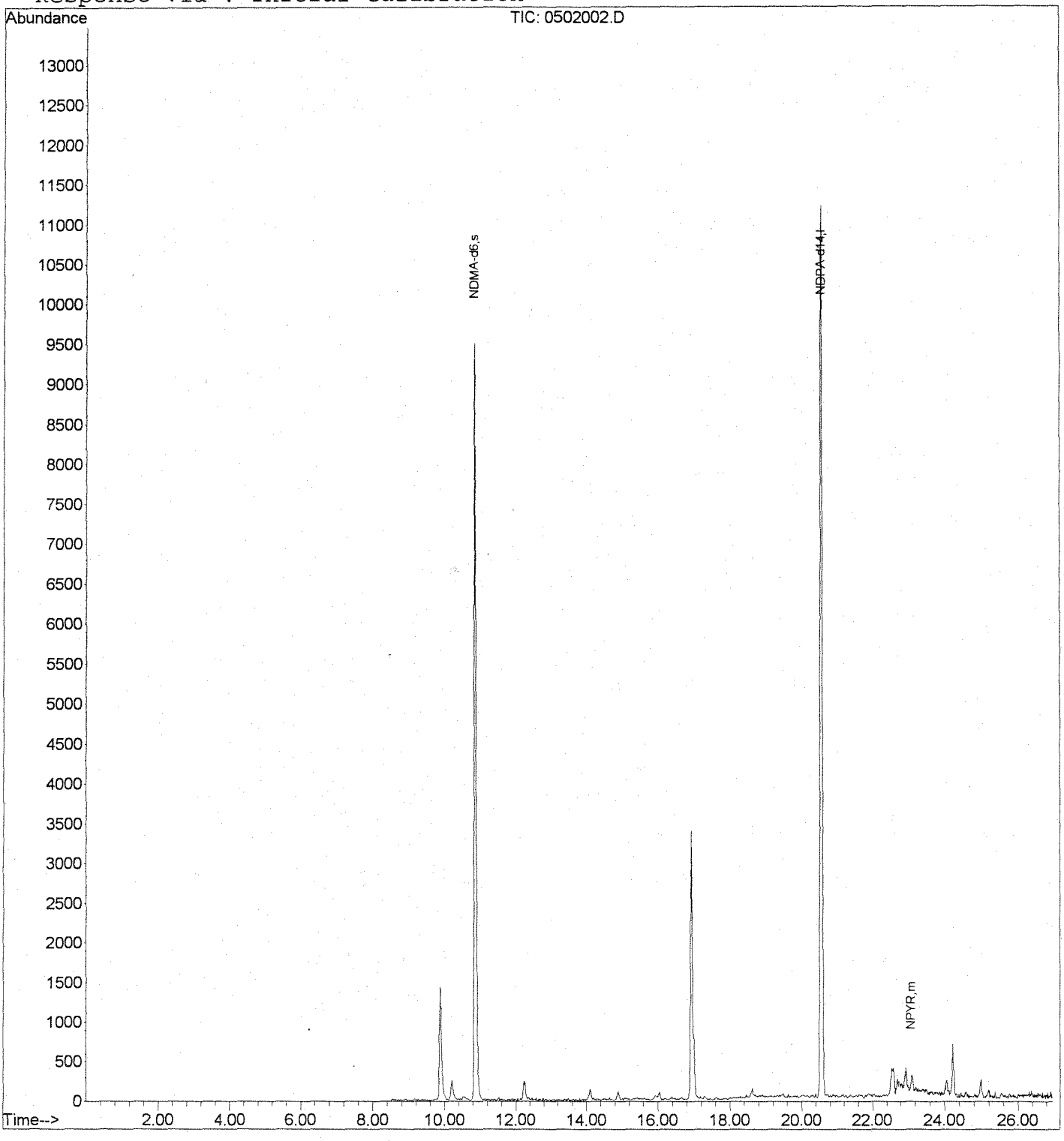
(#) = qualifier out of range (m) = manual integration
0502002.D 031112_D14.M Wed May 09 12:11:55 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502002.D
Acq On : 02 May 12 18:02
Sample : 043012-MB
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 9 12:02 2012

Vial: 4
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00
Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630
Date Collected: NA
Date Received: NA

Nitrosamines by EPA 521

Sample Name: Batch QCMS
Lab Code: KWG1204391-1

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**24.2**		2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	93	70-130	05/02/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050212-521\0502005.D
Lab ID: KWG1204391-1 -- P1201573-002MS
RunType: MS
Matrix: WATER

Date Acquired: 05/02/2012 20:09
Date Quantitated: 05/03/2012 13:49
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosopiperidine	52.8	NA	50	NR
	N-Nitrosodi-n-butylamine	54.8	NA	50	b

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502005.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 20:09	**Quant Date:**	05/03/2012 13:49	**Vial:**	7
Run Type:	MS			**Dilution:**	1.0
Lab ID:	KWG1204391-1 -- P1201573-002MS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204794	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121342	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	0.02	97	25407	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.86	0.03	0.00	50	19029	9.31	93	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.98	0.01	0.00	47	21217	12.12	24.2		
1	N-Nitrosomethylethylamine	13.56	-0.01	0.00	61	21018	8.25	16.5		
1	N-Nitrosodiethylamine	15.67	0.02	0.00	75	3521	9.92	19.8		
1	N-Nitrosodi-n-propylamine	20.85	-0.02	0.00	89	2335	7.85	15.7		
1	N-Nitrosopyrrolidine	23.23	0.01	0.00	55	39637	10.76	21.5		
1	N-Nitrosopiperidine	24.15	0.01	0.00	69	91334	13.57	27.1		
1	N-Nitrosodi-n-butylamine	26.40	0.02	0.00	57	25373	11.61	23.2		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502005.D Vial: 7
Acq On : 02 May 12 20:09 Operator: SVO-DW
Sample : P1201573-002 MS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:49:43 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

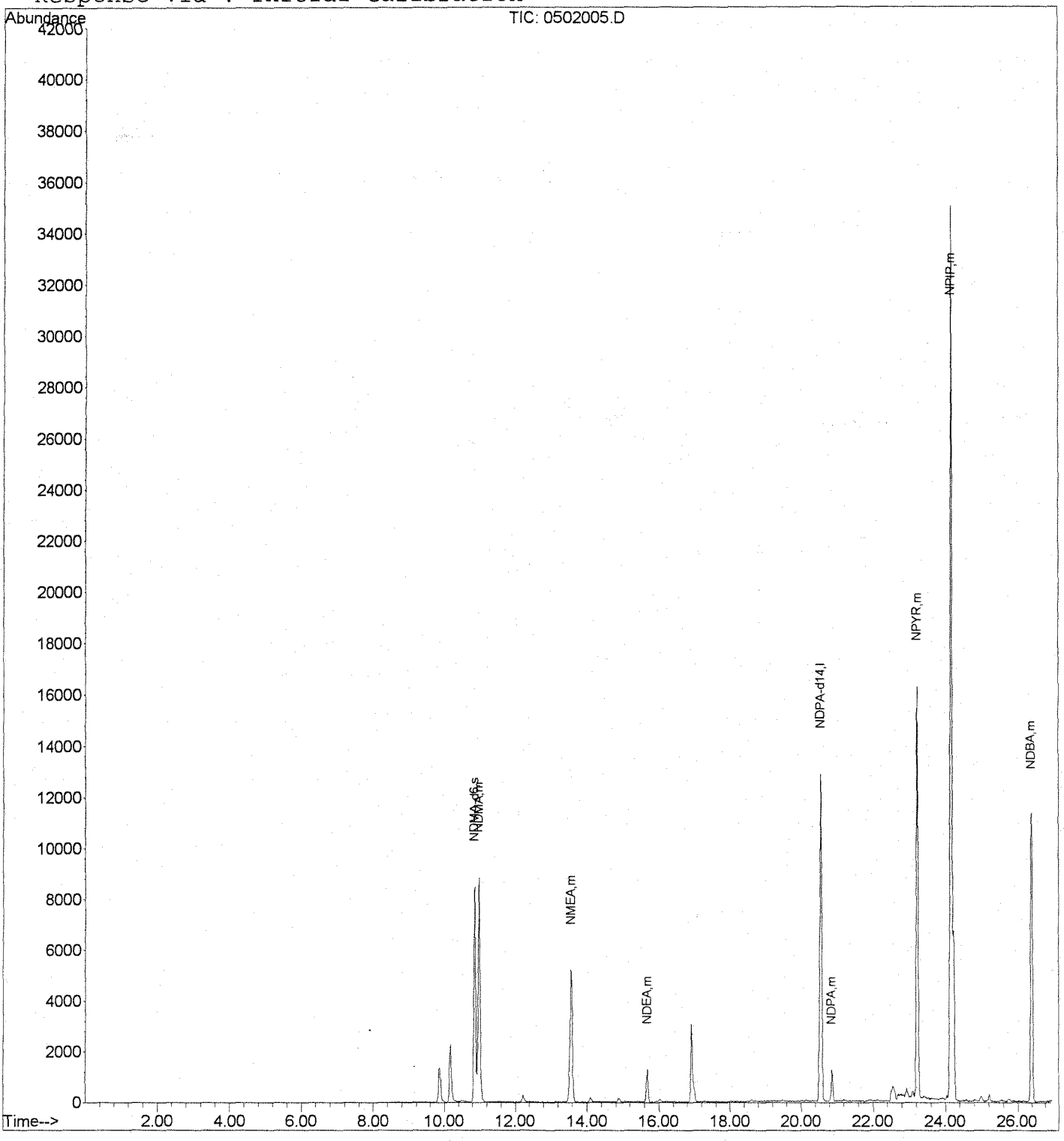
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	25407	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.86	50	19029	9.31	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.98	47	21217	12.12	ug/L	95
5) NMEA	13.56	61	21018	8.25	ug/L	100
6) NDEA	15.67	75	3521	9.92	ug/L	100
7) NDPA	20.85	89	2335	7.85	ug/L	100
8) NPYR	23.23	55	39637	10.76	ug/L	95
9) NPIP	24.15	69	91334	13.57	ug/L	100
10) NDBA	26.40	57	25373	11.61	ug/L	100

(#) = qualifier out of range (m) = manual integration
0502005.D 031112_D14.M Wed May 09 12:11:56 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502005.D Vial: 7
Acq On : 02 May 12 20:09 Operator: SVO-DW
Sample : P1201573-002 MS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:49 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630
Date Collected: NA
Date Received: NA

Nitrosamines by EPA 521

Sample Name: Batch QCDMS
Lab Code: KWG1204391-2

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**17.5**		2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	96	70-130	05/09/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050112-521\0501007.D
Lab ID: KWG1204391-2 -- P1201573-002DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/01/2012 21:19
Date Quantitated: 05/02/2012 16:16
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA		x
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosodi-n-butylamine	50.6	NA	50	NR
Surrogates	N-Nitrosodimethylamine-d6	67	70	130	b

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501007.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 21:19	**Quant Date:**	05/02/2012 16:16	**Vial:**	8
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1204391-2 -- P1201573-002DMS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204793	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121343	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	0.00	97	26255	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.85	0.00	0.00	50	12818	6.66	67	70-130	*	NR

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97		0.00	47	14833	8.74	17.5		
1	N-Nitrosomethylethylamine	13.55	0.02	0.00	61	14416	6.05	12.1		
1	N-Nitrosodiethylamine	15.65	0.01	0.00	75	2466	7.38	14.8		
1	N-Nitrosodi-n-propylamine	20.83		0.00	89	3075	9.48	19.0		
1	N-Nitrosopyrrolidine	23.20	-0.01	0.00	55	39232	10.37	20.7		
1	N-Nitrosopiperidine	24.12	-0.01	0.00	69	75431	11.25	22.5		
1	N-Nitrosodi-n-butylamine	26.36	-0.02	0.00	57	21808	10.21	20.4		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501007.D Vial: 8
Acq On : 01 May 12 21:19 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:16:58 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

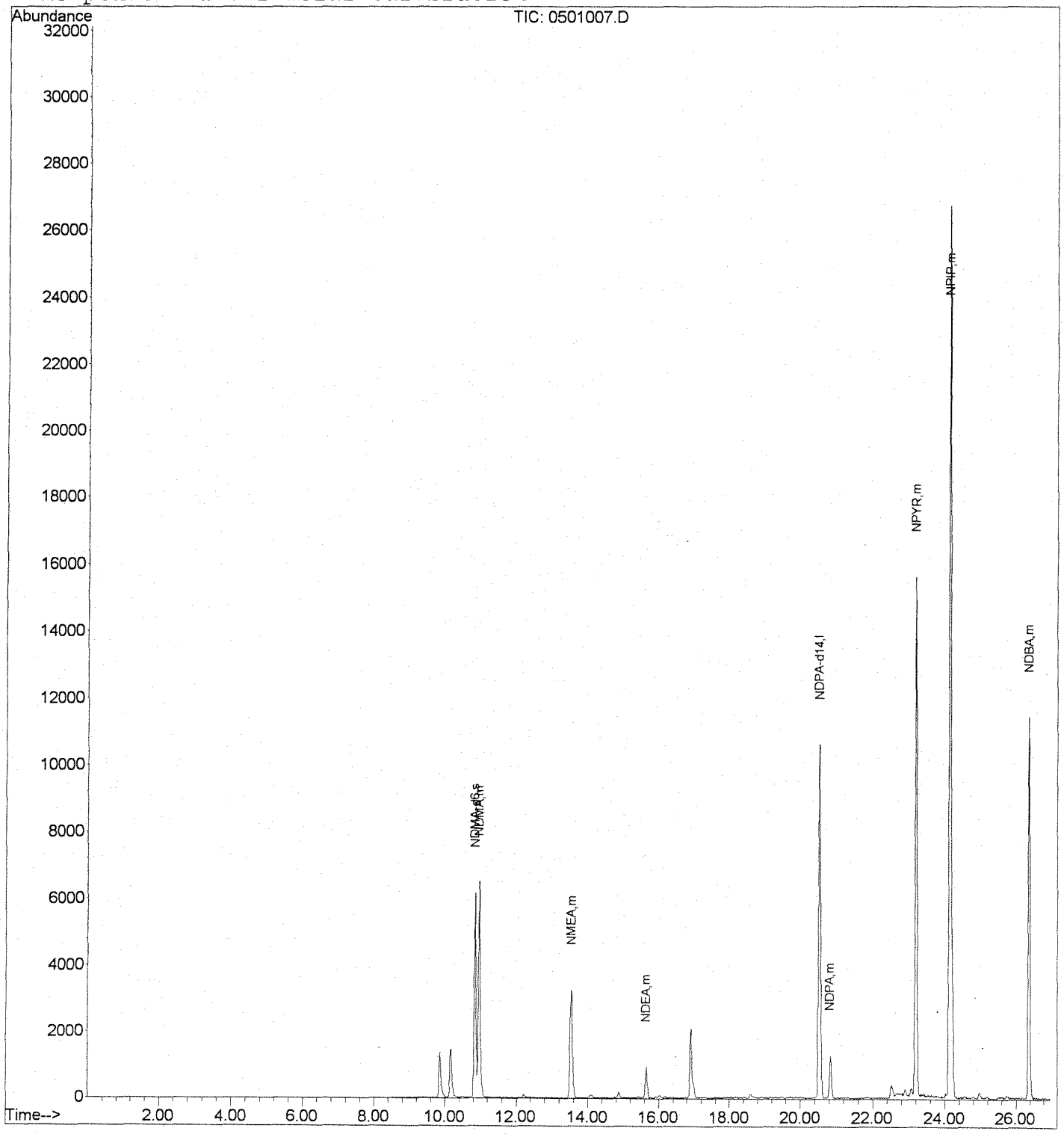
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	26255	50.00	ug/L	-0.04
System Monitoring Compounds						
3) NDMA-d6	10.85	50	12818	6.66	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.97	47	14833	8.74	ug/L	96
5) NMEA	13.55	61	14416	6.05	ug/L	100
6) NDEA	15.65	75	2466	7.38	ug/L	100
7) NDPA	20.83	89	3075	9.48	ug/L	100
8) NPYR	23.20	55	39232	10.37	ug/L	94
9) NPIP	24.12	69	75431	11.25	ug/L	100
10) NDBA	26.36	57	21808	10.21	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501007.D 031112_D14.M Wed May 09 12:06:37 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501007.D Vial: 8
Acq On : 01 May 12 21:19 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 2 16:16 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Exception Report

Data File: J:\MS16\DATA\050812-521\0508019.D
Lab ID: KWG1204391-2 -- P1201573-002DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/09/2012 01:36
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosopiperidine	53.6	NA	50	NR
	N-Nitrosodi-n-butylamine	69.4	NA	50	"

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508019.D			**Instrument:**	MS16
Acqu Date:	05/09/2012 01:36	**Quant Date:**	05/09/2012 12:13	**Vial:**	16
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1204391-2 -- P1201573-002DMS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204795	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
		Prep Date:	04/30/2012		
Prep Ref:	1121343				

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D			**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D			**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.51	0.00	97	31082	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.86	-0.02	0.00	50	24170	9.58	96	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97	-0.02	0.00	47	25741	12.04	24.1		NR
1	N-Nitrosomethylethylamine	13.53	-0.04	0.00	61	24709	8.01	16.0		
1	N-Nitrosodiethylamine	15.65	0.01	0.00	75	4409	10.10	20.2		
1	N-Nitrosodi-n-propylamine	20.81	-0.02	0.00	89	4250	10.69	21.4		
1	N-Nitrosopyrrolidine	23.19		0.00	55	50529	11.14	22.3		
1	N-Nitrosopiperidine	24.11		0.00	69	97644	12.12	24.2		
1	N-Nitrosodi-n-butylamine	26.34		0.00	57	27954	10.79	21.6		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508019.D Vial: 16
Acq On : 09 May 2012 01:36 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:32 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

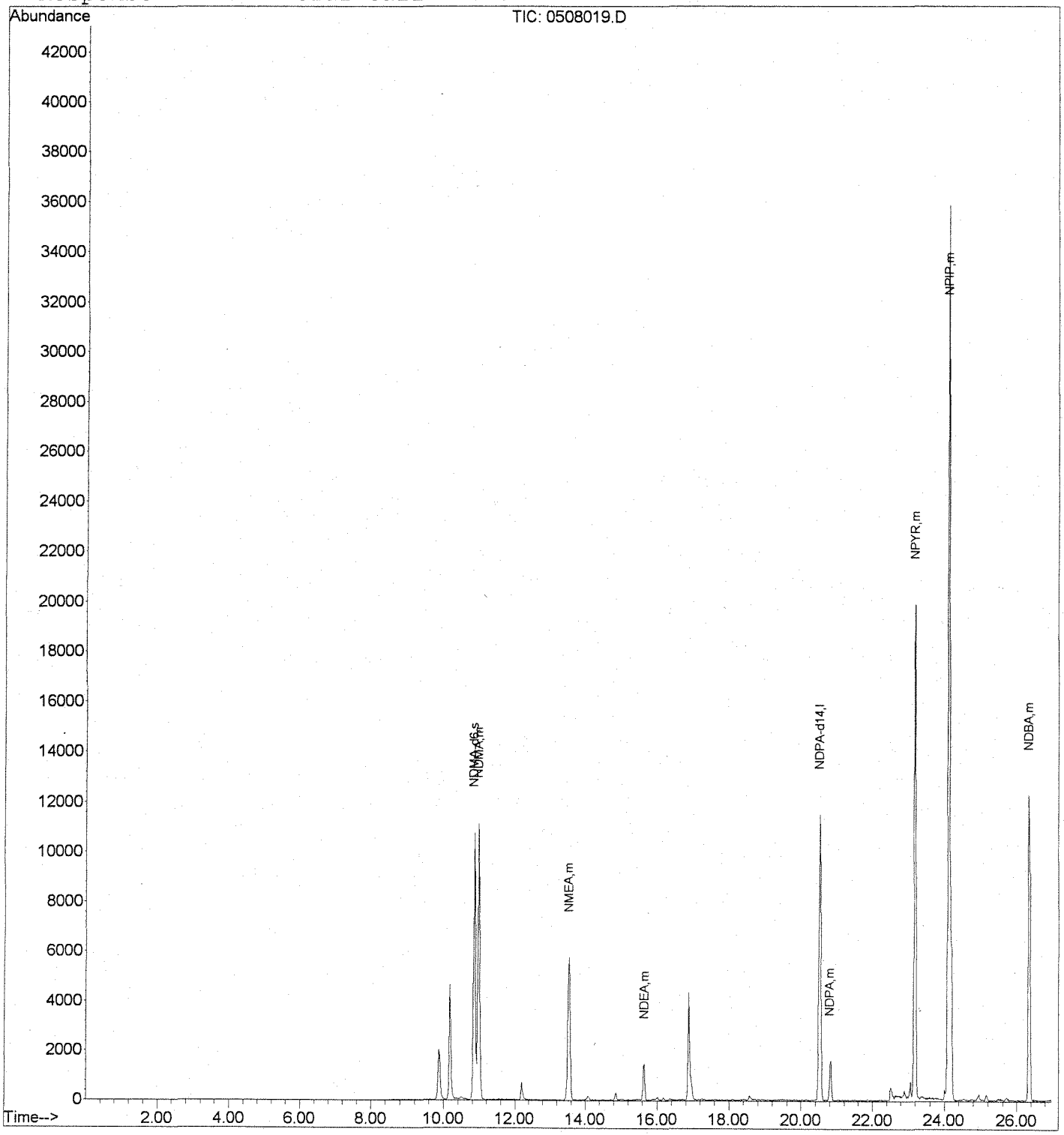
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.51	97	31082	50.00	ug/L	-0.06
System Monitoring Compounds						
3) NDMA-d6	10.86	50	24170	9.58	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.97	47	25741	12.04	ug/L	97
5) NMEA	13.53	61	24709	8.01	ug/L	100
6) NDEA	15.65	75	4409	10.10	ug/L	100
7) NDPA	20.81	89	4250	10.69	ug/L	100
8) NPYR	23.19	55	50529	11.14	ug/L	94
9) NPIP	24.11	69	97644	12.12	ug/L	100
10) NDBA	26.34	57	27954	10.79	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508019.D 031112_D14.M Wed May 09 12:16:21 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508019.D Vial: 16
Acq On : 09 May 2012 01:36 Operator: SVO-DW
Sample : P1201573-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Batch QC	**Units:**	ng/L
Lab Code:	P1201573-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**0.96**	J	2.0	0.32	1	04/30/12	05/02/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	98	70-130	05/02/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050212-521\0502004.D
Lab ID: P1201573-002
RunType: SMPL
Matrix: WATER

Date Acquired: 05/02/2012 19:26
Date Quantitated: 05/03/2012 13:49
Batch ID: KWG1204794
Analysis Method: 521
ListJoinID: LJ11419

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502004.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 19:26	**Quant Date:**	05/03/2012 13:49	**Vial:**	6
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201573-002			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**	04/23/2012	**Receive Date:**	04/23/2012

Analysis Lot:	KWG1204794	**Prep Lot:**	KWG1204391	**Report Group:**	P1201573
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121338	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:	Nitrosamines by EPA 521	**Report List ID:**	LJ11419
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	0.02	97	29832	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.84	0.01	0.00	50	23994	9.84	98	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.98	0.01	0.00	47	192	0.4800	0.96	J	

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502004.D Vial: 6
Acq On : 02 May 12 19:26 Operator: SVO-DW
Sample : P1201573-002 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:49:34 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

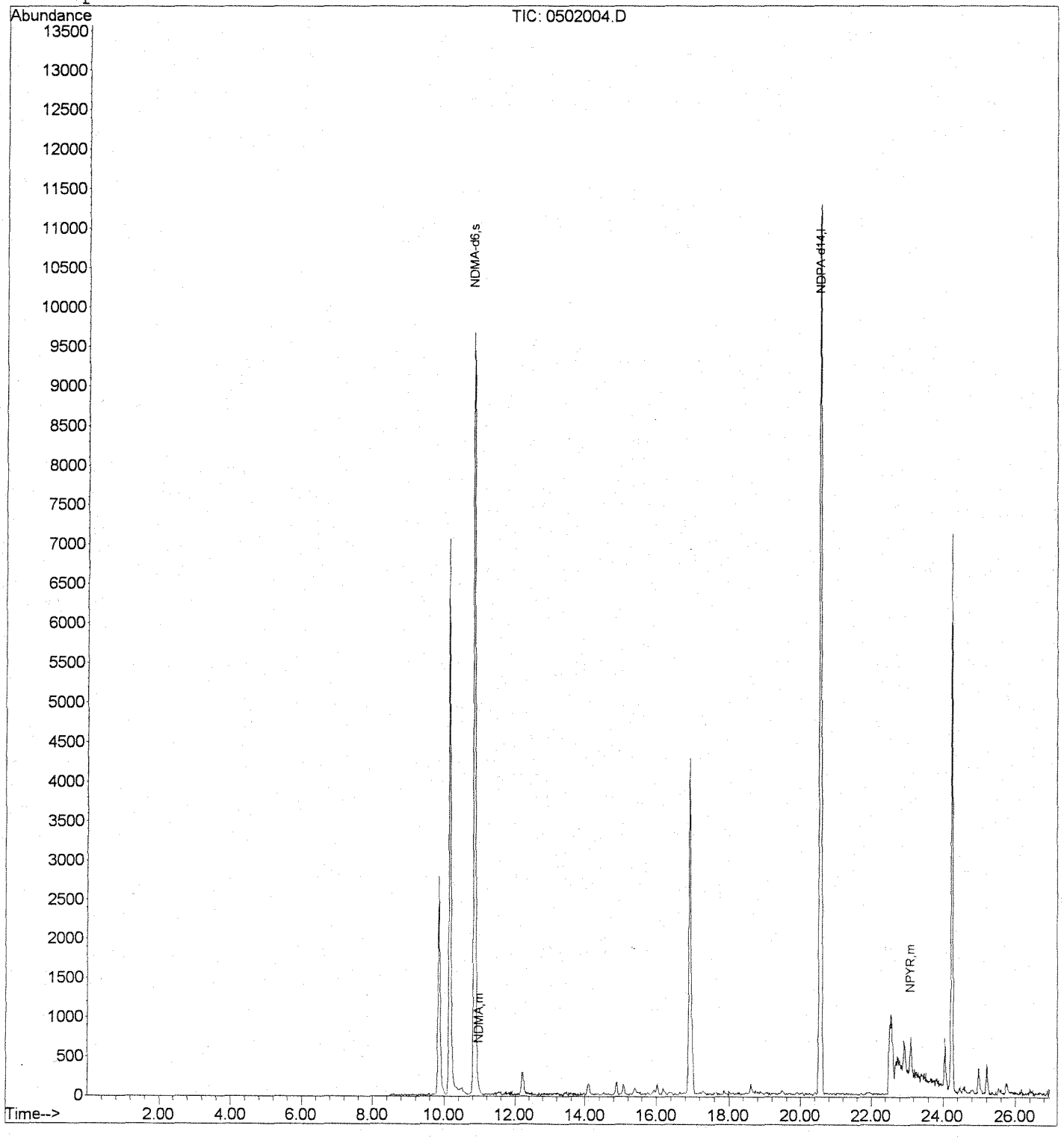
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	29832	50.00	ug/L	-0.03
System Monitoring Compounds						
3) NDMA-d6	10.84	50	23994	9.84	ug/L	-0.11
Target Compounds						Qvalue
4) NDMA	10.98	47	192	0.48	ug/L	72
8) NPYR	23.11	55	575	0.74	ug/L	94

(#) = qualifier out of range (m) = manual integration
0502004.D 031112_D14.M Wed May 09 12:11:56 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502004.D Vial: 6
Acq On : 02 May 12 19:26 Operator: SVO-DW
Sample : P1201573-002 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:49 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Units:**	ng/L
Lab Code:	KWG1204391-3	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**15.6**		2.0	0.32	1	04/30/12	05/01/12	KWG1204391	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	87	70-130	05/08/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\050112-521\0501004.D
Lab ID: KWG1204391-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/01/2012 19:12
Date Quantitated: 05/02/2012 16:16
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA		x
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosodi-n-butylamine	50.6	NA	50	NR
Surrogates	N-Nitrosodimethylamine-d6	63	70	130	↓

Primary Review: 5/9/12

Secondary Review:

Printed: 05/09/2012 12:36:46
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501004.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 19:12	**Quant Date:**	05/02/2012 16:16	**Vial:**	5
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1204391-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204793	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121344	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.52	-0.01	97	28060	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.86	0.01	0.00	50	12644	6.25	63	70-130	*	NR

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.98	0.01	0.00	47	13900	7.82	15.6		
1	N-Nitrosomethylethylamine	13.56	0.03	0.00	61	13998	5.63	11.3		
1	N-Nitrosodiethylamine	15.65	0.01	0.00	75	2927	8.00	16.0		
1	N-Nitrosodi-n-propylamine	20.84	0.01	0.00	89	3561	10.09	20.2		
1	N-Nitrosopyrrolidine	23.21		0.00	55	41753	10.33	20.7		
1	N-Nitrosopiperidine	24.12	-0.01	0.00	69	81430	11.34	22.7		
1	N-Nitrosodi-n-butylamine	26.37	-0.01	0.00	57	22662	10.01	20.0		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501004.D Vial: 5
Acq On : 01 May 12 19:12 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:16:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

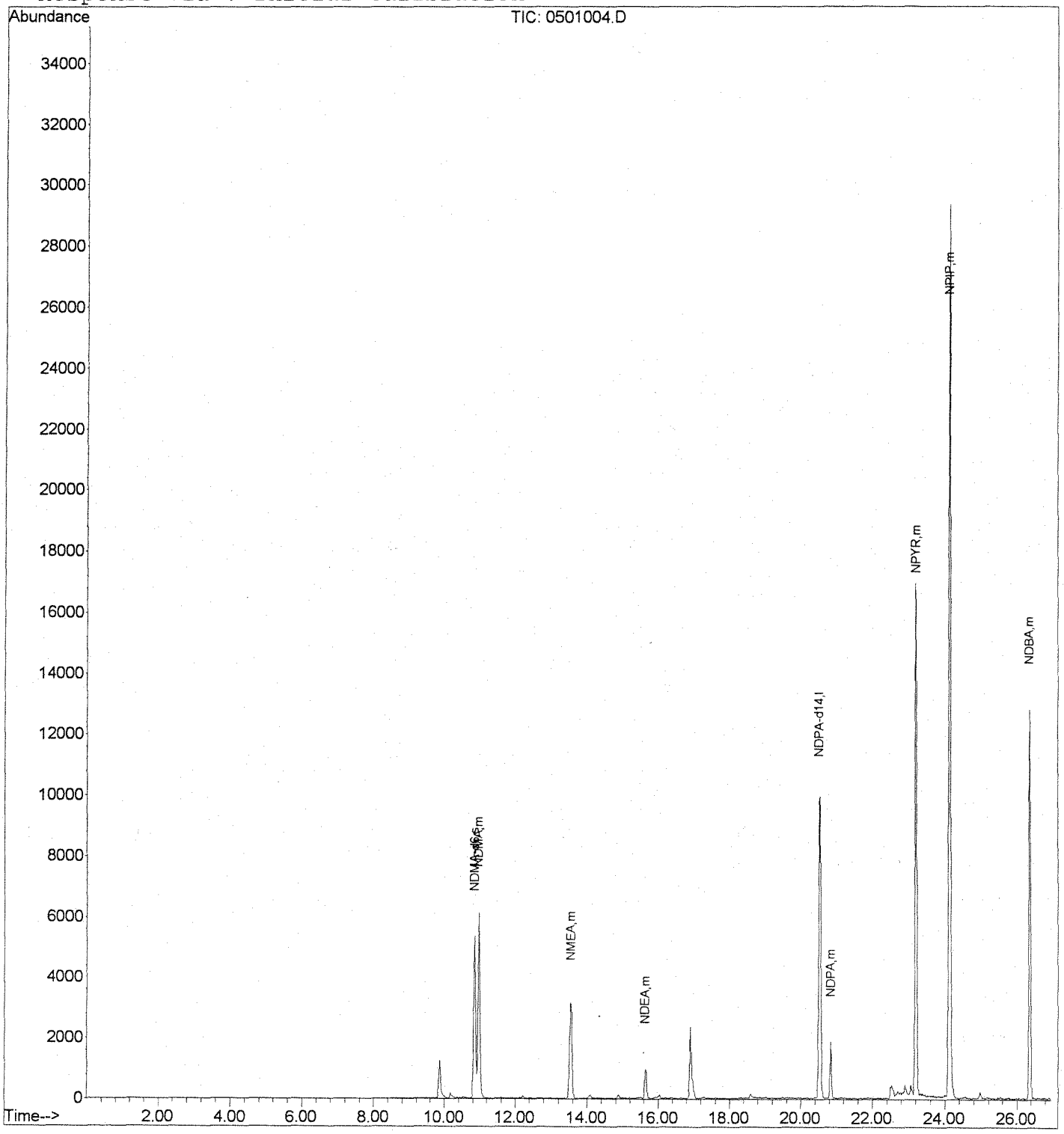
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.52	97	28060	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.86	50	12644	6.25	ug/L	-0.09
Target Compounds						Qvalue
4) NDMA	10.98	47	13900	7.82	ug/L	99
5) NMEA	13.56	61	13998	5.63	ug/L	100
6) NDEA	15.65	75	2927	8.00	ug/L	100
7) NDPA	20.84	89	3561	10.09	ug/L	100
8) NPYR	23.21	55	41753	10.33	ug/L	96
9) NPIP	24.12	69	81430	11.34	ug/L	100
10) NDBA	26.37	57	22662	10.01	ug/L	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501004.D Vial: 5
Acq On : 01 May 12 19:12 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 2 16:16 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Exception Report

Data File: J:\MS16\DATA\050812-521\0508016.D
Lab ID: KWG1204391-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/08/2012 23:29
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA		x
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
Continuing Calibration Recovery (Closing)	N-Nitrosopiperidine	53.6	NA	50	NC
	N-Nitrosodi-n-butylamine	69.4	NA	50	b

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508016.D			**Instrument:**	MS16
Acqu Date:	05/08/2012 23:29	**Quant Date:**	05/09/2012 12:13	**Vial:**	13
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1204391-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	04/30/2012

Analysis Lot:	KWG1204795	**Prep Lot:**	KWG1204391	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1121344	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\050212-521\0502002.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.50	-0.01	97	32827	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.83	-0.05	0.00	50	22524	8.69	87	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.95	-0.04	0.00	47	23011	10.48	21.0		NR
1	N-Nitrosomethylethylamine	13.52	-0.05	0.00	61	22498	7.16	14.3		
1	N-Nitrosodiethylamine	15.62	-0.02	0.00	75	4158	9.27	18.5		
1	N-Nitrosodi-n-propylamine	20.82	-0.01	0.00	89	3631	9.07	18.1		
1	N-Nitrosopyrrolidine	23.19		0.00	55	44044	9.46	18.9		
1	N-Nitrosopiperidine	24.11		0.00	69	91432	10.96	21.9		
1	N-Nitrosodi-n-butylamine	26.33	-0.01	0.00	57	26513	10.01	20.0		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508016.D Vial: 13
Acq On : 08 May 12 23:29 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:31 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

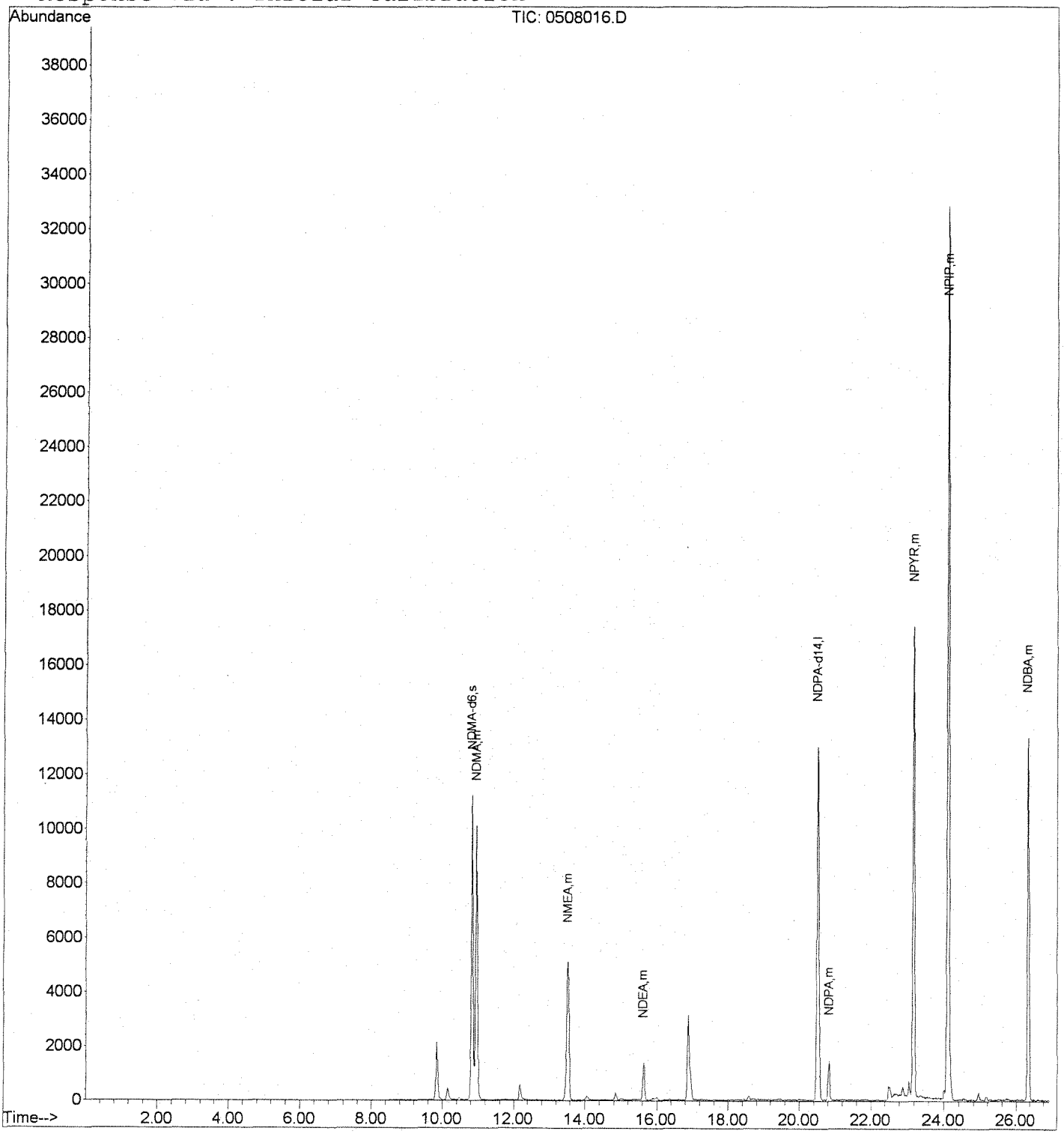
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.50	97	32827	50.00	ug/L	-0.07
System Monitoring Compounds						
3) NDMA-d6	10.83	50	22524	8.69	ug/L	-0.12
Target Compounds						Qvalue
4) NDMA	10.95	47	23011	10.48	ug/L	98
5) NMEA	13.52	61	22498	7.16	ug/L	100
6) NDEA	15.62	75	4158	9.27	ug/L	100
7) NDPA	20.82	89	3631	9.07	ug/L	100
8) NPYR	23.19	55	44044	9.46	ug/L	94
9) NPIP	24.11	69	91432	10.96	ug/L	100
10) NDBA	26.33	57	26513	10.01	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508016.D 031112_D14.M Wed May 09 12:16:20 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508016.D Vial: 13
Acq On : 08 May 12 23:29 Operator: SVO-DW
Sample : 043012-LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Standards Data

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Level ID	File ID
A	J:\MS16\DATA\031112-521\0311005.D
B	J:\MS16\DATA\031112-521\0311006.D
C	J:\MS16\DATA\031112-521\0311007.D
D	J:\MS16\DATA\031112-521\0311008.D
E	J:\MS16\DATA\031112-521\0311009.D
F	J:\MS16\DATA\031112-521\0311010.D
G	J:\MS16\DATA\031112-521\0311011.D
H	J:\MS16\DATA\031112-521\0311012.D
I	J:\MS16\DATA\031112-521\0311013.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
N-Nitrosodimethylamine-d6							C	1.0	1.28	D	2.0	2.08	E	5.0	2.86
	F	7.0	3.66	G	10	4.73	H	15	4.42	I	20	5.18			
N-Nitrosodimethylamine				B	0.50	1.18	C	1.0	1.63	D	2.0	2.42	E	5.0	2.51
	F	7.0	3.11	G	10	3.75	H	15	3.50	I	20	3.88			

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
N-Nitrosodimethylamine-d6	SURR	Quadratic	COD	0.992		≥ 0.99	3.46		
N-Nitrosodimethylamine	MS	Quadratic	COD	0.994		≥ 0.99	2.75		

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Calibration Date: 03/11/2012
Date Analyzed: 03/12/2012

Second Source Calibration Verification
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration ID: CAL11326
Units: ug/L

File ID: J:\MS16\DATA\031112-521\0311014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine	10	7.7	2.75	2.42	NA	-23	± 30 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Injection Log

ICAL 11326

Directory: J:\MS16\DATA\031112-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0311.D	1.	DCM		
2	1	0311001.D	1.	DWSTD5-49H 0.25 PPB		11 Mar 2012 29:0
3	2	0311002.D	1.	DWSTD5-49I 0.5 PPB		11 Mar 2012 29:4
4	13	0311003.D	1.	K1201175-002 MS		11 Mar 2012 30:2
5		0311004.D	1.	DCM		11 Mar 2012 31:1
6	1	0311005.D	1.	DWSTD5-42H 0.25 PPB		11 Mar 2012 31:5
7	2	0311006.D	1.	DWSTD5-51J 0.5 PPB		11 Mar 2012 32:3
8	3	0311007.D	1.	DWSTD5-50A 1 PPB		11 Mar 2012 33:2
9	4	0311008.D	1.	DWSTD5-42J 2 PPB		11 Mar 2012 34:0
10	5	0311009.D	1.	DWSTD5-48P 5 PPB		11 Mar 2012 34:4
11	6	0311010.D	1.	DWSTD5-43P 7 PPB		11 Mar 2012 35:2
12	7	0311011.D	1.	DWSTD5-42G 10 PPB		12 Mar 2012 12:1
13	8	0311012.D	1.	DWSTD5-42L 15 PPB		12 Mar 2012 12:5
14	9	0311013.D	1.	DWSTD5-42M 20 PPB		12 Mar 2012 13:3
15	10	0311014.D	1.	DWSTD5-50B ICV 10		12 Mar 2012 14:1
16		0311015.D	1.	DCM		12 Mar 2012 15:0
17	3	0311016.D	1.	DWSTD5-49J 1 PPB		12 Mar 2012 15:4
18	11	0311017.D	1.	K1201175-001		12 Mar 2012 16:2
19	12	0311018.D	1.	K1201175-002		12 Mar 2012 17:0
20	13	0311019.D	1.	K1201175-002 MS		12 Mar 2012 17:5
21	14	0311020.D	1.	K1201175-002 DMS		12 Mar 2012 18:3
						12 Mar 2012 19:1

3/12/14

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311005.D Vial: 1
Acq On : 11 Mar 12 20:38 Operator: SVO-DW
Sample : DWSTD5-42H 0.25 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:54 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	27591	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	162	0.43	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.11	47	496	0.34	ug/L	100
5) NMEA	13.63	61	240	0.38	ug/L	98

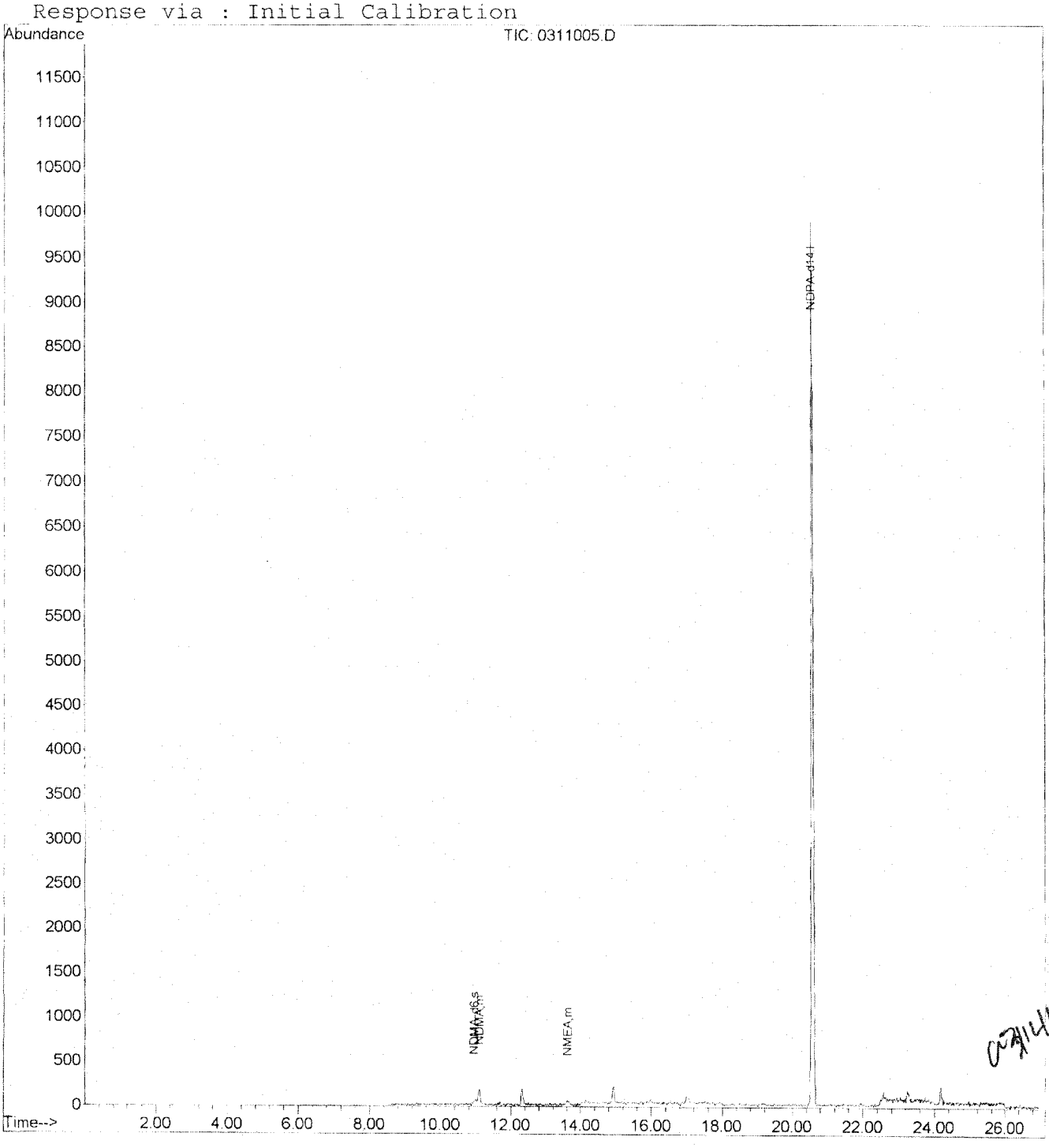
3/12/12

(#) = qualifier out of range (m) = manual integration
0311005.D 031112_D14.M Mon Mar 12 08:23:18 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311005.D Vial: 1
Acq On : 11 Mar 12 20:38 Operator: SVO-DW
Sample : DWSTD5-42H 0.25 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:18 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311005.D 031112_D14.M Mon Mar 12 08:23:19 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311006.D Vial: 2
Acq On : 11 Mar 12 21:21 Operator: SVO-DW
Sample : DWSTD5-51J 0.5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:54 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	28801	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	288	0.51	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	340	0.24	ug/L	99
5) NMEA	13.64	61	513	0.55	ug/L	98
8) NPYR	23.26	55	613	0.34	ug/L	100
9) NPIP	24.18	69	993	0.37	ug/L	99

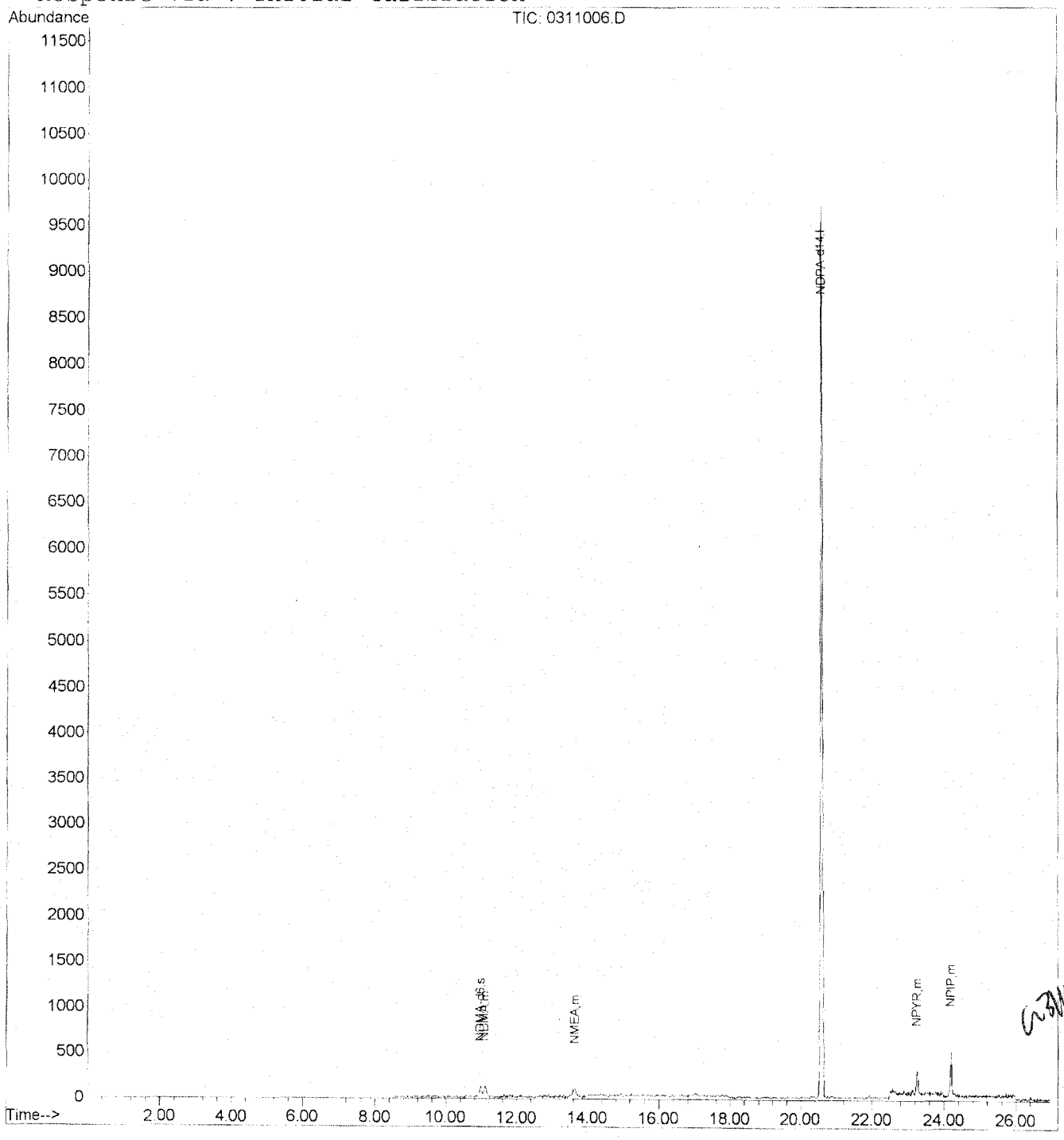
3/12/12

(#) = qualifier out of range (m) = manual integration
0311006.D 031112_D14.M Mon Mar 12 08:23:20 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311006.D Vial: 2
Acq On : 11 Mar 12 21:21 Operator: SVO-DW
Sample : DWSTD5-51J 0.5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311006.D 031112_D14.M Mon Mar 12 08:23:21 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311007.D Vial: 3
Acq On : 11 Mar 12 22:04 Operator: SVO-DW
Sample : DWSTD5-50A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

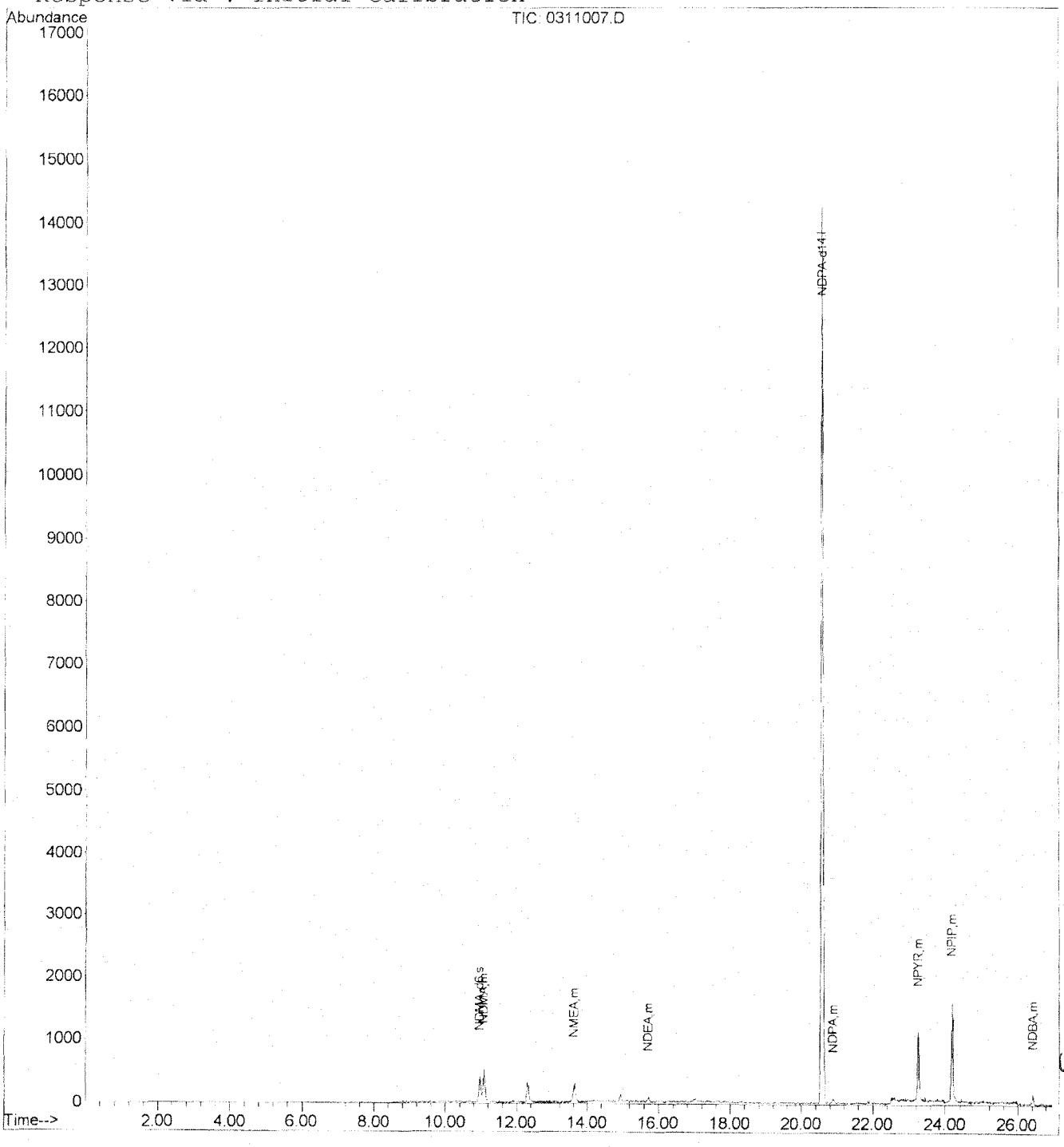
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	38374	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.97	50	981	0.83	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	1254	0.57	ug/L	98
5) NMEA	13.63	61	1290	0.84	ug/L	99
6) NDEA	15.73	75	176	1.02	ug/L	100
7) NDPA	20.89	89	119	0.47	ug/L	100
8) NPYR	23.25	55	2466	0.76	ug/L	100
9) NPIP	24.17	69	3591	0.68	ug/L	99
10) NDBA	26.43	57	181	0.76	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311007.D 031112_D14.M Mon Mar 12 08:23:22 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311007.D Vial: 3
Acq On : 11 Mar 12 22:04 Operator: SVO-DW
Sample : DWSTD5-50A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311007.D 031112_D14.M Mon Mar 12 08:23:22 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311008.D Vial: 4
Acq On : 11 Mar 12 22:46 Operator: SVO-DW
Sample : DWSTD5-42J 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.58	97	29381	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	2445	1.96	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	2840	1.57	ug/L	98
5) NMEA	13.63	61	2984	1.97	ug/L	99
6) NDEA	15.73	75	437	1.98	ug/L	100
7) NDPA	20.90	89	343	1.41	ug/L	100
8) NPYR	23.26	55	5523	1.89	ug/L	100
9) NPIP	24.18	69	8481	1.66	ug/L	99
10) NDBA	26.43	57	1130	1.19	ug/L	100

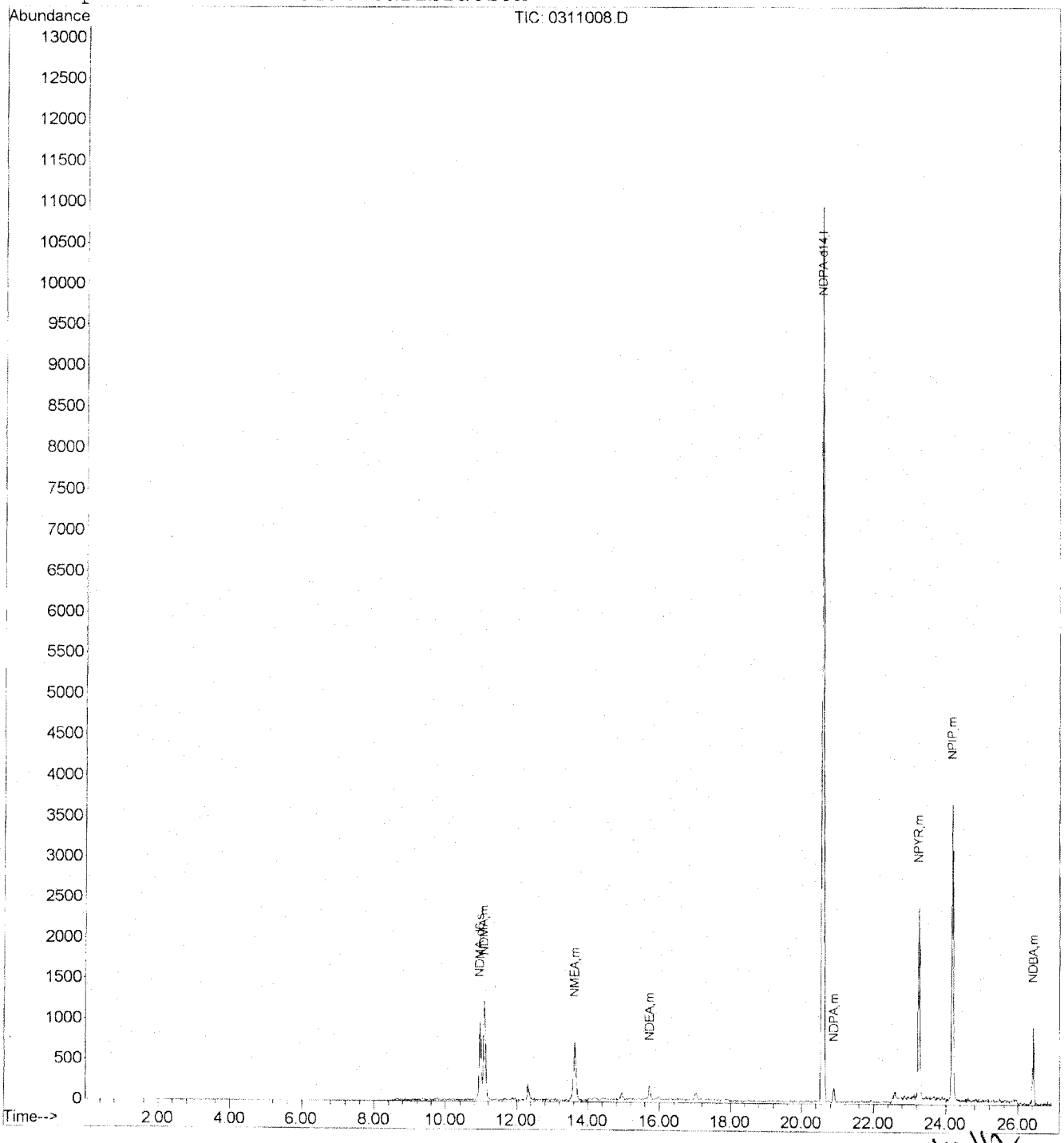
3/14/12

(#) = qualifier out of range (m) = manual integration
0311008.D 031112_D14.M Mon Mar 12 08:23:24 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311008.D Vial: 4
Acq On : 11 Mar 12 22:46 Operator: SVO-DW
Sample : DWSTD5-42J 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311008.D 031112_D14.M Mon Mar 12 08:23:24 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311009.D Vial: 5
Acq On : 11 Mar 12 23:28 Operator: SVO-DW
Sample : DWSTD5-48P 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	30053	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.95	50	8605	5.32	ug/L	0.06
Target Compounds						Qvalue
4) NDMA	11.07	47	7538	3.83	ug/L	98
5) NMEA	13.63	61	11231	5.57	ug/L	99
6) NDEA	15.73	75	1840	5.66	ug/L	100
7) NDPA	20.90	89	1496	4.59	ug/L	100
8) NPYR	23.26	55	17249	4.88	ug/L	99
9) NPIP	24.18	69	31523	4.94	ug/L	99
10) NDBA	26.43	57	8214	3.74	ug/L	100

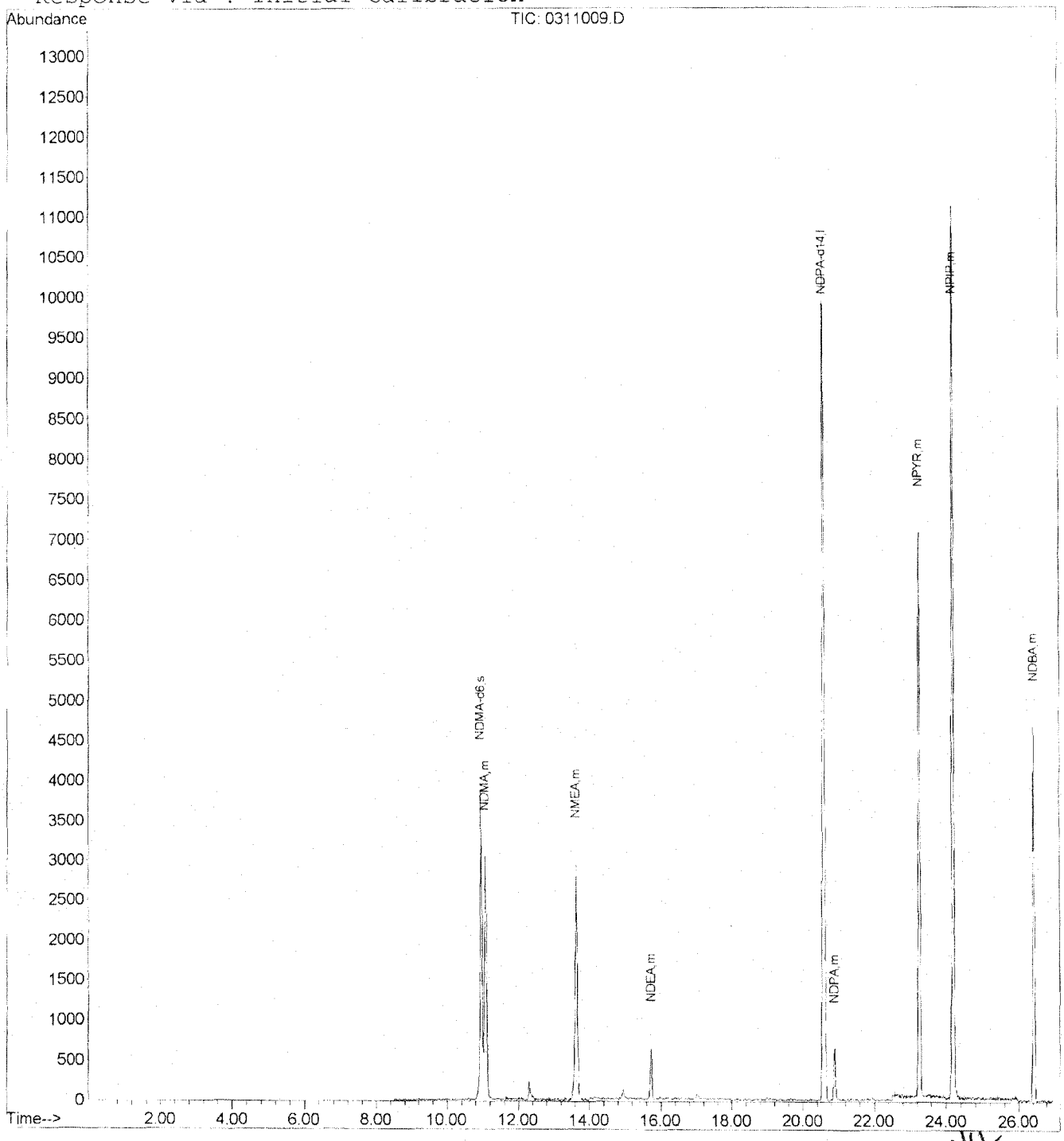
3/14/12

(#) = qualifier out of range (m) = manual integration
0311009.D 031112_D14.M Mon Mar 12 08:23:25 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311009.D Vial: 5
Acq On : 11 Mar 12 23:28 Operator: SVO-DW
Sample : DWSTD5-48P 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311009.D 031112_D14.M Mon Mar 12 08:23:26 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311010.D Vial: 6
Acq On : 12 Mar 2012 00:11 Operator: SVO-DW
Sample : DWSTD5-43P 7 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:56 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

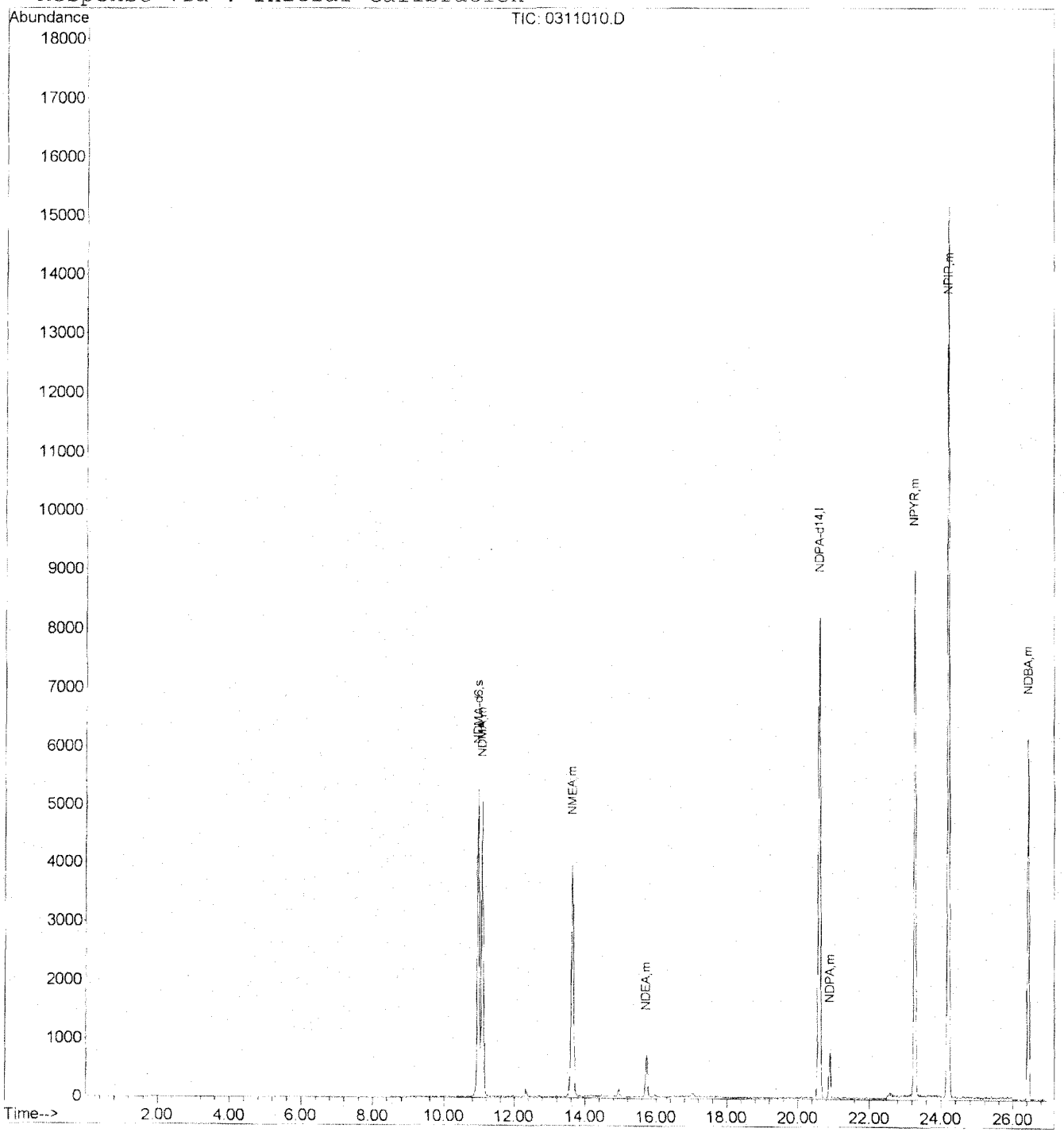
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	24830	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.97	50	12740	8.40	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	10802	6.36	ug/L	100
5) NMEA	13.64	61	17148	8.81	ug/L	99
6) NDEA	15.71	75	2090	7.20	ug/L	100
7) NDPA	20.90	89	1908	6.34	ug/L	100
8) NPYR	23.26	55	22562	7.05	ug/L	100
9) NPIP	24.19	69	40716	7.10	ug/L	99
10) NDBA	26.43	57	12687	5.81	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311010.D 031112_D14.M Mon Mar 12 08:23:27 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311010.D Vial: 6
Acq On : 12 Mar 2012 00:11 Operator: SVO-DW
Sample : DWSTD5-43P 7 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311010.D 031112_D14.M Mon Mar 12 08:23:27 2012 Page 2

3/14/12

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311011.D Vial: 7
Acq On : 12 Mar 2012 00:53 Operator: SVO-DW
Sample : DWSTD5-42G 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:56 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

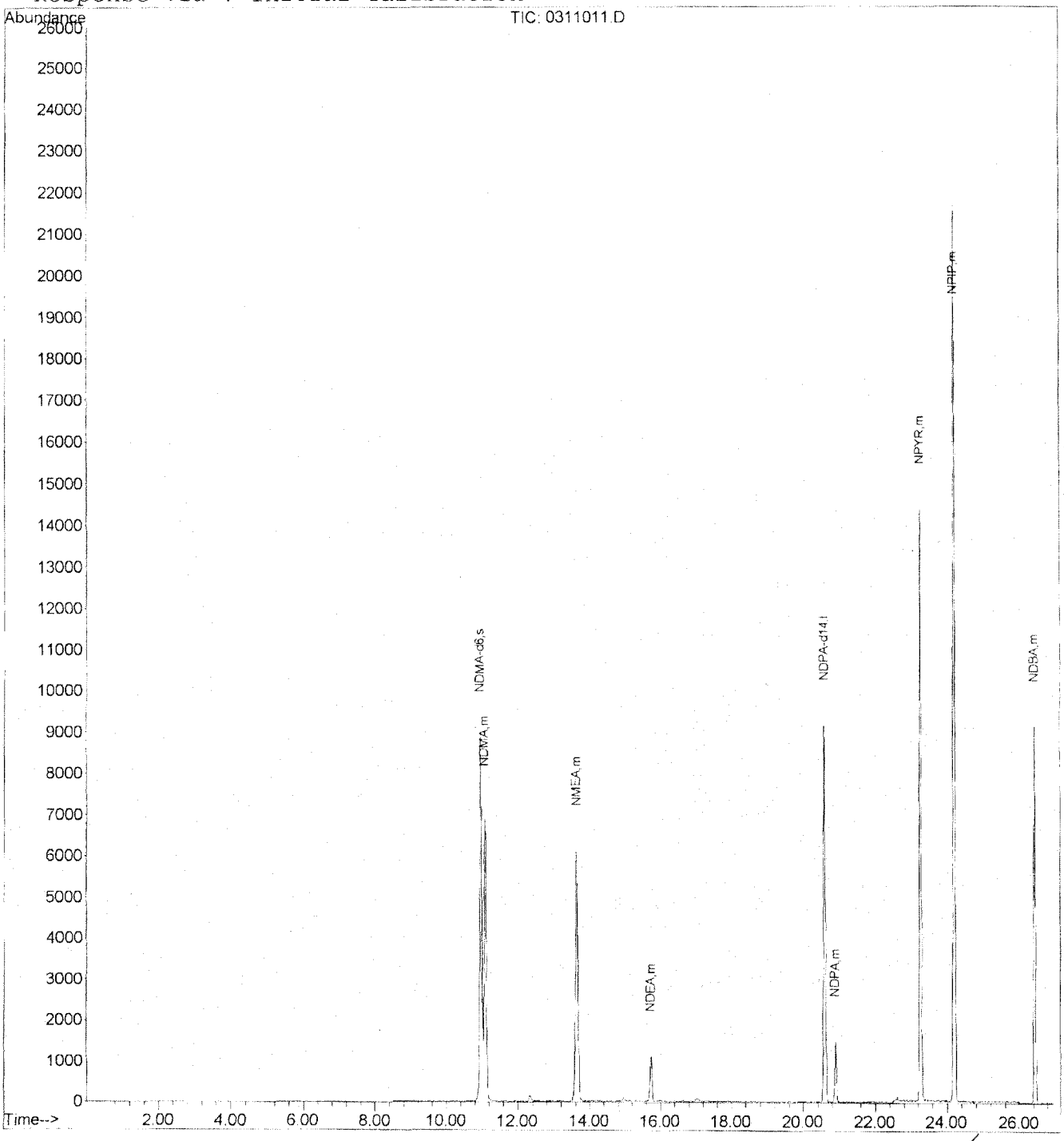
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	23331	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.96	50	22064	13.23	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	17491	10.29	ug/L	97
5) NMEA	13.63	61	27747	12.90	ug/L	99
6) NDEA	15.74	75	3394	10.82	ug/L	100
7) NDPA	20.89	89	3130	9.38	ug/L	100
8) NPYR	23.27	55	36060	10.55	ug/L	100
9) NPIP	24.18	69	61376	10.26	ug/L	99
10) NDBA	26.44	57	19158	8.10	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311011.D 031112_D14.M Mon Mar 12 08:23:29 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311011.D Vial: 7
Acq On : 12 Mar 2012 00:53 Operator: SVO-DW
Sample : DWSTD5-42G 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311012.D Vial: 8
Acq On : 12 Mar 2012 01:36 Operator: SVO-DW
Sample : DWSTD5-42L 15 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

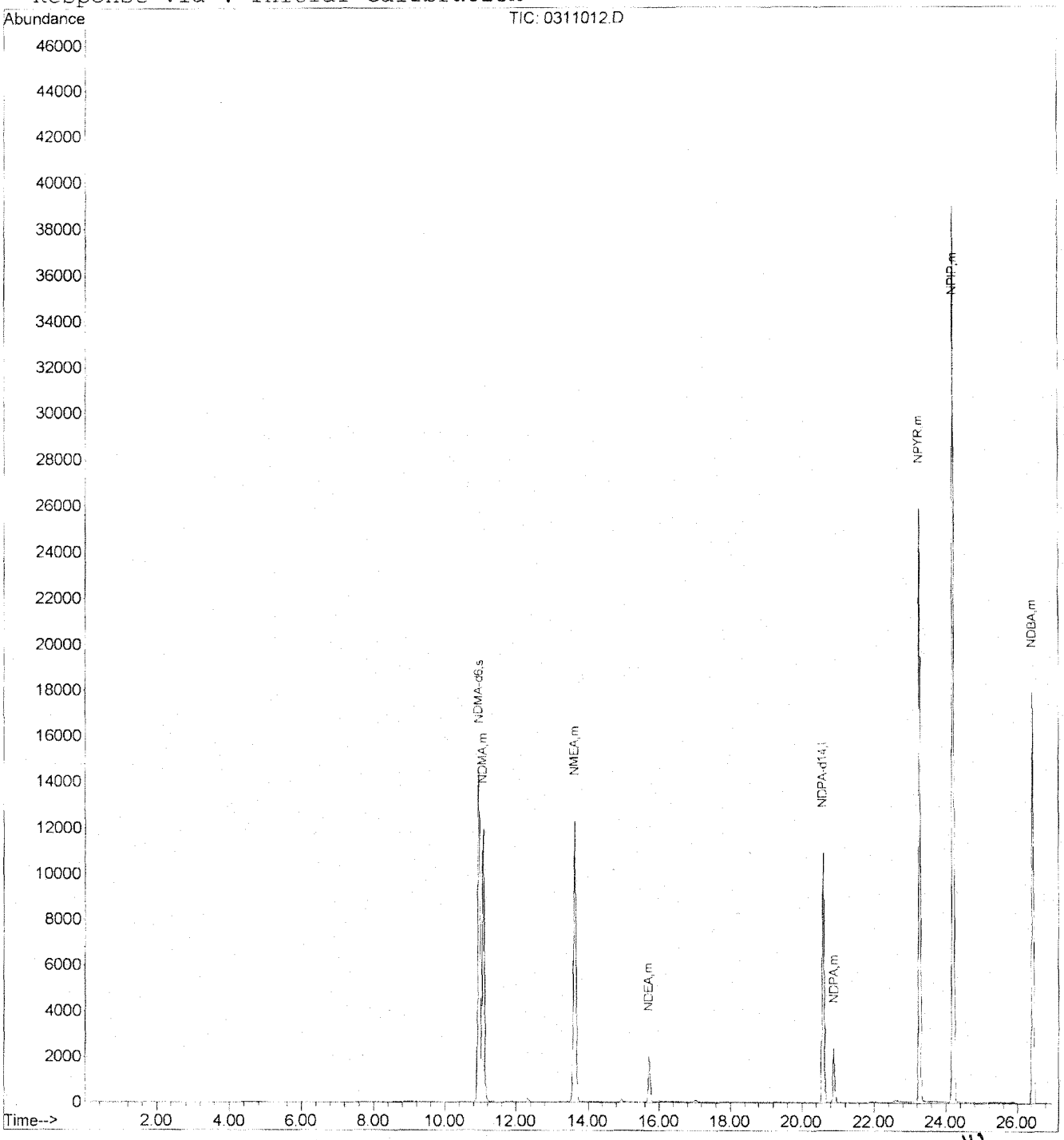
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.60	97	28601	50.00	ug/L	0.03
System Monitoring Compounds						
3) NDMA-d6	10.97	50	37928	16.79	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	29994	13.71	ug/L	100
5) NMEA	13.63	61	50017	16.69	ug/L	100
6) NDEA	15.71	75	6644	15.10	ug/L	100
7) NDPA	20.90	89	6020	12.66	ug/L	100
8) NPYR	23.26	55	67126	14.25	ug/L	100
9) NPIP	24.19	69	113622	13.93	ug/L	99
10) NDBA	26.43	57	42125	12.04	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311012.D 031112_D14.M Mon Mar 12 08:23:30 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311012.D Vial: 8
Acq On : 12 Mar 2012 01:36 Operator: SVO-DW
Sample : DWSTD5-42L 15 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311012.D 031112_D14.M Mon Mar 12 08:23:31 2012 Page 2

3/12/12

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311013.D Vial: 9
Acq On : 12 Mar 2012 02:18 Operator: SVO-DW
Sample : DWSTD5-42M 20 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.60	97	29929	50.00	ug/L	0.03
System Monitoring Compounds						
3) NDMA-d6	10.96	50	62054	22.72	ug/L	0.07
Target Compounds						Qvalue
4) NDMA	11.08	47	46487	18.92	ug/L	99
5) NMEA	13.64	61	86114	22.95	ug/L	99
6) NDEA	15.73	75	11096	20.76	ug/L	100
7) NDPA	20.90	89	9412	16.35	ug/L	100
8) NPYR	23.28	55	96259	17.71	ug/L	100
9) NPIP	24.19	69	172721	18.16	ug/L	100
10) NDBA	26.45	57	66211	15.71	ug/L	100

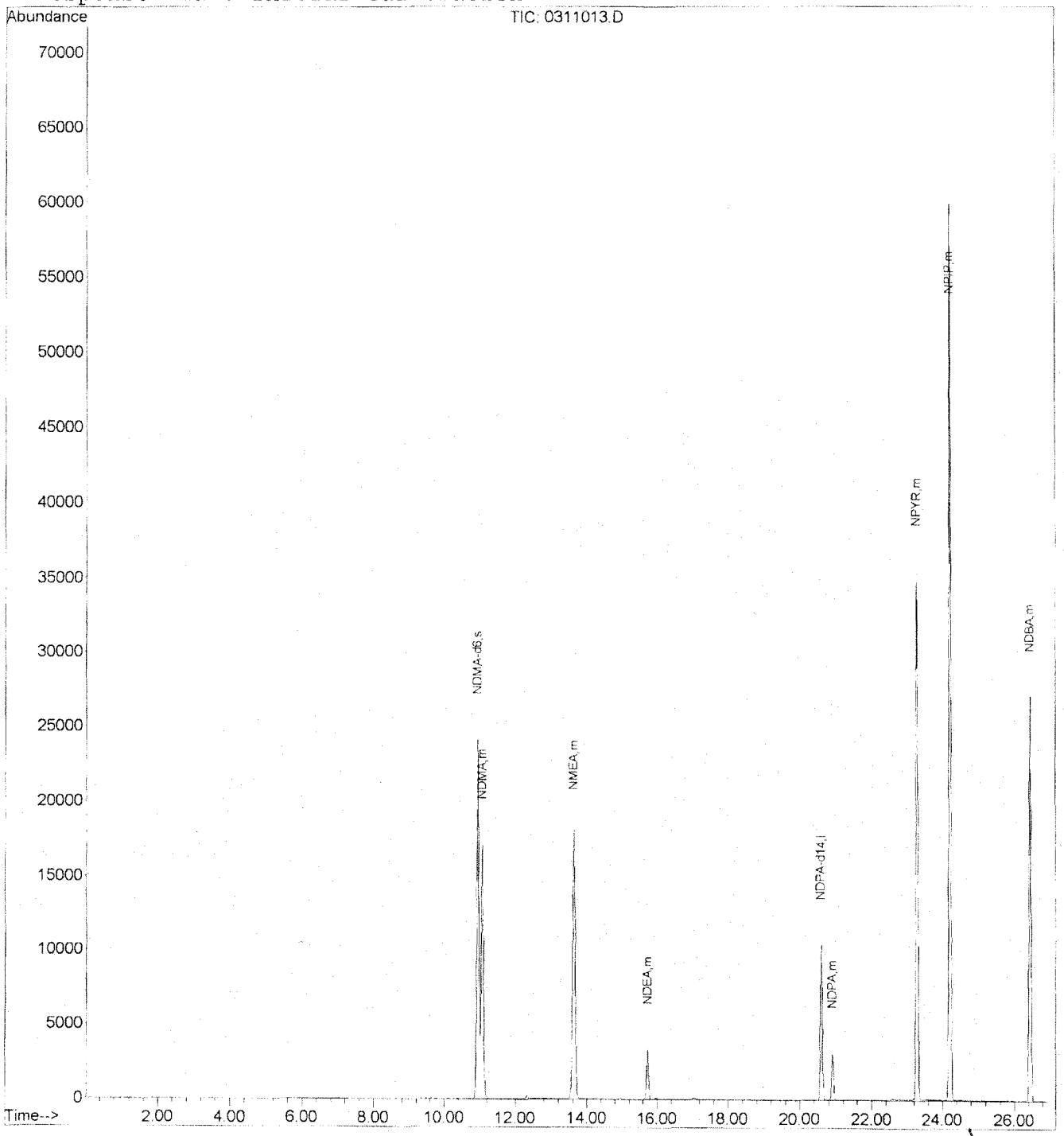
3/12/12

(#) = qualifier out of range (m) = manual integration
0311013.D 031112_D14.M Mon Mar 12 08:23:32 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311013.D Vial: 9
Acq On : 12 Mar 2012 02:18 Operator: SVO-DW
Sample : DWSTD5-42M 20 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\031112-521\0311014.D Vial: 10
Acq On : 12 Mar 2012 03:01 Operator: SVO-DW
Sample : DWSTD5-50B ICV 10 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:40:42 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	25007	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	0.00	50	0	0.00	ug/L	
Target Compounds						Qvalue
4) NDMA	11.08	47	12119	7.67	ug/L	97
5) NMEA	13.62	61	20016	8.05	ug/L	100
6) NDEA	15.71	75	2597	7.97	ug/L	100
7) NDPA	20.89	89	2542	8.49	ug/L	100
8) NPYR	23.26	55	28231	8.16	ug/L	94
9) NPIP	24.19	69	49441	8.21	ug/L	100
10) NDBA	26.43	57	15154	8.18	ug/L	100

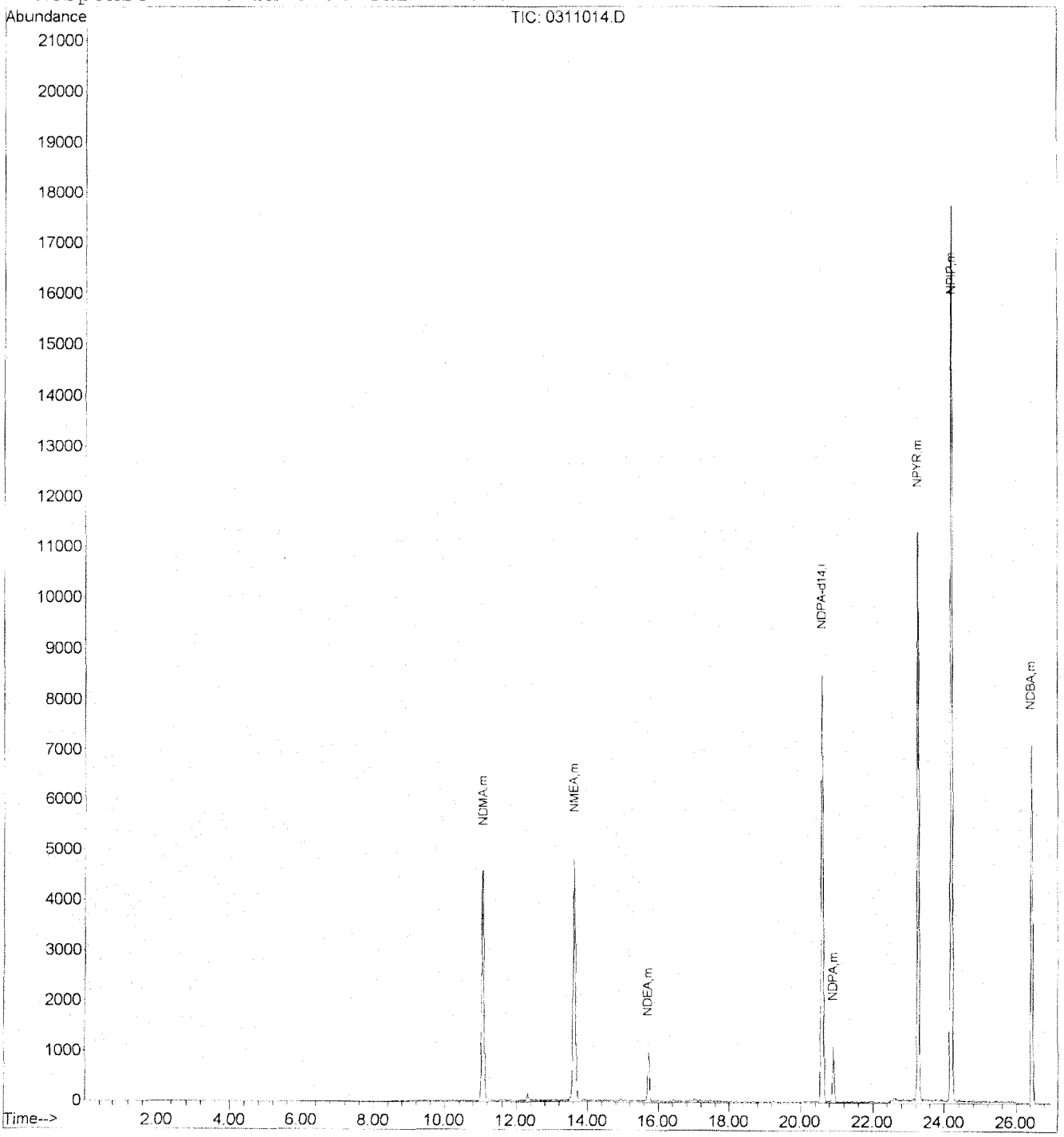
3/14/12

(#) = qualifier out of range (m) = manual integration
0311014.D 031112_D14.M Mon Mar 12 08:40:42 2012 Page 1

Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\031112-521\0311014.D Vial: 10
Acq On : 12 Mar 2012 03:01 Operator: SVO-DW
Sample : DWSTD5-50B ICV 10 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:40 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



0311014.D 031112_D14.M Mon Mar 12 08:40:42 2012 Page 2

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/01/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	0.98		3.46	0.816	NA	-2	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	0.89		2.75	1.53	NA	-11	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Exception Report

Data File: J:\MS16\DATA\050112-521\0501001.D
Lab ID: KWG1204793-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/01/2012 17:04
Date Quantitated: 05/01/2012 17:33
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Printed: 05/09/2012 12:36:43
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501001.D			**Instrument:**	MS16
Acqu Date:	05/01/2012 17:04	**Quant Date:**	05/01/2012 17:33	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204793-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204793	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050112-521\0501.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	-0.06	97	32908	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.85			50	537	0.9800		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97			47	1005	0.8900			
1	N-Nitrosomethylethylamine	13.53			61	987	1.06			
1	N-Nitrosodiethylamine	15.64			75	157	1.04			
1	N-Nitrosodi-n-propylamine	20.83			89	153	1.23			
1	N-Nitrosopyrrolidine	23.21			55	2655	1.19			
1	N-Nitrosopiperidine	24.13			69	5111	1.32			
1	N-Nitrosodi-n-butylamine	26.38			57	612	1.38			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808
DataFile: J:\MS16\DATA\050112-521\0501001.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	0.816		0.9800	1.000	-2.0
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	1.527		0.8900	1.000	-11.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	1.500		1.060	1.000	6.0
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.239		1.040	1.000	4.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.232		1.230	1.000	23.0
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	4.034		1.190	1.000	19.0
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	7.766		1.320	1.000	32.0
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	0.930		1.380	1.000	38.0

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501001.D Vial: 1
Acq On : 01 May 12 17:04 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 01 17:33:02 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

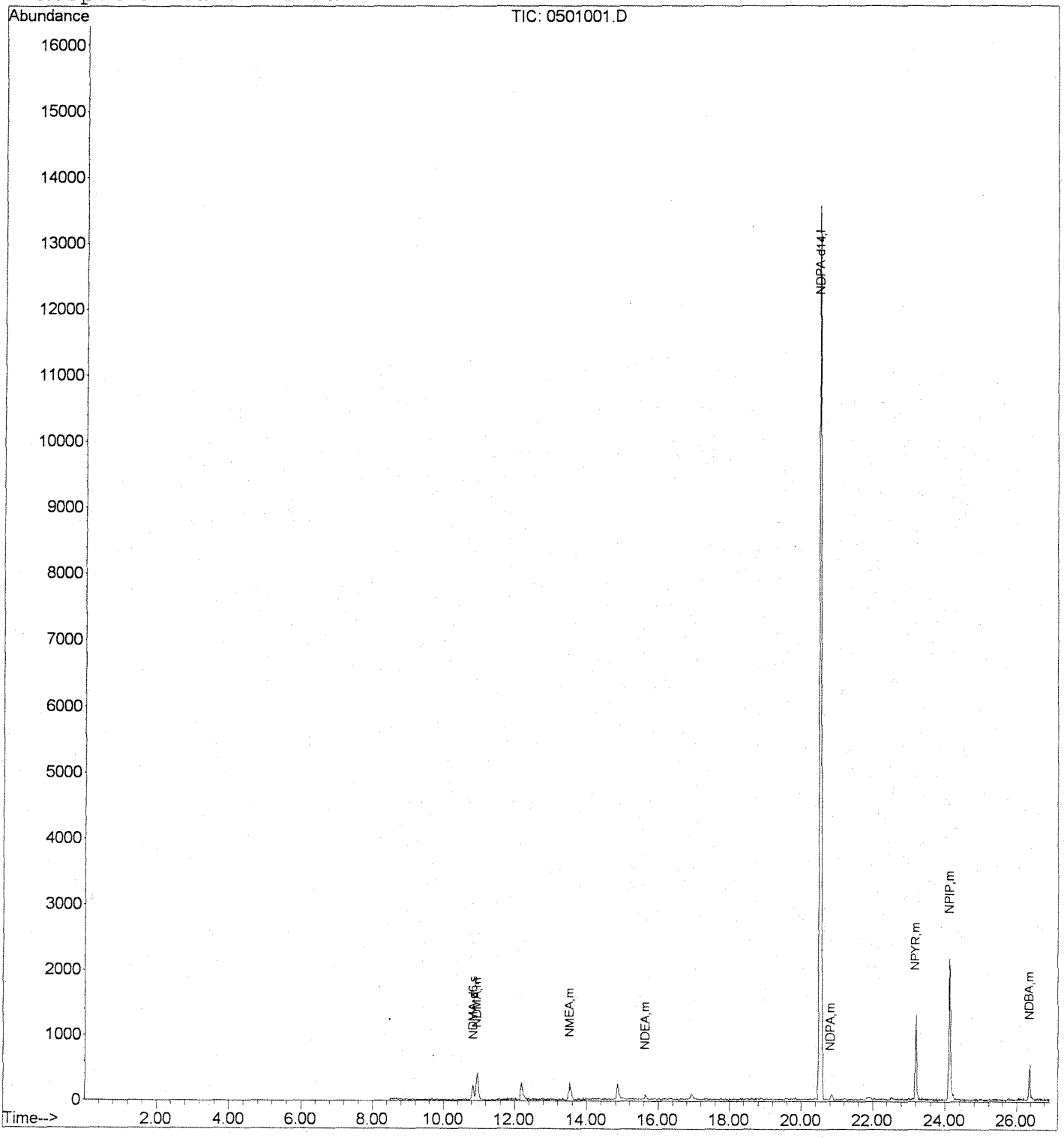
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	32908	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.85	50	537	0.98	ug/L	-0.10
Target Compounds						Qvalue
4) NDMA	10.97	47	1005	0.89	ug/L	98
5) NMEA	13.53	61	987	1.06	ug/L	99
6) NDEA	15.64	75	157	1.04	ug/L	100
7) NDPA	20.83	89	153	1.23	ug/L	99
8) NPYR	23.21	55	2655	1.19	ug/L	94
9) NPIP	24.13	69	5111	1.32	ug/L	100
10) NDBA	26.38	57	612	1.38	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501001.D 031112_D14.M Wed May 09 11:58:38 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501001.D Vial: 1
Acq On : 01 May 12 17:04 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 1 17:33 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204793
Units: ug/L

File ID: J:\MS16\DATA\050112-521\0501013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	4.3		3.46	2.75	NA	-15	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	5.4		2.75	3.21	NA	8	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050112-521\0501013.D
Lab ID: KWG1204793-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/02/2012 01:33
Date Quantitated: 05/02/2012 16:17
Batch ID: KWG1204793
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050112-521\0501013.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 01:33	**Quant Date:**	05/02/2012 16:17	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204793-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204793	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050112-521\0501.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	-0.04	97	32882	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.81			50	9051	4.27		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.93			47	10566	5.40			
1	N-Nitrosomethylethylamine	13.53			61	10533	4.04			
1	N-Nitrosodiethylamine	15.64			75	2140	5.55			
1	N-Nitrosodi-n-propylamine	20.83			89	1908	5.49			
1	N-Nitrosopyrrolidine	23.21			55	26354	6.09			
1	N-Nitrosopiperidine	24.13			69	51712	6.77			
1	N-Nitrosodi-n-butylamine	26.37			57	17691	7.53			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808
DataFile: J:\MS16\DATA\050112-521\0501013.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	2.753		4.270	5.000	-14.6
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	3.213		5.400	5.000	8.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	3.203		4.040	5.000	-19.2
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.651		5.550	5.000	11.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.580		5.490	5.000	9.8
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	8.015		6.090	5.000	21.8
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	1.6E+1		6.770	5.000	35.4
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	5.380		7.530	5.000	50.6 *

1 Compounds Failed CCV Criteria (12.50 Percent)

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501013.D Vial: 2
Acq On : 02 May 2012 01:33 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 02 16:17:00 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

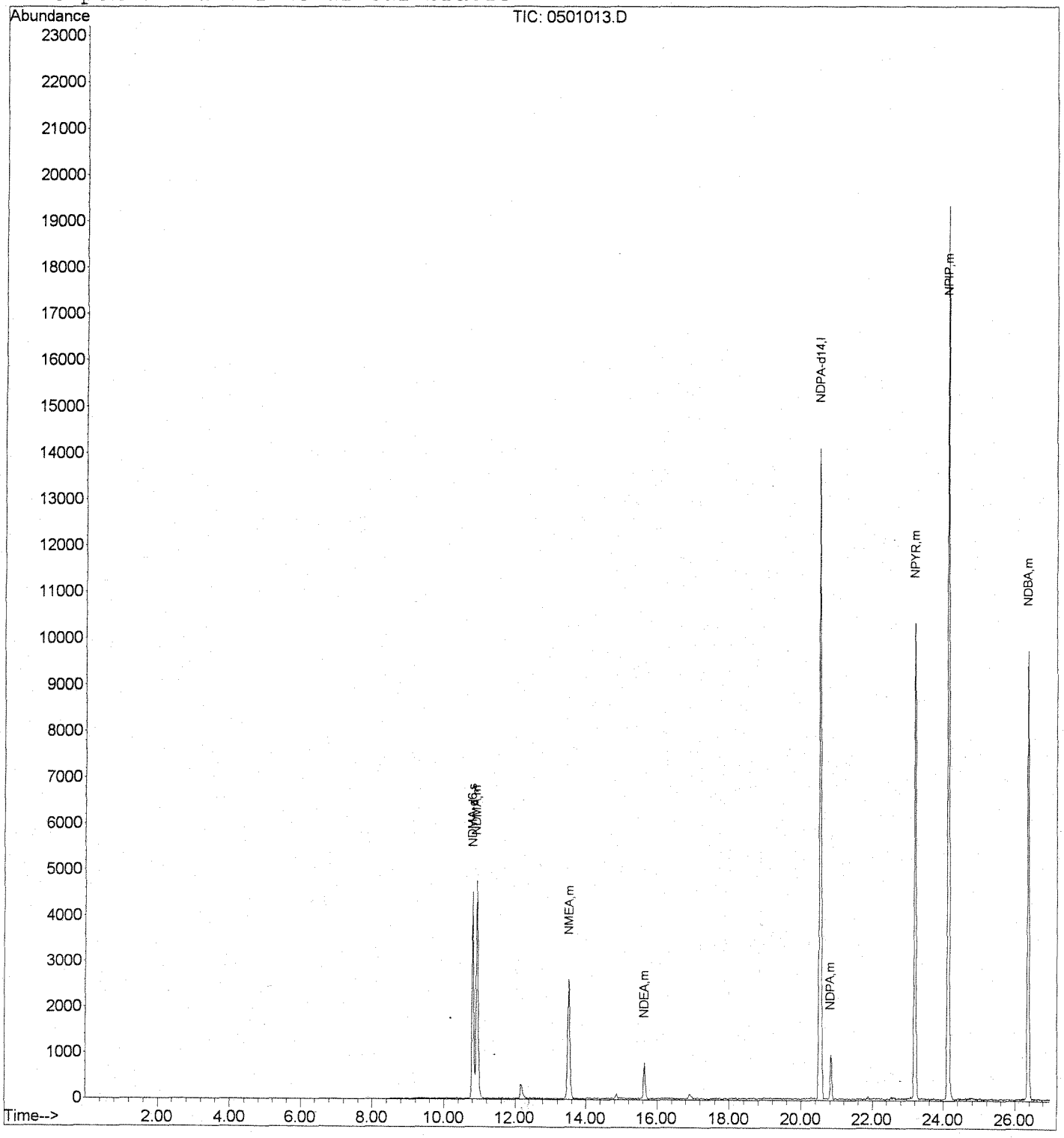
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	32882	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.81	50	9051	4.27	ug/L	-0.14
Target Compounds						Qvalue
4) NDMA	10.93	47	10566	5.40	ug/L	95
5) NMEA	13.53	61	10533	4.04	ug/L	100
6) NDEA	15.64	75	2140	5.55	ug/L	100
7) NDPA	20.83	89	1908	5.49	ug/L	100
8) NPYR	23.21	55	26354	6.09	ug/L	94
9) NPIP	24.13	69	51712	6.77	ug/L	100
10) NDBA	26.37	57	17691	7.53	ug/L	100

(#) = qualifier out of range (m) = manual integration
0501013.D 031112_D14.M Wed May 09 11:58:50 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050112-521\0501013.D Vial: 2
Acq On : 02 May 2012 01:33 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 2 16:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.3		3.46	1.80	NA	25	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.3		2.75	2.78	NA	30	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050212-521\0502001.D
Lab ID: KWG1204794-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/02/2012 17:19
Date Quantitated: 05/03/2012 13:45
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502001.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 17:19	**Quant Date:**	05/03/2012 13:45	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204794-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204794	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050212-521\0502.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.53	-0.06	97	30450	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.83			50	1094	1.25		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97			47	1694	1.30			
1	N-Nitrosomethylethylamine	13.57			61	1266	1.19			
1	N-Nitrosodiethylamine	15.65			75	178	1.13			
1	N-Nitrosodi-n-propylamine	20.87			89	197	1.39			
1	N-Nitrosopyrrolidine	23.22			55	3470	1.43			
1	N-Nitrosopiperidine	24.14			69	5823	1.47			
1	N-Nitrosodi-n-butylamine	26.38			57	524	1.36			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808

DataFile: J:\MS16\DATA\050212-521\0502001.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	1.796		1.250	1.000	25.0
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	2.782		1.300	1.000	30.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	2.079		1.190	1.000	19.0
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.292		1.130	1.000	13.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.323		1.390	1.000	39.0
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	5.698		1.430	1.000	43.0
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	9.562		1.470	1.000	47.0
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	0.860		1.360	1.000	36.0

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502001.D Vial: 1
Acq On : 02 May 12 17:19 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:45:01 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

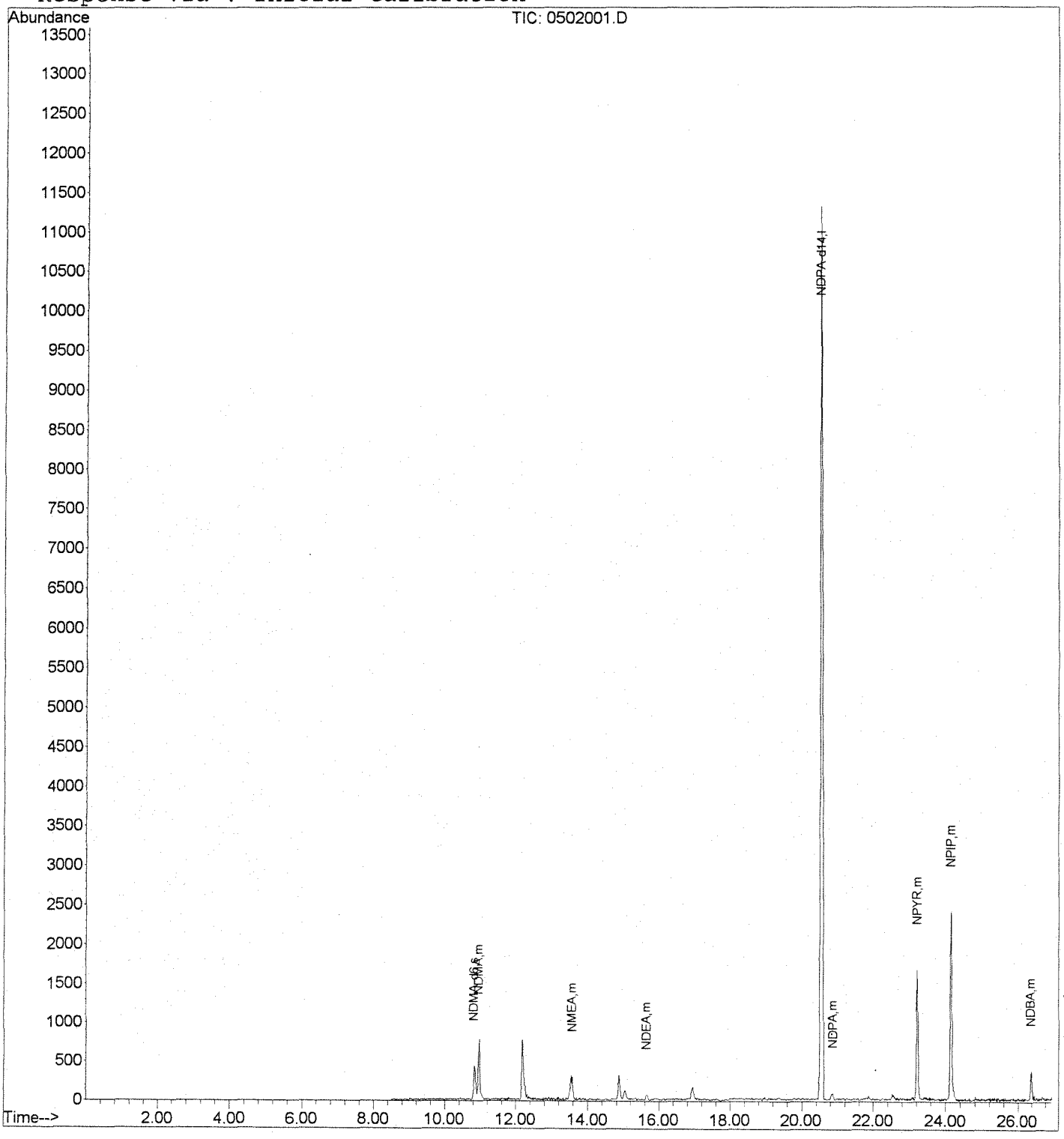
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.53	97	30450	50.00	ug/L	-0.05
System Monitoring Compounds						
3) NDMA-d6	10.83	50	1094	1.25	ug/L	-0.12
Target Compounds						Qvalue
4) NDMA	10.97	47	1694	1.30	ug/L	98
5) NMEA	13.57	61	1266	1.19	ug/L	100
6) NDEA	15.65	75	178	1.13	ug/L	100
7) NDPA	20.87	89	197	1.39	ug/L	100
8) NPYR	23.22	55	3470	1.43	ug/L	97
9) NPIP	24.14	69	5823	1.47	ug/L	100
10) NDBA	26.38	57	524	1.36	ug/L	100

(#) = qualifier out of range (m) = manual integration
0502001.D 031112_D14.M Wed May 09 12:11:50 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502001.D Vial: 1
Acq On : 02 May 12 17:19 Operator: SVO-DW
Sample : DWSTD5-53A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:45 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/02/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204794
Units: ug/L

File ID: J:\MS16\DATA\050212-521\0502008.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.1		3.46	3.43	NA	1	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.3		2.75	3.88	NA	27	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050212-521\0502008.D
Lab ID: KWG1204794-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/02/2012 22:16
Date Quantitated: 05/03/2012 13:46
Batch ID: KWG1204794
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050212-521\0502008.D			**Instrument:**	MS16
Acqu Date:	05/02/2012 22:16	**Quant Date:**	05/03/2012 13:46	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204794-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204794	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\050212-521\0502.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	-0.02	97	27043	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.84			50	9283	5.06		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.96			47	10492	6.34			
1	N-Nitrosomethylethylamine	13.55			61	9530	4.33			
1	N-Nitrosodiethylamine	15.67			75	1764	5.56			
1	N-Nitrosodi-n-propylamine	20.85			89	1569	5.49			
1	N-Nitrosopyrrolidine	23.23			55	24098	6.66			
1	N-Nitrosopiperidine	24.15			69	49139	7.64			
1	N-Nitrosodi-n-butylamine	26.40			57	15150	7.74			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808
DataFile: J:\MS16\DATA\050212-521\0502008.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	3.433		5.060	5.000	1.2
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	3.880		6.340	5.000	26.8
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	3.524		4.330	5.000	-13.4
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.652		5.560	5.000	11.2
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.580		5.490	5.000	9.8
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	8.911		6.660	5.000	33.2
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	1.8E+1		7.640	5.000	52.8 *
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	5.602		7.740	5.000	54.8 *

2 Compounds Failed CCV Criteria (25.00 Percent)

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502008.D Vial: 2
Acq On : 02 May 12 22:16 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 03 13:46:21 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

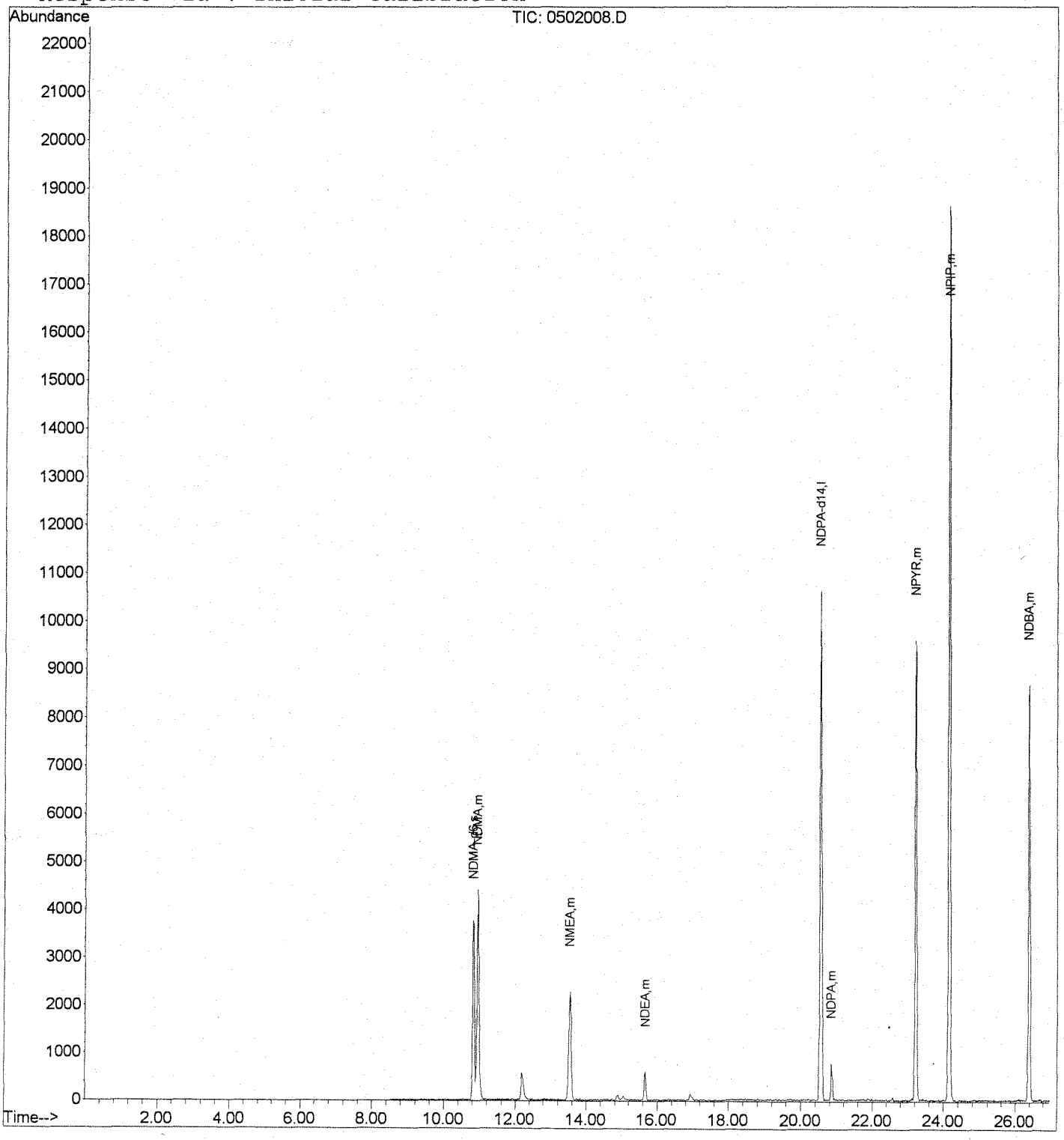
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	27043	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.84	50	9283	5.06	ug/L	-0.11
Target Compounds						Qvalue
4) NDMA	10.96	47	10492	6.34	ug/L	95
5) NMEA	13.55	61	9530	4.33	ug/L	100
6) NDEA	15.67	75	1764	5.56	ug/L	100
7) NDPA	20.85	89	1569	5.49	ug/L	100
8) NPYR	23.23	55	24098	6.66	ug/L	94
9) NPIP	24.15	69	49139	7.64	ug/L	100
10) NDBA	26.40	57	15150	7.74	ug/L	100

(#) = qualifier out of range (m) = manual integration
0502008.D 031112_D14.M Wed May 09 12:11:57 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050212-521\0502008.D Vial: 2
Acq On : 02 May 12 22:16 Operator: SVO-DW
Sample : DWSTD5-53C 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 3 13:46 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/08/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508013.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.2		3.46	1.72	NA	23	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.2		2.75	2.36	NA	16	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Exception Report

Data File: J:\MS16\DATA\050812-521\0508013.D
Lab ID: KWG1204795-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/08/2012 21:22
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review: 5/9/12

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508013.D			**Instrument:**	MS16
Acqu Date:	05/08/2012 21:22	**Quant Date:**	05/09/2012 12:13	**Vial:**	3
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204795-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204795	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.51	-0.08	97	28678	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.88			50	988	1.23		70-130	NA	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.99			47	1353	1.16			
1	N-Nitrosomethylethylamine	13.57			61	1110	1.16			
1	N-Nitrosodiethylamine	15.64			75	174	1.15			
1	N-Nitrosodi-n-propylamine	20.83			89	159	1.30			
1	N-Nitrosopyrrolidine	23.19			55	2383	1.21			
1	N-Nitrosopiperidine	24.11			69	4536	1.34			
1	N-Nitrosodi-n-butylamine	26.34			57	350	1.28			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808
DataFile: J:\MS16\DATA\050812-521\0508013.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	1.723		1.230	1.000	23.0
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	2.359		1.160	1.000	16.0
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	1.935		1.160	1.000	16.0
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.303		1.150	1.000	15.0
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.277		1.300	1.000	30.0
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	4.155		1.210	1.000	21.0
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	7.909		1.340	1.000	34.0
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	0.610		1.280	1.000	28.0

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508013.D Vial: 3
Acq On : 08 May 12 21:22 Operator: SVO-DW
Sample : DWSTD5-55J 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:30 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

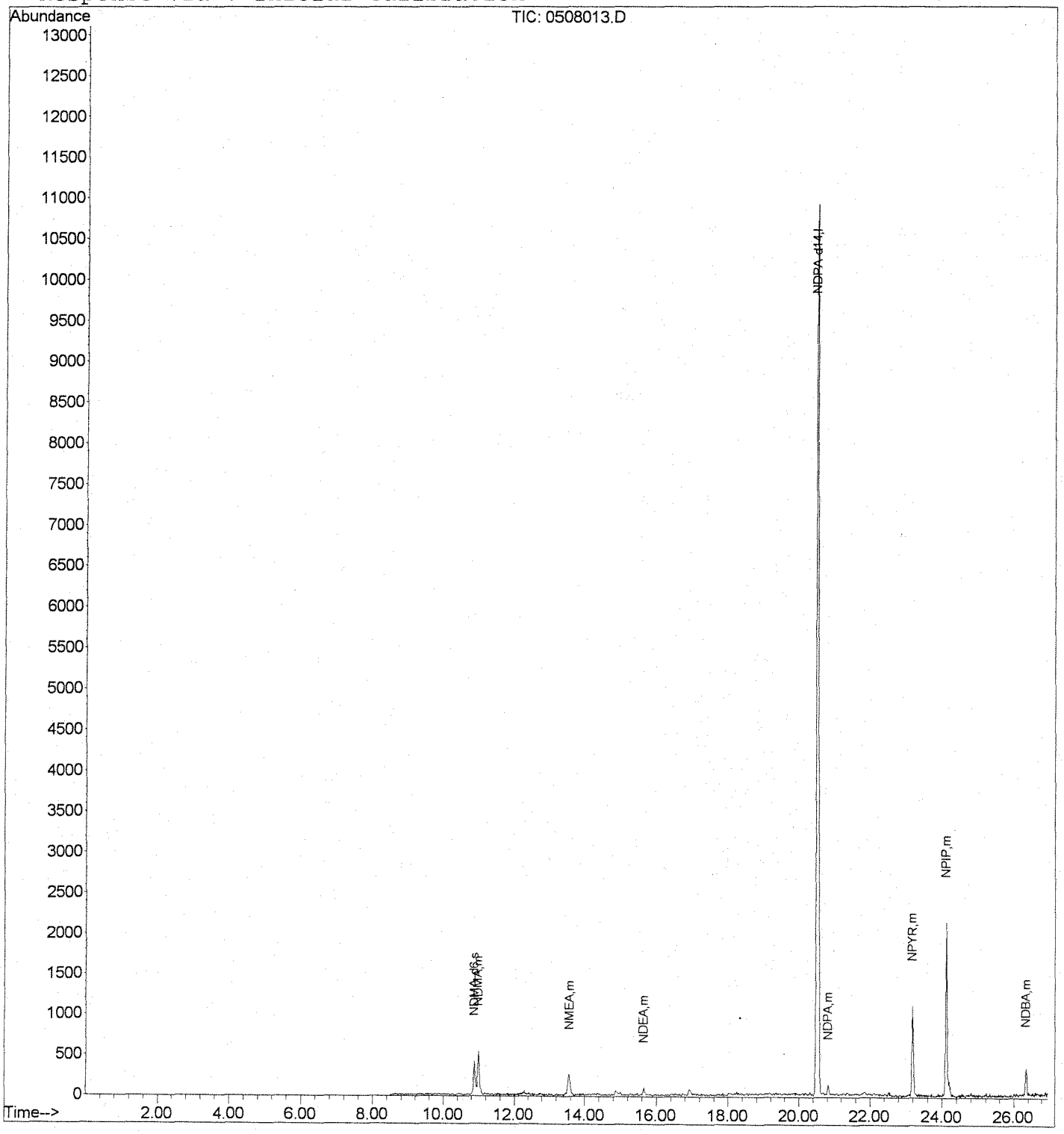
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.51	97	28678	50.00	ug/L	-0.07
System Monitoring Compounds						
3) NDMA-d6	10.88	50	988	1.23	ug/L	-0.08
Target Compounds						Qvalue
4) NDMA	10.99	47	1353	1.16	ug/L	95
5) NMEA	13.57	61	1110	1.16	ug/L	99
6) NDEA	15.64	75	174	1.15	ug/L	100
7) NDPA	20.83	89	159	1.30	ug/L	100
8) NPYR	23.19	55	2383	1.21	ug/L	94
9) NPIP	24.11	69	4536	1.34	ug/L	100
10) NDBA	26.34	57	350	1.28	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508013.D 031112_D14.M Wed May 09 12:16:16 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508013.D Vial: 3
Acq On : 08 May 12 21:22 Operator: SVO-DW
Sample : DWSTD5-55J 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/09/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1204795
Units: ug/L

File ID: J:\MS16\DATA\050812-521\0508024.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.5		3.46	3.84	NA	10	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.6		2.75	4.04	NA	31	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\050812-521\0508024.D
Lab ID: KWG1204795-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/09/2012 08:53
Date Quantitated: 05/09/2012 12:13
Batch ID: KWG1204795
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 5/9/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\050812-521\0508024.D			**Instrument:**	MS16
Acqu Date:	05/09/2012 08:53	**Quant Date:**	05/09/2012 12:13	**Vial:**	5
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204795-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/09/2012

Analysis Lot:	KWG1204795	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\050812-521\0508012.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.51	-0.06	97	27403	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.87			50	10510	5.51		70-130	NA	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.97			47	11071	6.57			
1	N-Nitrosomethylethylamine	13.54			61	11895	5.07			
1	N-Nitrosodiethylamine	15.62			75	2070	6.23			
1	N-Nitrosodi-n-propylamine	20.81			89	1950	6.43			
1	N-Nitrosopyrrolidine	23.19			55	26653	7.18			
1	N-Nitrosopiperidine	24.10			69	50086	7.68			
1	N-Nitrosodi-n-butylamine	26.33			57	17435	8.47			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Calibration Verification Report

Calibration ID: CAL11326
Method ID: MJ808

DataFile: J:\MS16\DATA\050812-521\0508024.D

Parameter Name	Type	PARM Type	Curve Fit	Method Criteria	Min RF	ICAL RF	CCV RF	%Diff	Sol'n Conc.	True Value	% Drift
N-Nitrosodimethylamine-d6		SURR	Quadratic	50		3.460	3.835		5.510	5.000	10.2
N-Nitrosodimethylamine		MS	Quadratic	50		2.747	4.040		6.570	5.000	31.4
N-Nitrosomethylethylamine		MS	Quadratic	50		4.551	4.341		5.070	5.000	1.4
N-Nitrosodiethylamine		MS	Quadratic	50		0.606	0.755		6.230	5.000	24.6
N-Nitrosodi-n-propylamine		MS	Quadratic	50		0.522	0.712		6.430	5.000	28.6
N-Nitrosopyrrolidine		MS	Quadratic	50		6.248	9.726		7.180	5.000	43.6
N-Nitrosopiperidine		MS	Quadratic	50		1.1E+1	1.8E+1		7.680	5.000	53.6 *
N-Nitrosodi-n-butylamine		MS	Quadratic	50		3.161	6.362		8.470	5.000	69.4 *

2 Compounds Failed CCV Criteria (25.00 Percent)

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508024.D Vial: 5
Acq On : 09 May 2012 08:53 Operator: SVO-DW
Sample : DWSTD5-55L 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 09 12:13:33 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

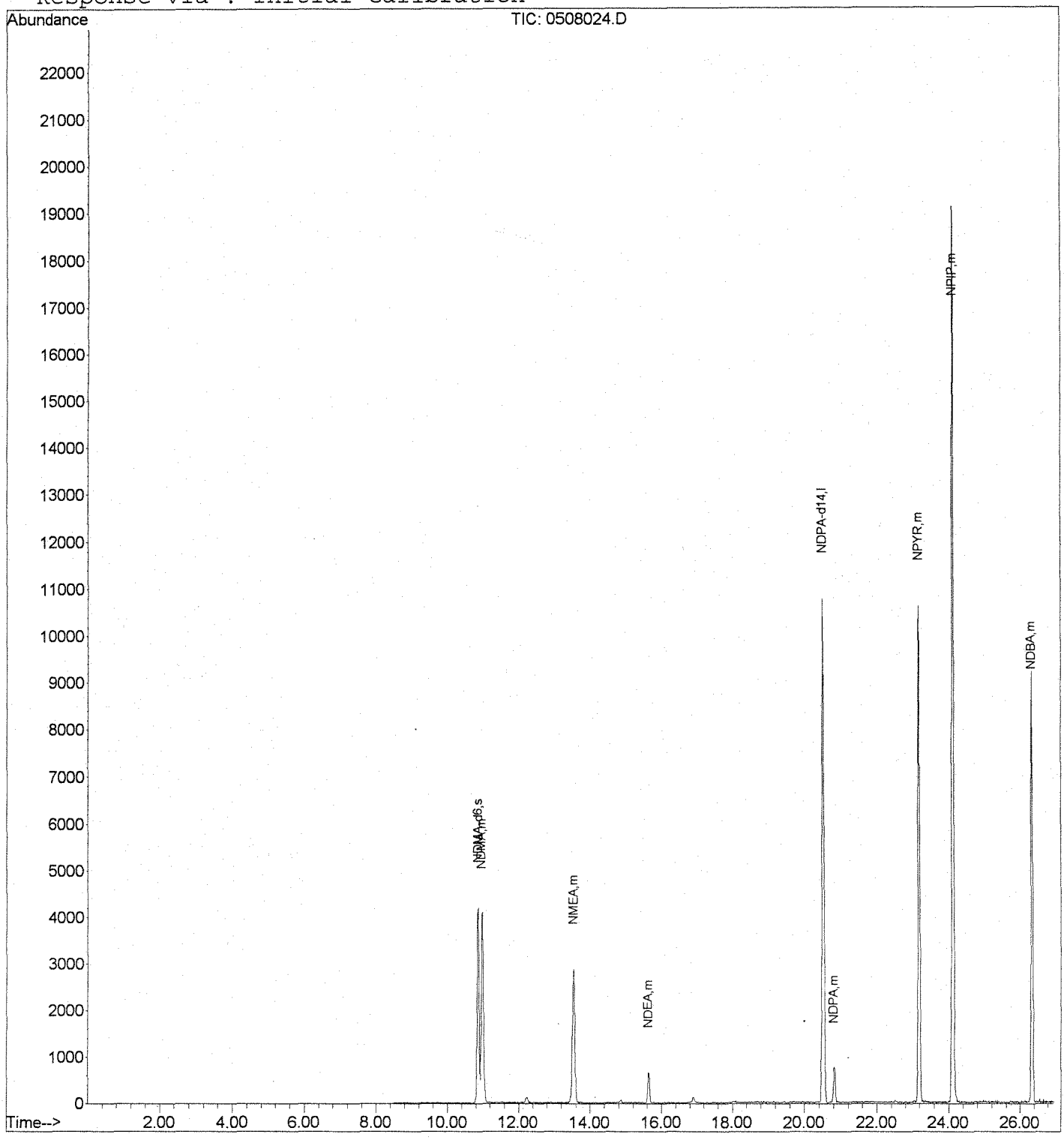
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.51	97	27403	50.00	ug/L	-0.07
System Monitoring Compounds						
3) NDMA-d6	10.87	50	10510	5.51	ug/L	-0.08
Target Compounds						Qvalue
4) NDMA	10.97	47	11071	6.57	ug/L	97
5) NMEA	13.54	61	11895	5.07	ug/L	100
6) NDEA	15.62	75	2070	6.23	ug/L	100
7) NDPA	20.81	89	1950	6.43	ug/L	100
8) NPYR	23.19	55	26653	7.18	ug/L	97
9) NPIP	24.10	69	50086	7.68	ug/L	100
10) NDBA	26.33	57	17435	8.47	ug/L	100

(#) = qualifier out of range (m) = manual integration
0508024.D 031112_D14.M Wed May 09 12:16:22 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\050812-521\0508024.D Vial: 5
Acq On : 09 May 2012 08:53 Operator: SVO-DW
Sample : DWSTD5-55L 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 9 12:13 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Sample Prep and Screen Data

Preparation Information

Group ID:	KWG1204391	**Prep Method:**	METHOD	**Prep Date:**	04/30/12 08:00
Department:	Semivoa GC				

Lab Code	Client ID	Product	Matrix	Amt. Ext.	Final Vol.
KWG1204391-1	Matrix Spike	521 Nitrosamines	WATER	500ml	1ml
KWG1204391-2	Duplicate Matrix Spike	521 Nitrosamines	WATER	500ml	1ml
KWG1204391-3	Lab Control Sample	521 Nitrosamines	WATER	500ml	1ml
KWG1204391-4	Method Blank	521 Nitrosamines	WATER	500ml	1ml
P1201573-002	MW-16	521 Nitrosamines	WATER	500ml	1ml
P1201573-003	DUPE-8-2Q12	521 Nitrosamines	WATER	500ml	1ml
P1201588-002	MW-13	521 Nitrosamines	WATER	500ml	1ml
P1201604-005	MW-24-1	521 Nitrosamines	WATER	500ml	1ml
P1201630-005	MW-4-1	521 Nitrosamines	WATER	500ml	1ml

Lab Code	Parent Lab Code	Comments
KWG1204391-1	P1201573-002	
KWG1204391-2	P1201573-002	

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
KWG1204391-1	1121342	DWSTD05-35 I	10uL	DWSTD05-55 B	100uL	
KWG1204391-2	1121343	DWSTD05-35 I	10uL	DWSTD05-55 B	100uL	
KWG1204391-3	1121344	DWSTD05-35 I	10uL	DWSTD05-55 B	100uL	
KWG1204391-4	1121345	DWSTD05-35 I	10uL			
P1201573-002	1121338	DWSTD05-35 I	10uL			
P1201573-003	1121339	DWSTD05-35 I	10uL			
P1201588-002	1121340	DWSTD05-35 I	10uL			
P1201604-005	1121341	DWSTD05-35 I	10uL			
P1201630-005	1121337	DWSTD05-35 I	10uL			

Comments:

Started By: RHayes Assisted By:

Completed By: RHayes Assisted By:

Training: Yes / No (Yes circled)

Yes / No

Reviewed By: Date: 5/9/12 Storage: 215A - F. 06

Chain of Custody

Relinquished By: Date: 4/30/12

Received By: Date: 5/1/12

~~Extracts~~ Examined: Yes / No

COLUMBIA ANALYTICAL SERVICES, INC.

Service Request No.: As listed **Date Extracted:** 4-30-12

Analyst: Rob Hayes **Method:** EPA 521

StarLims Run :

Nitrosoamines in Water

Lab ID	Client ID ISTD:	Sample Volume (mL)	Surr (mL)	MS	Residual Chlorine	Final Volume mL
P1201573-002	10 mL	500	10		<0.1	1
" -003		500	10		<0.1	1
P1201588-002		500	10		<0.1	1
P1201604-005		500	10		<0.1	1
P1201630-005		500	10		<0.1	1
MB		500	10		<0.1	1
LCS		500	10	100	<0.1	1
P1201573-002	MS	500	10	100	<0.1	1
P1201573-002	DMS	500	10	100	<0.1	1
MRL		500	10	10	<0.1	1

Comments:

DCM Lot # DF597 **MeOH Lot #** DE997 **Sulfate Lot #** 2/14/12 - J49603

SPE Cartridge Lot # 94627-EL

Surrogate ID: DuoTD05-35 I 1ppm XP 5/15/12

Spike ID : DuoTD05-55B 100ppb XP 10/30/12 ISTD: DuoTD05-496 5ppm X1 7/9/12

Vial: Amber **Extract Storage:** 21SA-F-06 **Extracts Received:** 5/11/12

Reviewed By:	**Date:** 5/9/12

Preparation Information Benchsheet

Prep Run#: 156720 **Prep WorkFlow:** OrgExtDW(14/28) **Status:** Draft
Team: Semivoa GC **Prep Method:** Method **Prep Date/Time:** 4/30/12 09:18 AM
Number of Copies to make: 4

#	Lab Code	Client ID	B#	√	Test	Matrix	Amt Ext.	pH	Int Vol	Final Vol	Surr Added	Spike Added
1	P1201573-002	MW-16	.02	✓	521/Nitrosamines	Water						
2	P1201573-003	DUPE-8-2Q12	.01	✓	521/Nitrosamines	Water						
3	P1201588-002	MW-13	.02	✓	521/Nitrosamines	Water						
4	P1201604-005	MW-24-1	.01	✓	521/Nitrosamines	Water						
5	P1201630-005	MW-4-1	.01	✓	521/Nitrosamines	Water						

Comments: used for ID only

Surrogate ID: _____ Spike ID: _____

Witnessed By: _____

Analyst: _____ Assisted By: _____

Exception Report

Batch Exceptions

Batch ID: KWG1204793

Data Path: J:\MS16\DATA\050112-521\

File ID	Laboratory ID	Client ID	Btl ID	Type	Matrix	Date Acquired	Pass	Fail	ReAnalyze?
0501001.D	KWG1204793-2	Continuing Calibration Verific		CCV	Not appli	05-01-2012 17:04	x		
0501004.D	KWG1204391-3	Lab Control Sample		LCS	Water	05-01-2012 19:12		x	
0501007.D	KWG1204391-2	Duplicate Matrix Spike		DMS	Water	05-01-2012 21:19		x	
0501008.D	P1201573-003	DUPE-8-2Q12		SMPL	Water	05-01-2012 22:01	x		
0501009.D	P1201588-002	MW-13		SMPL	Water	05-01-2012 22:44	x		
0501010.D	P1201604-005	MW-24-1		SMPL	Water	05-01-2012 23:26	x		
0501011.D	P1201630-005	MW-4-1		SMPL	Water	05-02-2012 00:09	x		
0501013.D	KWG1204793-3	Continuing Calibration Verific		CCV	Not appli	05-02-2012 01:33	x		

Reviews

Level 1: _____ Date: May 9, 2012

Level 2: _____ Date: 5/9/12

Injection Log

Directory: J:\MS16\DATA\050112-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0501.D	1.	DCM	Run # 290877	01 May 2012 28:2
2	1	0501001.D	1.	DWSTD5-53A 1 PPB		01 May 2012 29:0
3	3	0501002.D	1.	043012-MRL		01 May 2012 29:4
4	4	0501003.D	1.	043012-MB – rerun Surr low		01 May 2012 30:2
5	5	0501004.D	1.	043012-LCS – rerun Surr low		01 May 2012 31:1
6	6	0501005.D	1.	P1201573-002 – rerun Surr low		01 May 2012 31:5
7	7	0501006.D	1.	P1201573-002 MS		01 May 2012 32:3
8	8	0501007.D	1.	P1201573-002 DMS		01 May 2012 33:1
9	9	0501008.D	1.	P1201573-003		01 May 2012 34:0
10	10	0501009.D	1.	P1201588-002		01 May 2012 34:4
11	11	0501010.D	1.	P1201604-005		01 May 2012 35:2
12	12	0501011.D	1.	P1201630-005		02 May 2012 12:0
13		0501012.D	1.	CARRYOVER BLANK		02 May 2012 12:5
14	2	0501013.D	1.	DWSTD5-53C 5 PPB		02 May 2012 13:3

Exception Report

Batch Exceptions

Batch ID: KWG1204794

Data Path: J:\MS16\DATA\050212-521\

File ID	Laboratory ID	Client ID	Btl ID	Type	Matrix	Date Acquired	Pass	Fail	ReAnalyze?
0502001.D	KWG1204794-2	Continuing Calibration Verific		CCV	Not appl	05-02-2012 17:19	x		
0502002.D	KWG1204391-4	Method Blank		MB	Water	05-02-2012 18:02	x		
0502004.D	P1201573-002	MW-16		SMPL	Water	05-02-2012 19:26	x		
0502005.D	KWG1204391-1	Matrix Spike		MS	Water	05-02-2012 20:09		x	
0502008.D	KWG1204794-3	Continuing Calibration Verific		CCV	Not appl	05-02-2012 22:16	x		

Reviews

Level 1: _____ Date: May 9, 2012

Level 2: _____ Date: 5/9/12

Injection Log

Directory: J:\MS16\DATA\050212-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0502.D	1.	DCM		02 May 2012 28:3
2	1	0502001.D	1.	DWSTD5-53A 1 PPB		02 May 2012 29:1
3	4	0502002.D	1.	043012-MB		02 May 2012 30:0
4	5	0502003.D	1.	043012-LCS – report ~~NR, report orig~~ Recov NR recvn		02 May 2012 30:4
5	6	0502004.D	1.	P1201573-002		02 May 2012 31:2
6	7	0502005.D	1.	P1201573-002 MS		02 May 2012 32:0
7	8	0502006.D	1.	P1201573-002 DMS - NR recvn		02 May 2012 32:5
8		0502007.D	1.	CARRYOVER BLANK		02 May 2012 33:3
9	2	0502008.D	1.	DWSTD5-53C 5 PPB		02 May 2012 34:1

Exception Report

Batch Exceptions

Batch ID: KWG1204795

Data Path: J:\MS16\DATA\050812-521\

File ID	Laboratory ID	Client ID	Btl ID	Type	Matrix	Date Acquired	Pass	Fail	ReAnalyze?
0508013.D	KWG1204795-2	Continuing Calibration Verific		CCV	Not appli	05-08-2012 21:22	x		
0508016.D	KWG1204391-3	Lab Control Sample		LCS	Water	05-08-2012 23:29		x	
0508019.D	KWG1204391-2	Duplicate Matrix Spike		DMS	Water	05-09-2012 01:36		x	
0508024.D	KWG1204795-3	Continuing Calibration Verific		CCV	Not appli	05-09-2012 08:53	x		

Reviews

Level 1: _____ Date: May 9, 2012

Level 2: _____ Date: 5/9/12

Injection Log

Directory: J:\MS16\DATA\050812-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0508.D	1.	DCM		08 May 2012 23:0
2	1	0508001.D	1.	DWSTD5-55H 0.25 PPB		08 May 2012 23:4
3	2	0508002.D	1.	DWSTD5-55I 0.5 PPB	MK reinject	08 May 2012 25:3
4	3	0508003.D	1.	DWSTD5-55J 1 PPB		08 May 2012 26:1
5	2	0508004.D	1.	DWSTD5-55I 0.5 PPB		08 May 2012 27:0
6	4	0508005.D	1.	DWSTD5-55K 2 PPB		08 May 2012 27:4
7	5	0508006.D	1.	DWSTD5-55L 5 PPB		08 May 2012 28:2
8	6	0508007.D	1.	DWSTD5-55M 7 PPB		08 May 2012 29:0
9	7	0508008.D	1.	DWSTD5-55N 10 PPB	NR, not needed	08 May 2012 29:5
10	8	0508009.D	1.	DWSTD5-55O 15 PPB		08 May 2012 30:3
11	9	0508010.D	1.	DWSTD5-55P 20 PPB		08 May 2012 31:1
12	10	0508011.D	1.	DWSTD5-56B ICV 10		08 May 2012 31:5
13		0508012.D	1.	DCM		08 May 2012 32:3
14	3	0508013.D	1.	DWSTD5-55J 1 PPB		08 May 2012 33:2
15	11	0508014.D	1.	043012-MRL		08 May 2012 34:0
16	12	0508015.D	1.	043012-MB		08 May 2012 34:4
17	13	0508016.D	1.	043012-LCS (Surr only)		08 May 2012 35:2
18	14	0508017.D	1.	P1201573-002		09 May 2012 12:1
19	15	0508018.D	1.	P1201573-002 MS		09 May 2012 12:5
20	16	0508019.D	1.	P1201573-002 DMS (Surr only)		09 May 2012 13:3
21	17	0508020.D	1.	P1201573-003		09 May 2012 14:1
22	18	0508021.D	1.	P1201588-002		09 May 2012 15:0
23	19	0508022.D	1.	P1201604-005		09 May 2012 15:4
24		0508023.D	1.	CARRYOVER BLANK		09 May 2012 20:1
25	5	0508024.D	1.	DWSTD5-55L 5 PPB	NDMA FAIL 4	09 May 2012 20:5

1,4-Dioxane

Organic Analysis:
1,4-Dioxane by GC/MS

Summary Package

Sample and QC Results

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201630

Cover Page - Organic Analysis Data Package
1,4-Dioxane by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
MW-4-1	P1201630-005	04/26/2012	04/26/2012

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Carl Dagen

Date: 5/9/12 Title: Group Supervisor

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	04/26/2012
Sample Matrix:	Water	**Date Received:**	04/26/2012

1,4-Dioxane by GC/MS

Sample Name:	MW-4-1	**Units:**	ug/L
Lab Code:	P1201630-005	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	97	48-118	05/03/12	Acceptable

Comments:

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1204380-5	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	90	48-118	05/03/12	Acceptable

Comments:

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630

Surrogate Recovery Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	K1203834-003	80
MW-4-1	P1201630-005	97
Method Blank	KWG1204380-5	90
Batch QCMS	KWG1204380-1	80
Batch QCDMS	KWG1204380-2	80
Lab Control Sample	KWG1204380-3	93
Duplicate Lab Control Sample	KWG1204380-4	96

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Dioxane-d8	48-118

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/03/2012
Time Analyzed: 16:29

Internal Standard Area and RT Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F003.D
Instrument ID: MS26
Analysis Method: 8270D SIM

Lab Code: KWG1204586-2
Analysis Lot: KWG1204586

		1,4-Dichlorobenzene-d4	
		Area	RT
	Results ==>	14,092	5.28
	Upper Limit ==>	28,184	5.78
	Lower Limit ==>	7,046	4.78
	ICAL Result ==>	15,754	5.29
Associated Analyses			
Method Blank	KWG1204380-5	14,307	5.28
Lab Control Sample	KWG1204380-3	15,930	5.28
Duplicate Lab Control Sample	KWG1204380-4	14,308	5.27
Batch QCMS	KWG1204380-1	14,342	5.27
Batch QCDMS	KWG1204380-2	13,718	5.27
Batch QC	K1203834-003	16,251	5.28
MW-4-1	P1201630-005	15,604	5.28

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012

Matrix Spike/Duplicate Matrix Spike Summary
1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1203834-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

Analyte Name	Sample Result	Batch QCMS KWG1204380-1 Matrix Spike			Batch QCDMS KWG1204380-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,4-Dioxane	ND	24.3	25.0	97	23.8	25.0	95	33-127	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630
Date Extracted: 04/30/2012
Date Analyzed: 05/03/2012

Lab Control Spike/Duplicate Lab Control Spike Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1204380

	Lab Control Sample KWG1204380-3 Lab Control Spike			Duplicate Lab Control Sample KWG1204380-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,4-Dioxane	23.6	25.0	94	22.8	25.0	91	52-111	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	16:48

Method Blank Summary
1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS26
Lab Code:	KWG1204380-5	**File ID:**	J:\MS26\DATA\050312\0503F004.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/12	17:08
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/12	17:27
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-4-1	P1201630-005	J:\MS26\DATA\050312\0503F019.D	05/03/12	21:35

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	17:08

Lab Control Sample Summary
1,4-Dioxane by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS26
Lab Code:	KWG1204380-3	**File ID:**	J:\MS26\DATA\050312\0503F005.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/12	16:48
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-4-1	P1201630-005	J:\MS26\DATA\050312\0503F019.D	05/03/12	21:35

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/03/2012
Time Analyzed: 16:10

Tune Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F002.D
Instrument ID: MS26
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1204586

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.9	55287	PASS
68	69	0	2	1.3	1000	PASS
69	198	0	100	23.0	75190	PASS
70	69	0	2	0.4	321	PASS
127	198	10	80	41.2	134864	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	53.1	327258	PASS
199	198	5	9	6.7	22072	PASS
275	198	10	60	28.6	93752	PASS
365	442	1	50	2.1	12870	PASS
441	443	0	100	73.0	87834	PASS
442	442	100	100	100.0	615872	PASS
443	442	15	24	19.5	120280	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1204586-2	J:\MS26\DATA\050312\0503F003.D	05/03/2012	16:29	
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/2012	16:48	
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/2012	17:08	
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/2012	17:27	
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/2012	17:46	
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/2012	18:05	
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/2012	18:24	
MW-4-1	P1201630-005	J:\MS26\DATA\050312\0503F019.D	05/03/2012	21:35	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201630
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26
Column: MS

Level ID	File ID
A	J:\MS26\DATA\041112\0411F009.D
B	J:\MS26\DATA\041112\0411F010.D
C	J:\MS26\DATA\041112\0411F011.D
D	J:\MS26\DATA\041112\0411F012.D
E	J:\MS26\DATA\041112\0411F013.D
F	J:\MS26\DATA\041112\0411F014.D
G	J:\MS26\DATA\041112\0411F015.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,4-Dioxane	A	2.0	0.346	B	4.0	0.323	C	10	0.385	D	20	0.376	E	50	0.406
	F	100	0.417	G	200	0.401									
1,4-Dioxane-d8	A	2.0	0.360	B	4.0	0.348	C	10	0.389	D	20	0.384	E	50	0.381
	F	100	0.407	G	200	0.394									

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,4-Dioxane	MS	AverageRF	% RSD	9.0		≤ 20	0.379		0.01
1,4-Dioxane-d8	SURR	AverageRF	% RSD	5.4		≤ 20	0.380		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Calibration Date: 04/11/2012
Date Analyzed: 04/11/2012

Second Source Calibration Verification
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL11446
Units: ng/ml

File ID: J:\MS26\DATA\041112\0411F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	21	0.379	0.404	7	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/03/2012

Continuing Calibration Verification Summary
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 04/11/2012
Calibration ID: CAL11446
Analysis Lot: KWG1204586
Units: ng/ml

File ID: J:\MS26\DATA\050312\0503F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	20	0.01	0.379	0.376	-1	NA	± 20 %	AverageRF
1,4-Dioxane-d8	20	17	0.01	0.380	0.314	-17	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle **Service Request:** P1201630
Project: JPL GW Mon. 2Q12/100006114

Analysis Run Log
1,4-Dioxane by GC/MS

Analysis Method: 8270D SIM **Analysis Lot:** KWG1204586
Instrument ID: MS26

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0503F002.D	GC/MS Tuning - Generic	KWG1204586-1	5/3/2012	16:10		5/3/2012	16:20
0503F003.D	Continuing Calibration Verification	KWG1204586-2	5/3/2012	16:29		5/3/2012	16:39
0503F004.D	Method Blank	KWG1204380-5	5/3/2012	16:48		5/3/2012	16:58
0503F005.D	Lab Control Sample	KWG1204380-3	5/3/2012	17:08		5/3/2012	17:18
0503F006.D	Duplicate Lab Control Sample	KWG1204380-4	5/3/2012	17:27		5/3/2012	17:37
0503F007.D	Batch QCMS	KWG1204380-1	5/3/2012	17:46		5/3/2012	17:56
0503F008.D	Batch QCDMS	KWG1204380-2	5/3/2012	18:05		5/3/2012	18:15
0503F009.D	Batch QC	K1203834-003	5/3/2012	18:24		5/3/2012	18:34
0503F010.D	ZZZZZZ	ZZZZZZ	5/3/2012	18:43		5/3/2012	18:53
0503F011.D	ZZZZZZ	ZZZZZZ	5/3/2012	19:02		5/3/2012	19:12
0503F012.D	ZZZZZZ	ZZZZZZ	5/3/2012	19:21		5/3/2012	19:31
0503F013.D	ZZZZZZ	ZZZZZZ	5/3/2012	19:40		5/3/2012	19:50
0503F014.D	ZZZZZZ	ZZZZZZ	5/3/2012	20:00		5/3/2012	20:10
0503F015.D	ZZZZZZ	ZZZZZZ	5/3/2012	20:19		5/3/2012	20:29
0503F016.D	ZZZZZZ	ZZZZZZ	5/3/2012	20:38		5/3/2012	20:48
0503F017.D	ZZZZZZ	ZZZZZZ	5/3/2012	20:57		5/3/2012	21:07
0503F018.D	ZZZZZZ	ZZZZZZ	5/3/2012	21:16		5/3/2012	21:26
0503F019.D	MW-4-1	P1201630-005	5/3/2012	21:35		5/3/2012	21:45

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630
Date Extracted: 04/30/2012

Extraction Prep Log
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Extraction Lot: KWG1204380
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MW-4-1	P1201630-005	04/26/12	04/26/12	100ml	50ml	NA	
Method Blank	KWG1204380-5	NA	NA	100ml	50ml	NA	
Batch QC	K1203834-003	NA	NA	100ml	50ml	NA	
Batch QCMS	KWG1204380-1	NA	NA	100ml	50ml	NA	
Batch QCDMS	KWG1204380-2	NA	NA	100ml	50ml	NA	
Lab Control Sample	KWG1204380-3	NA	NA	100ml	50ml	NA	
Duplicate Lab Control Sample	KWG1204380-4	NA	NA	100ml	50ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

QC Reports

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630

Surrogate Recovery Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Batch QC	K1203834-003	80
MW-4-1	P1201630-005	97
Method Blank	KWG1204380-5	90
Batch QCMS	KWG1204380-1	80
Batch QCDMS	KWG1204380-2	80
Lab Control Sample	KWG1204380-3	93
Duplicate Lab Control Sample	KWG1204380-4	96

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Dioxane-d8	48-118

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/03/2012
Time Analyzed: 16:29

Internal Standard Area and RT Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F003.D
Instrument ID: MS26
Analysis Method: 8270D SIM

Lab Code: KWG1204586-2
Analysis Lot: KWG1204586

		1,4-Dichlorobenzene-d4	
		Area	RT
	Results ==>	14,092	5.28
	Upper Limit ==>	28,184	5.78
	Lower Limit ==>	7,046	4.78
	ICAL Result ==>	15,754	5.29
Associated Analyses			
Method Blank	KWG1204380-5	14,307	5.28
Lab Control Sample	KWG1204380-3	15,930	5.28
Duplicate Lab Control Sample	KWG1204380-4	14,308	5.27
Batch QCMS	KWG1204380-1	14,342	5.27
Batch QCDMS	KWG1204380-2	13,718	5.27
Batch QC	K1203834-003	16,251	5.28
MW-4-1	P1201630-005	15,604	5.28

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012

Matrix Spike/Duplicate Matrix Spike Summary
1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1203834-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

Analyte Name	Sample Result	Batch QCMS KWG1204380-1 Matrix Spike			Batch QCDMS KWG1204380-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,4-Dioxane	ND	24.3	25.0	97	23.8	25.0	95	33-127	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630
Date Extracted: 04/30/2012
Date Analyzed: 05/03/2012

Lab Control Spike/Duplicate Lab Control Spike Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1204380

	Lab Control Sample KWG1204380-3 Lab Control Spike			Duplicate Lab Control Sample KWG1204380-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,4-Dioxane	23.6	25.0	94	22.8	25.0	91	52-111	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	16:48

Method Blank Summary
1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS26
Lab Code:	KWG1204380-5	**File ID:**	J:\MS26\DATA\050312\0503F004.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/12	17:08
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/12	17:27
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-4-1	P1201630-005	J:\MS26\DATA\050312\0503F019.D	05/03/12	21:35

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Extracted:**	04/30/2012
Sample Matrix:	Water	**Date Analyzed:**	05/03/2012
		Time Analyzed:	17:08

Lab Control Sample Summary
1,4-Dioxane by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS26
Lab Code:	KWG1204380-3	**File ID:**	J:\MS26\DATA\050312\0503F005.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1204380

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/12	16:48
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/12	17:46
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/12	18:05
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/12	18:24
MW-4-1	P1201630-005	J:\MS26\DATA\050312\0503F019.D	05/03/12	21:35

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Raw Data

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	04/26/2012
Sample Matrix:	Water	**Date Received:**	04/26/2012

1,4-Dioxane by GC/MS

Sample Name:	MW-4-1	**Units:**	ug/L
Lab Code:	P1201630-005	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	97	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F019.D
Lab ID: P1201630-005
RunType: SMPL
Matrix: WATER

Date Acquired: 05/03/2012 21:35
Date Quantitated: 05/04/2012 08:46
Batch ID: KWG1204586
Analysis Method: 8270D SIM
ListJoinID: LJ2865

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Duplicate Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: LB MAY 04 2012

Secondary Review: CH 05·04·12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F019.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 21:35	**Quant Date:**	05/04/2012 08:46	**Vial:**	19
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201630-005			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**	04/26/2012	**Receive Date:**	04/26/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	P1201630
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121258	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:	1,4-Dioxane by GC/MS	**Report List ID:**	LJ2865
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.00?	152	15604	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.21	0.02	0.00	96	5777	48.68	97	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F019.D Vial: 19
Acq On : 3 May 2012 9:35 pm Operator: KBailey
Sample : P1201630-005 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:23 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	15604	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.21	96	5777	48.68	ng/ml	-0.02
Spiked Amount 50.000			Recovery =	97.36%		

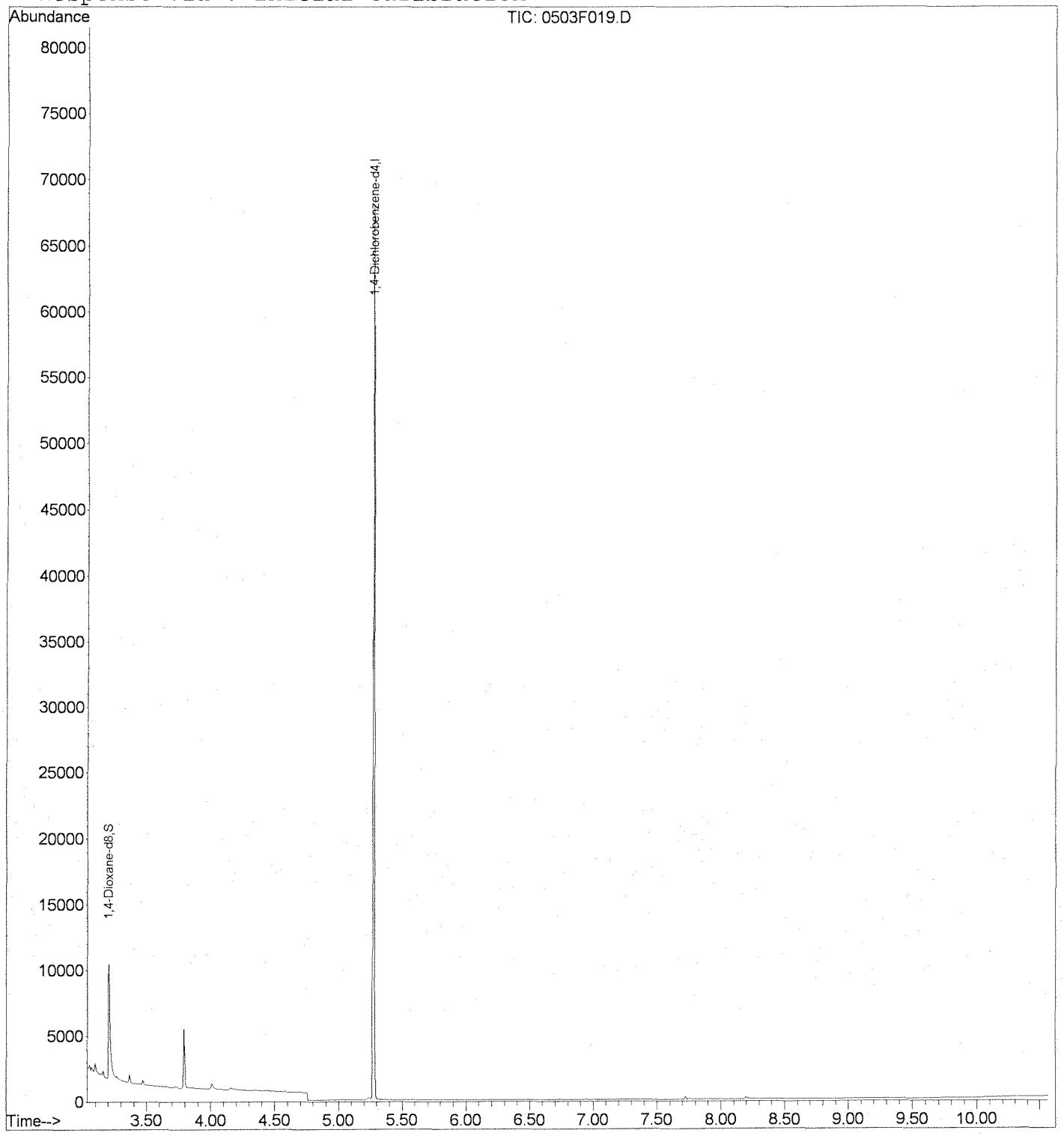
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration
0503F019.D 041112_DX.M Fri May 04 08:54:37 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F019.D Vial: 19
Acq On : 3 May 2012 9:35 pm Operator: KBailey
Sample : P1201630-005 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1204380-5	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	90	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F004.D
Lab ID: KWG1204380-5
RunType: MB
Matrix: WATER

Date Acquired: 05/03/2012 16:48
Date Quantitated: 05/04/2012 08:46
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

L3834
L3902
P1573
P1588
P1LC4
P1L30

Primary Review: LCB MAY 04 2012

Secondary Review: CK 05·04·12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F004.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 16:48	**Quant Date:**	05/04/2012 08:46	**Vial:**	4
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1204380-5			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121267	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.00?	152	14307	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.20	0.01	0.00	96	4916	45.18	90	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (Not Reviewed)

Data File : J:\MS26\DATA\050312\0503F004.D Vial: 4
Acq On : 3 May 2012 4:48 pm Operator: KBailey
Sample : KWG1204380-5 | MB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:19 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

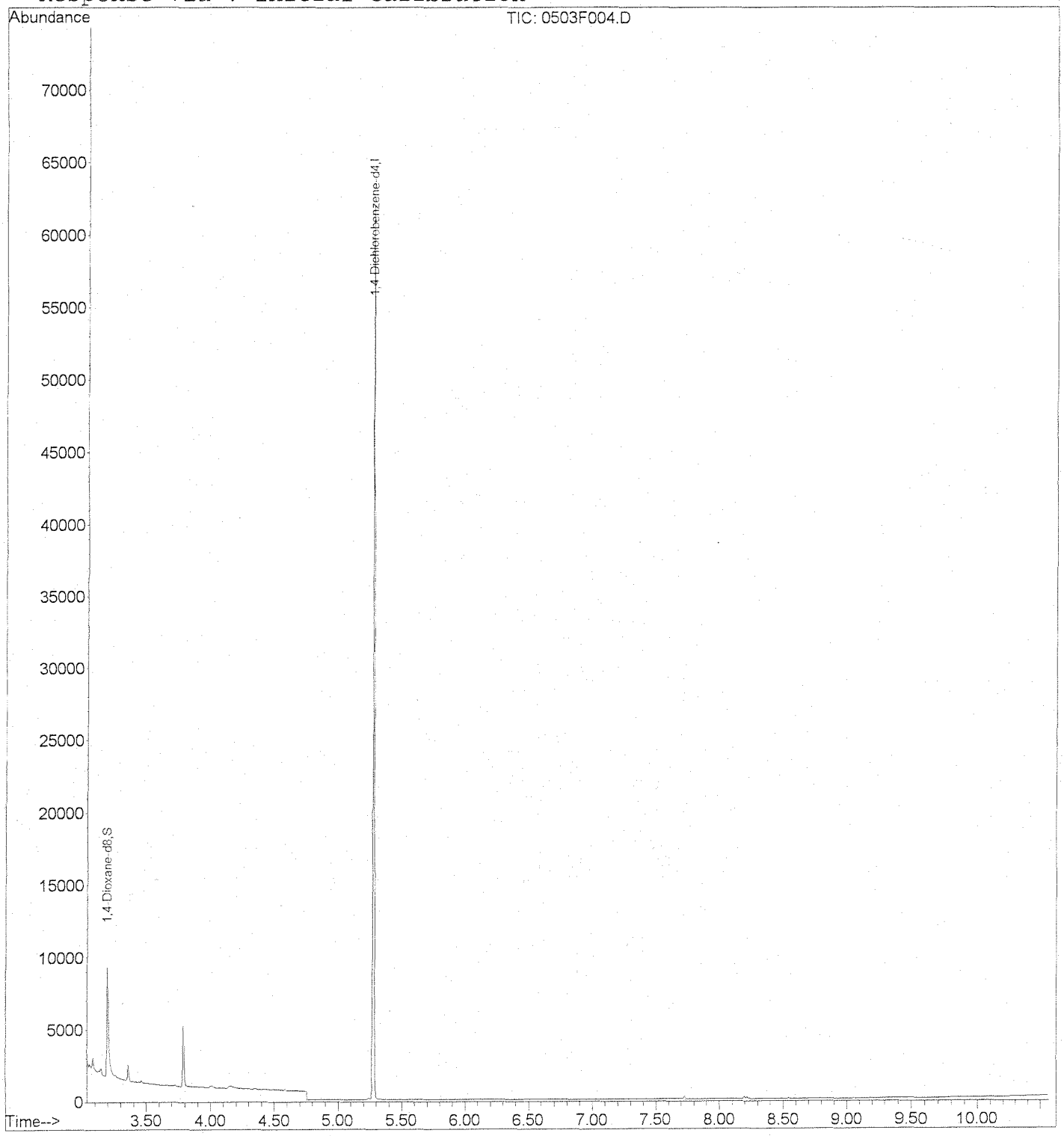
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	14307	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.20	96	4916	45.18	ng/ml	-0.03
Spiked Amount 50.000			Recovery = 90.36%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration
0503F004.D 041112_DX.M Fri May 04 08:54:29 2012 Page 1

Quantitation Report (Not Reviewed)

Data File : J:\MS26\DATA\050312\0503F004.D Vial: 4
Acq On : 3 May 2012 4:48 pm Operator: KBailey
Sample : KWG1204380-5 | MB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1203834-003	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	80	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F009.D
Lab ID: K1203834-003
RunType: SMPL
Matrix: WATER

Date Acquired: 05/03/2012 18:24
Date Quantitated: 05/04/2012 08:48
Batch ID: KWG1204586
Analysis Method: 8270D SIM
ListJoinID: LJ2865

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Duplicate Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
LC3902
P1573
P1588
P1604
P1630

Primary Review: LS MAY 04 2012

Secondary Review: CH 05.04.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F009.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 18:24	**Quant Date:**	05/04/2012 08:48	**Vial:**	9
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	K1203834-003			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	V	**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**	04/23/2012	**Receive Date:**	04/25/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	K1203834
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121255	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:	1,4-Dioxane by GC/MS	**Report List ID:**	LJ2865
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.007	152	16251	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.22	0.03	0.01	96	4920m	39.81	80	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F009.D Vial: 9
Acq On : 3 May 2012 6:24 pm Operator: KBailey
Sample : K1203834-003 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:21 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	16251	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	4920m	39.81	ng/ml	-0.01
Spiked Amount 50.000			Recovery =	79.62%		

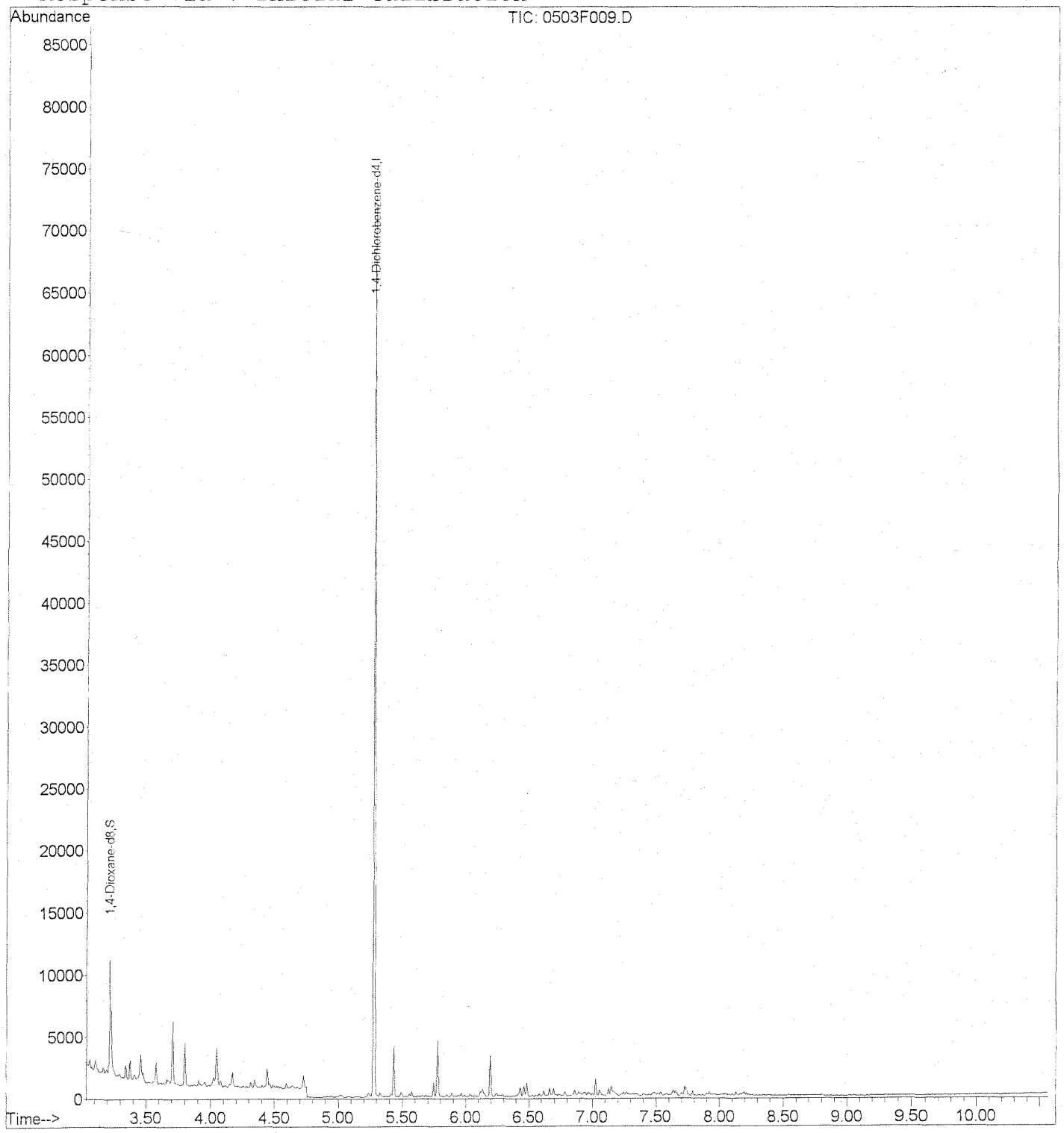
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration
0503F009.D 041112_DX.M Fri May 04 08:54:32 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F009.D Vial: 9
Acq On : 3 May 2012 6:24 pm Operator: KBailey
Sample : K1203834-003 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:48 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration



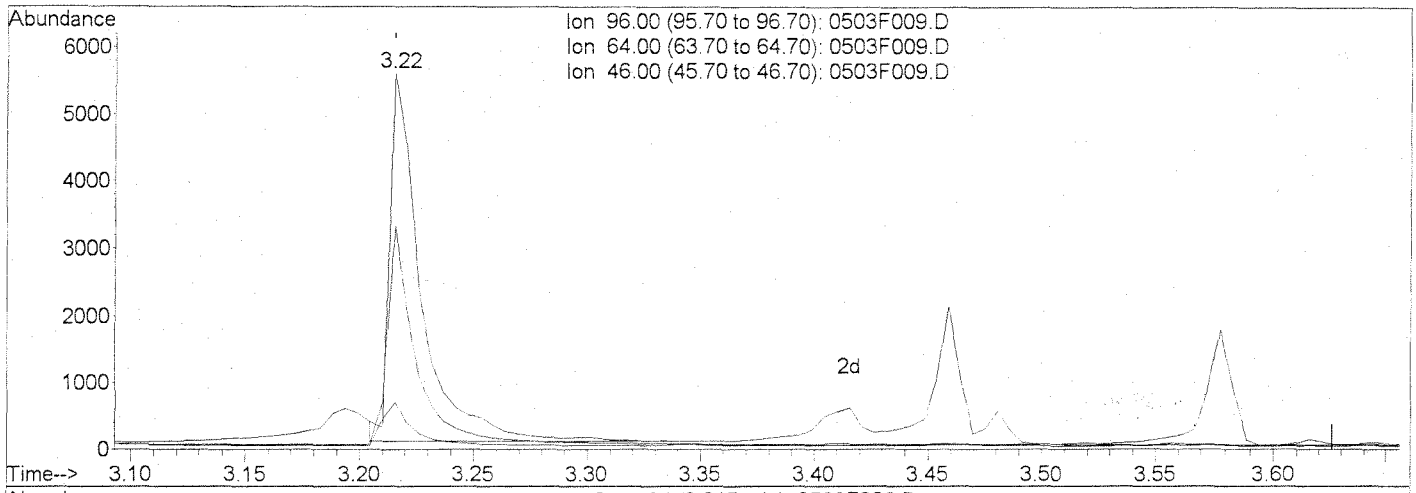
Quantitation Report (Qedit)

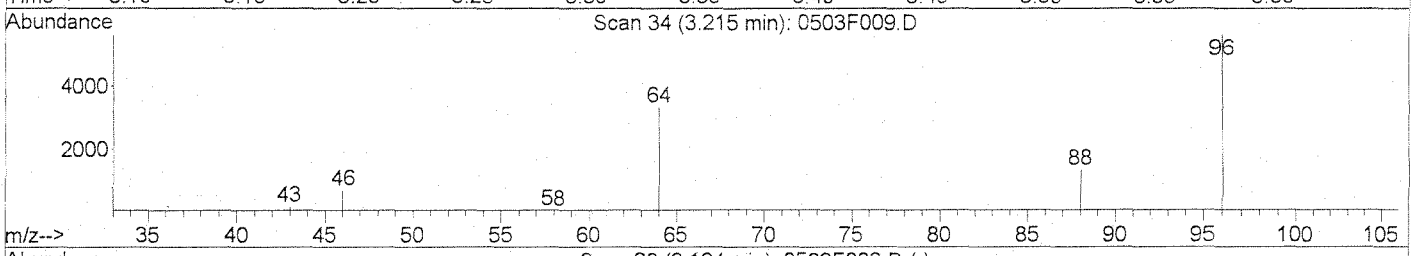
Data File : J:\MS26\DATA\050312\0503F009.D
Acq On : 3 May 2012 6:24 pm
Sample : K1203834-003
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012

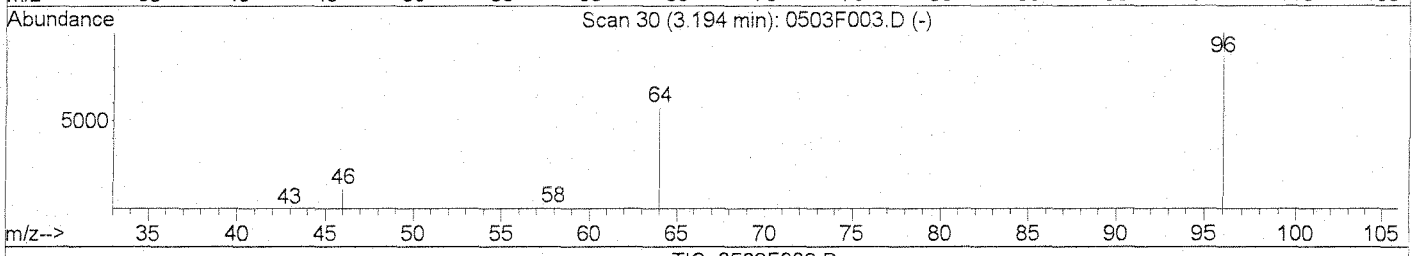
Vial: 9
Operator: KBailey
Inst : MS26
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F009.D

(2) 1,4-Dioxane-d8 (S)

3.22min 43.05ng/ml

response 5320

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	59.32
46.00	9.50	11.67
0.00	0.00	0.00

Manual Integration:

Before

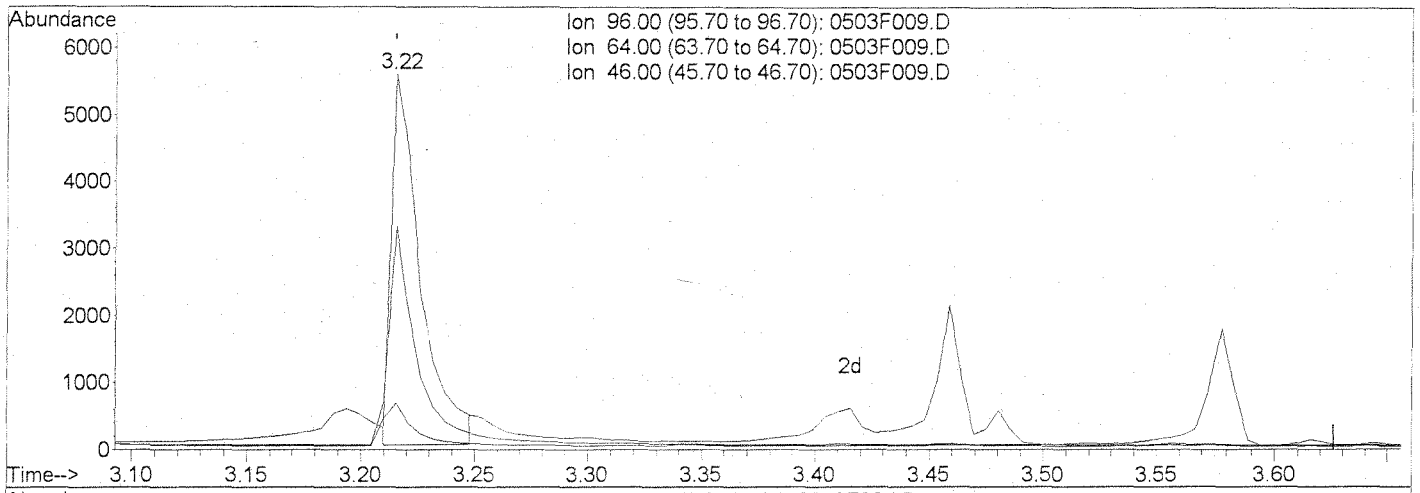
0503F009.D 041112_DX.M Fri May 04 08:48:05 2012

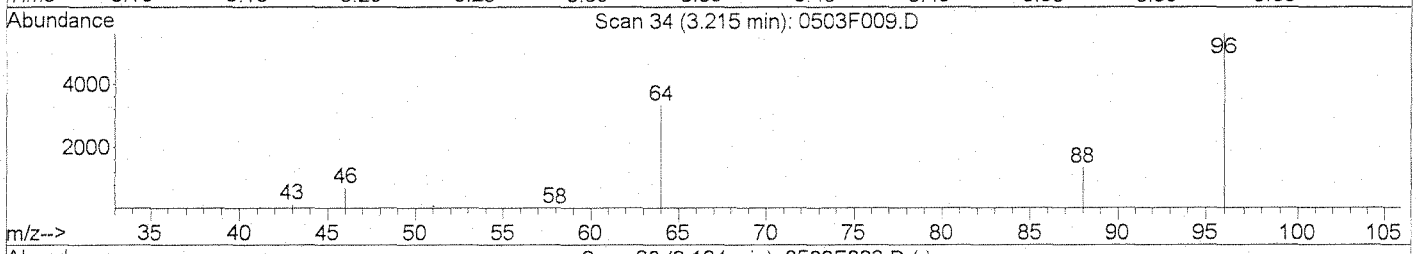
Quantitation Report (Qedit)

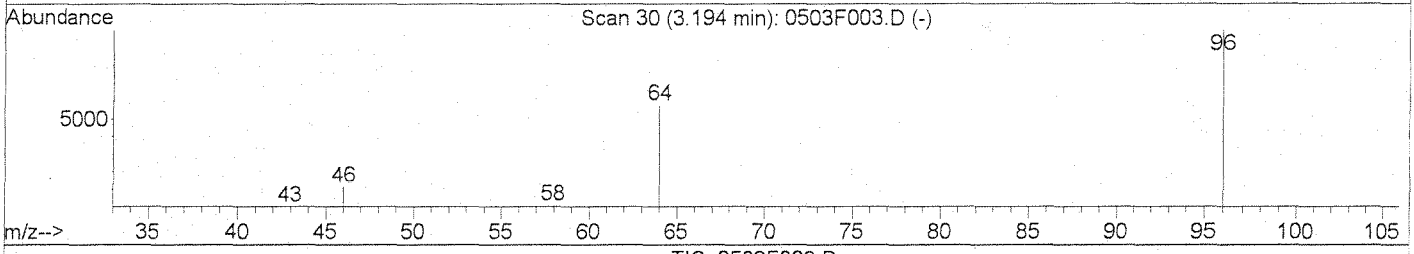
Data File : J:\MS26\DATA\050312\0503F009.D
Acq On : 3 May 2012 6:24 pm
Sample : K1203834-003
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:48 2012

Vial: 9
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F009.D

(2) 1,4-Dioxane-d8 (S)

3.22min 39.81ng/ml m

response 4920

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	59.36
46.00	9.50	12.44
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F009.D 041112_DX.M Fri May 04 08:48:15 2012

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QCMS	**Units:**	ug/L
Lab Code:	KWG1204380-1	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**24.3**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	80	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F007.D
Lab ID: KWG1204380-1 -- K1203834-003MS
RunType: MS
Matrix: WATER

Date Acquired: 05/03/2012 17:46
Date Quantitated: 05/04/2012 08:47
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
L3902
P1573
P1588
Pilot
PIL30

Primary Review: MAY 04 2012

Secondary Review: 05-04-12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F007.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 17:46	**Quant Date:**	05/04/2012 08:47	**Vial:**	7
Run Type:	MS			**Dilution:**	1.0
Lab ID:	KWG1204380-1 -- K1203834-003MS			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121263	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	14342	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.18	-0.01	0.00	96	4336m	39.76	80	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.19	-0.02	0.00	88	5291m	48.65	24.3		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

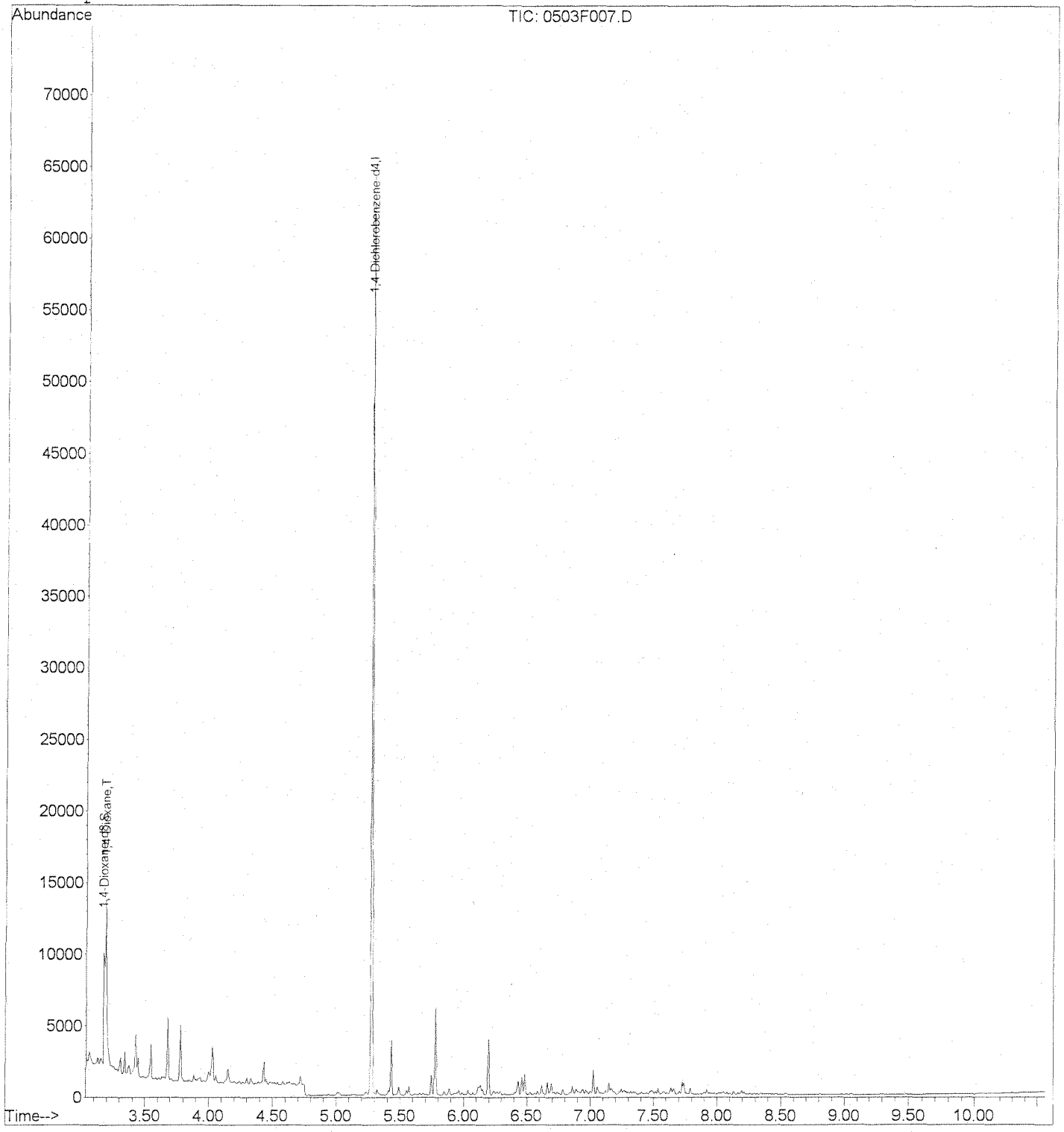
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	14342	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.18	96	4336m	39.76	ng/ml	-0.05
Spiked Amount 50.000			Recovery =	79.52%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.19	88	5291m	48.65	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F007.D 041112_DX.M Fri May 04 08:54:30 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: 041112_DX.RE

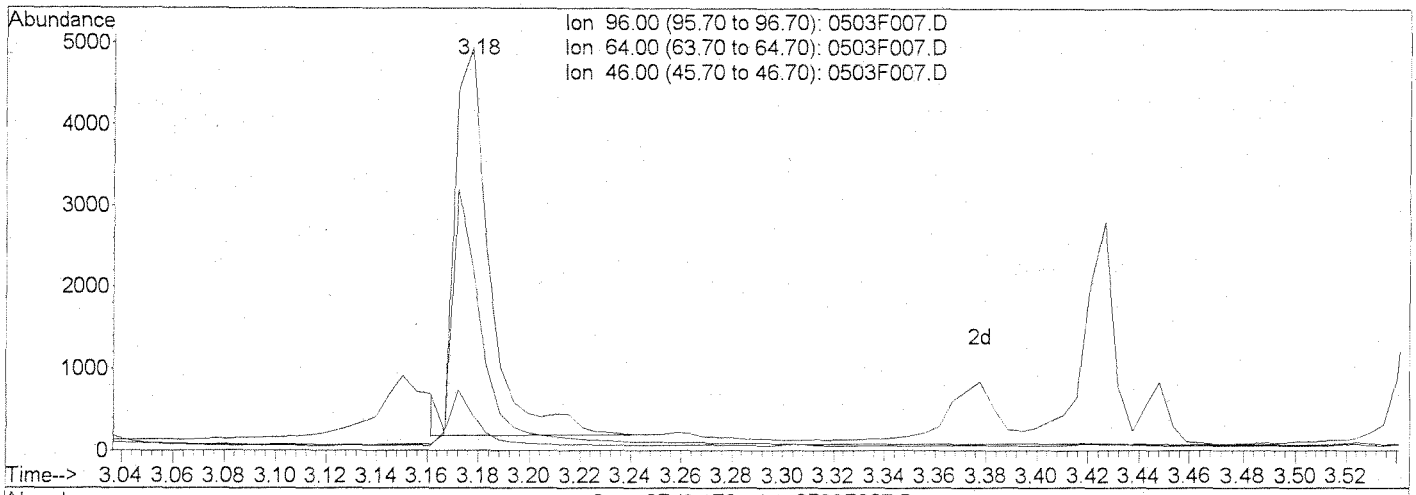
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

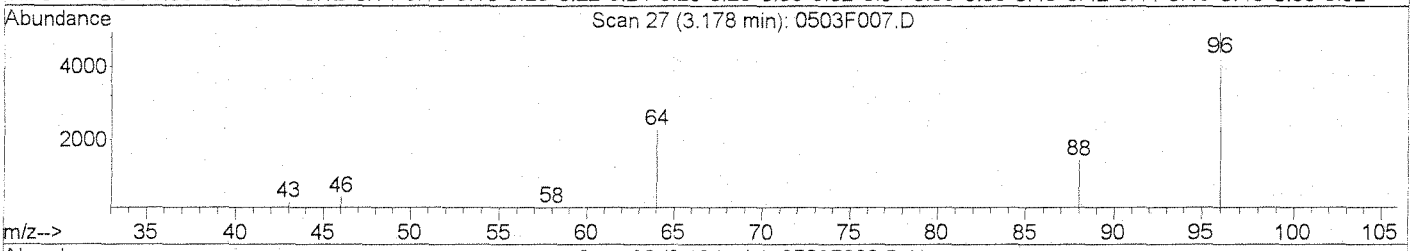


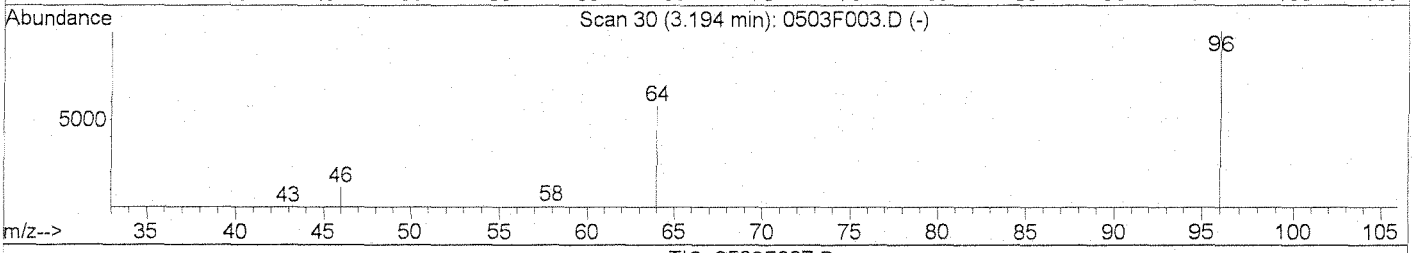
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F007.D

(2) 1,4-Dioxane-d8 (S)

3.18min 40.96ng/ml

response 4467

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	46.36
46.00	9.50	8.07
0.00	0.00	0.00

Manual Integration:

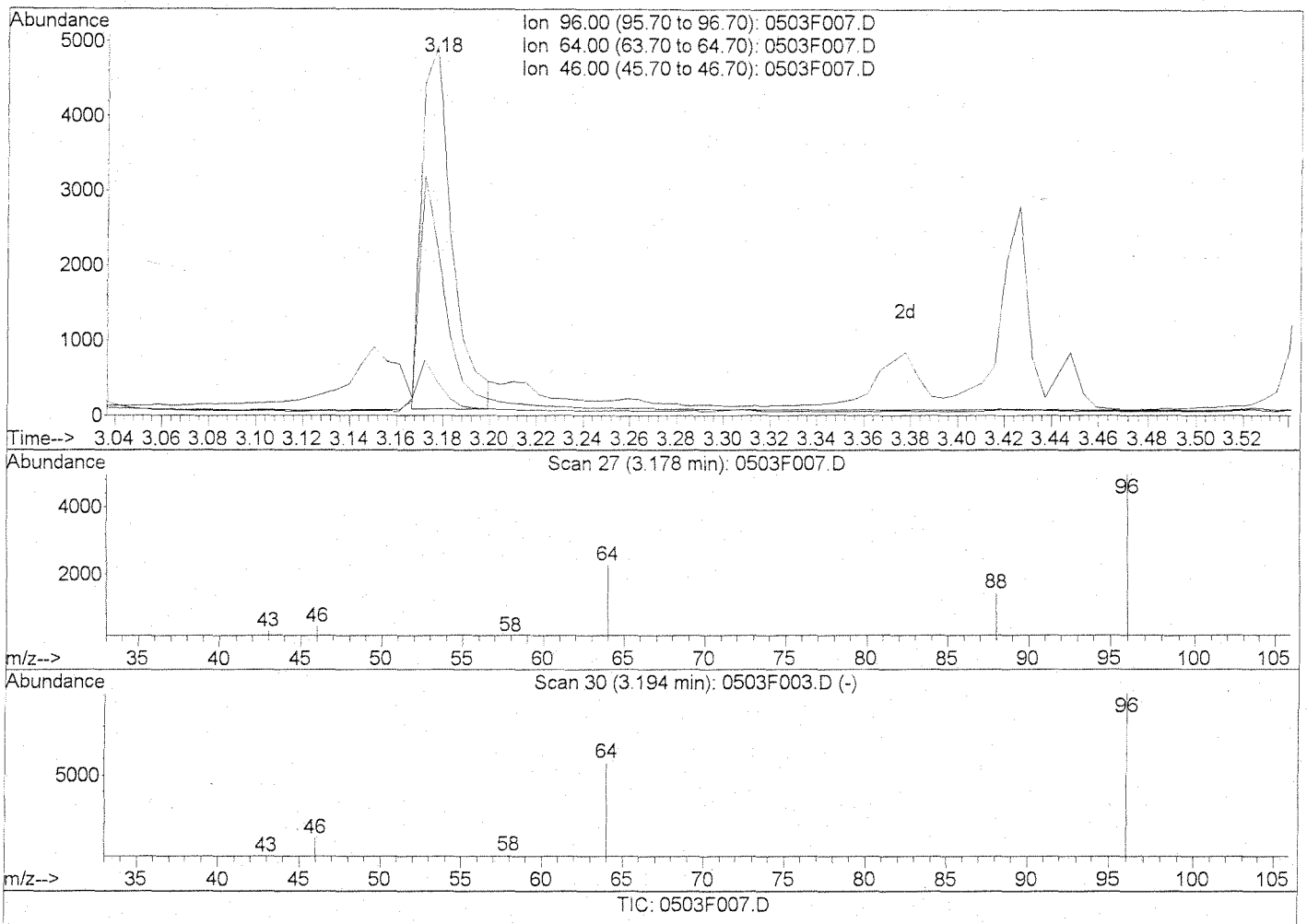
Before

0503F007.D 041112_DX.M Fri May 04 08:47:13 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F007.D

(2) 1,4-Dioxane-d8 (S)

3.18min 39.76ng/ml m

response 4336

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	46.06
46.00	9.50	8.91
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

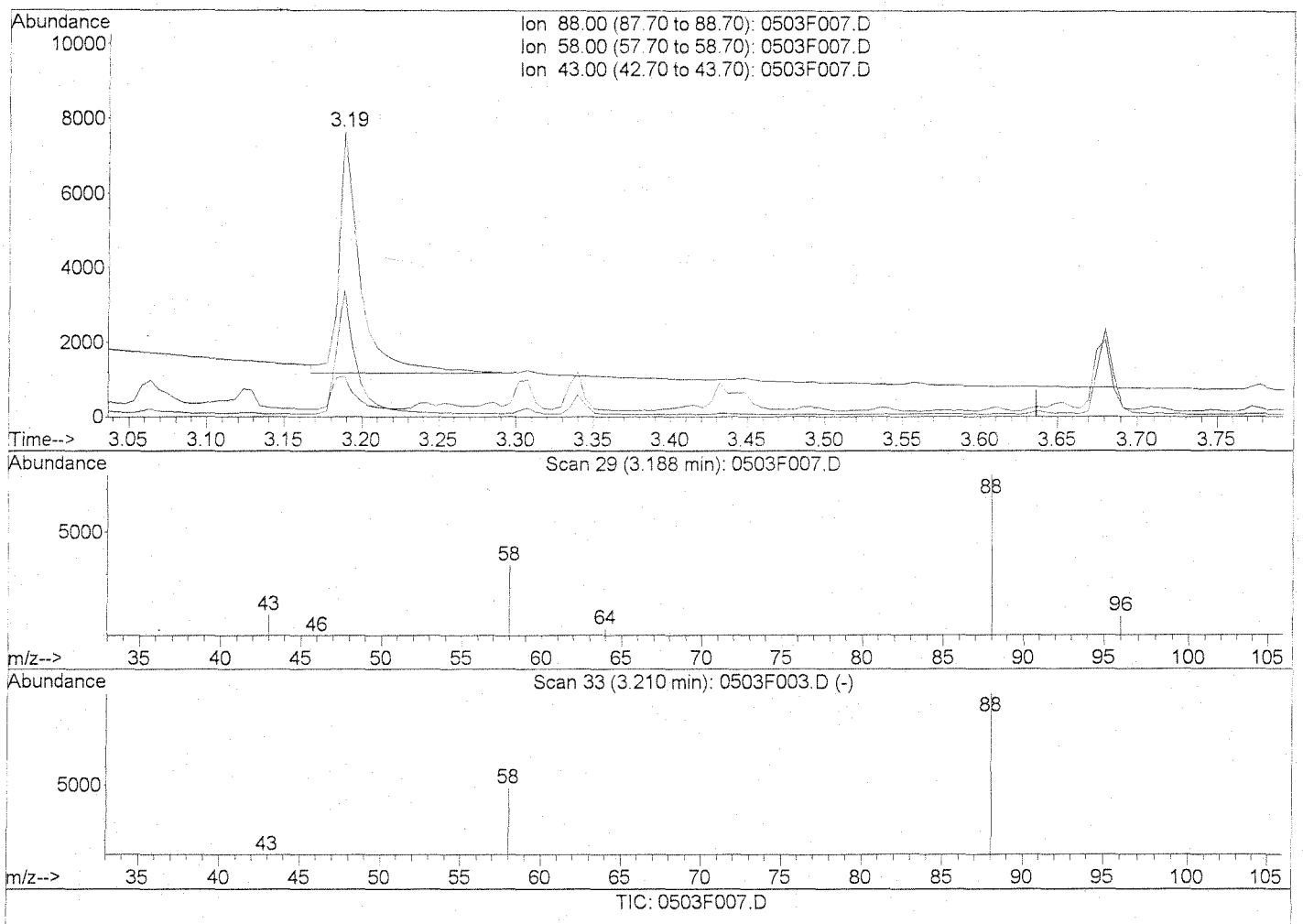
CM 1/43

0503F007.D 041112_DX.M Fri May 04 08:47:19 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F007.D

(3) 1,4-Dioxane (T)

3.19min 56.85ng/ml

response 6183

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	51.74#
43.00	15.90	13.70
0.00	0.00	0.00

Manual Integration:

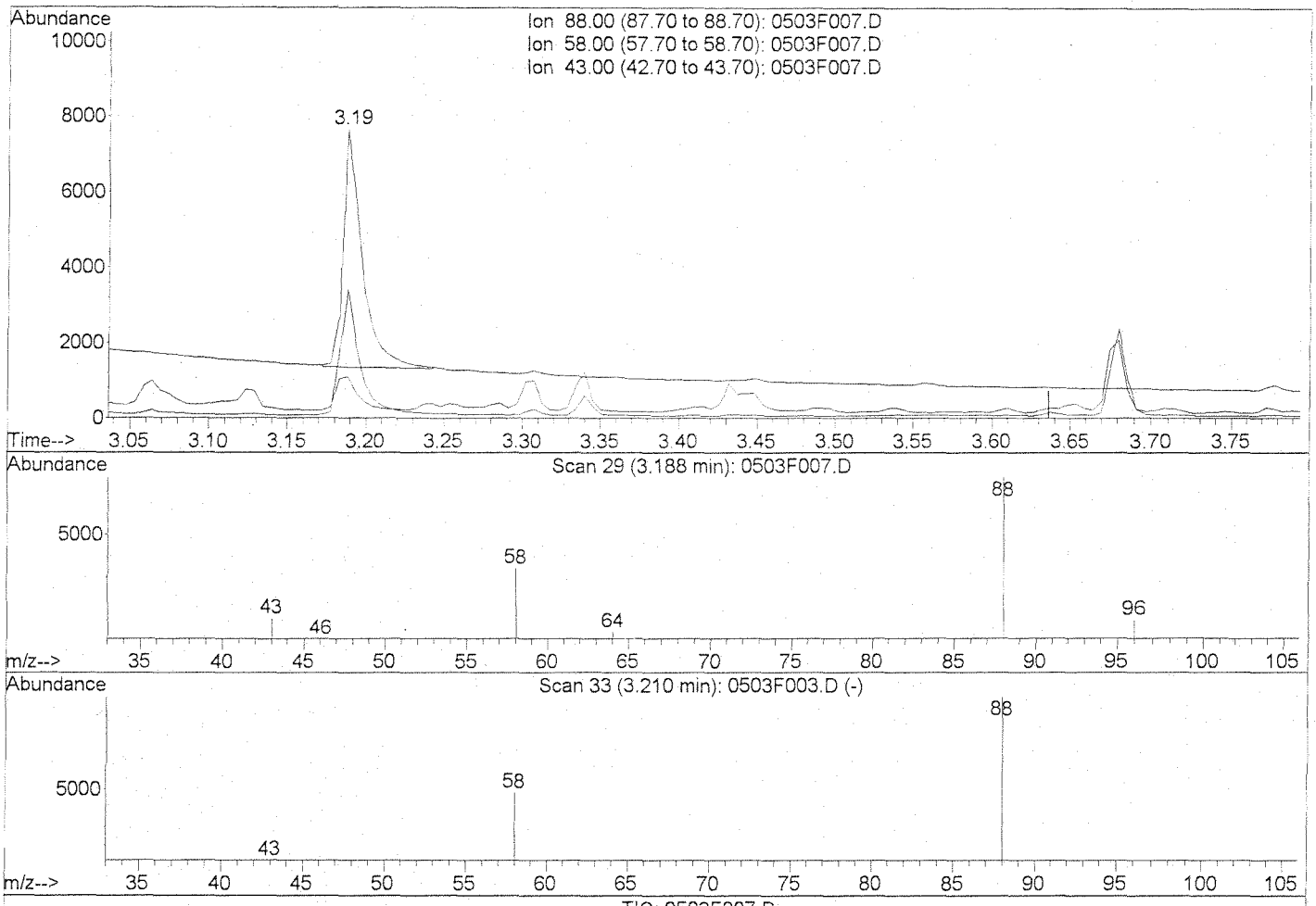
Before

0503F007.D 041112_DX.M Fri May 04 08:47:24 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F007.D Vial: 7
Acq On : 3 May 2012 5:46 pm Operator: KBailey
Sample : KWG1204380-1 | MS K1203834-003MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration



TIC: 0503F007.D

(3) 1,4-Dioxane (T)

3.19min 48.65ng/ml m

response 5291

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	44.73#
43.00	15.90	14.31
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F007.D 041112_DX.M Fri May 04 08:47:29 2012

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Batch QCDMS	**Units:**	ug/L
Lab Code:	KWG1204380-2	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**23.8**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	80	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F008.D
Lab ID: KWG1204380-2 -- K1203834-003DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/03/2012 18:05
Date Quantitated: 05/04/2012 08:47
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Batch QC:
L3902
P1573
P1588
P1604
P1630

Primary Review: [signature] MAY 04 2012

Secondary Review: CH 05.04.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F008.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 18:05	**Quant Date:**	05/04/2012 08:47	**Vial:**	8
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1204380-2 -- K1203834-003DMS			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121264	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	13718	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.16	-0.03	0.00	96	4176m	40.03	80	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.18	-0.03	0.00	88	4942m	47.51	23.8		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manualiy deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

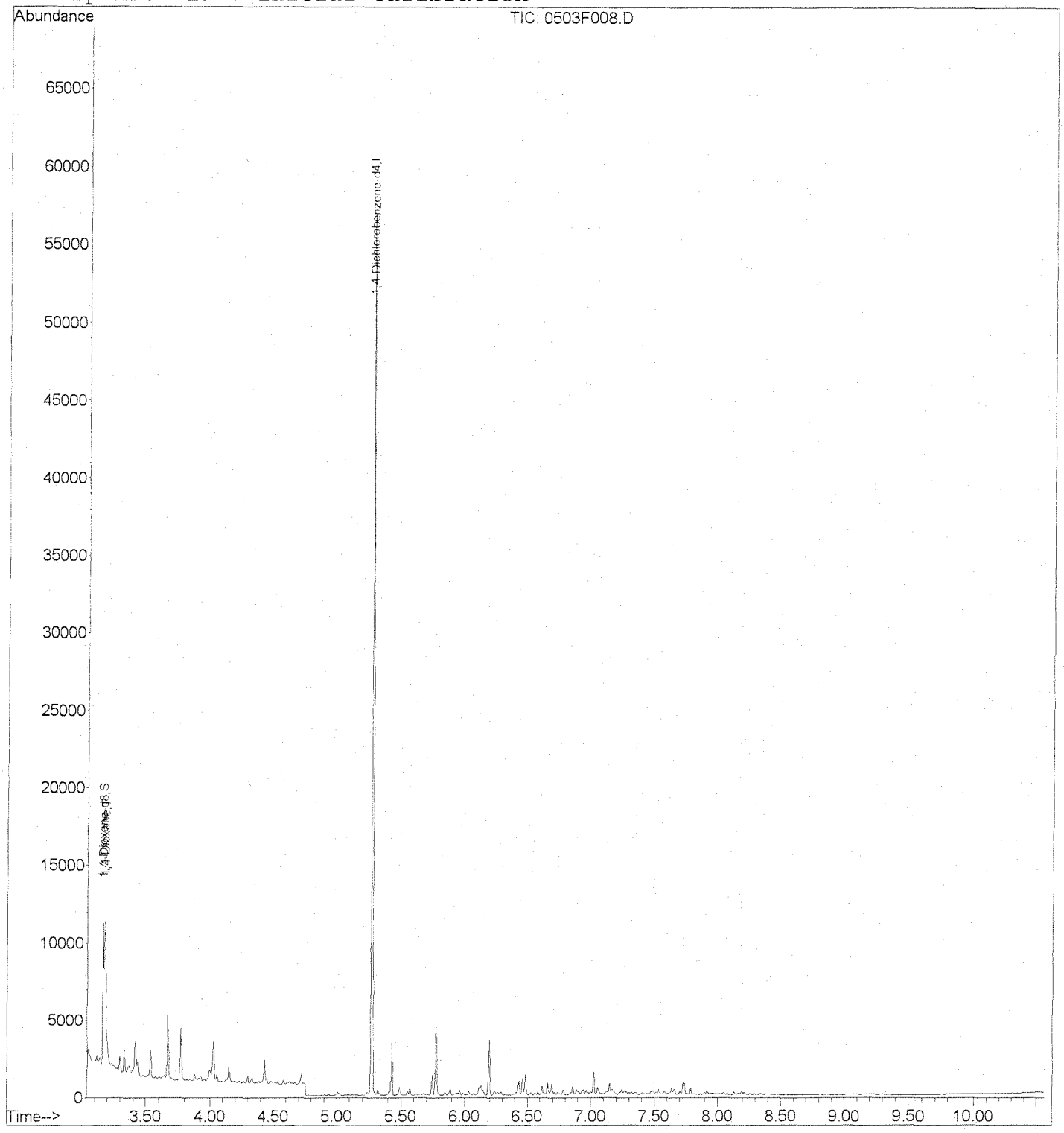
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	13718	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.16	96	4176m	40.03	ng/ml	-0.07
Spiked Amount 50.000			Recovery =	80.06%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.18	88	4942m	47.51	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F008.D 041112_DX.M Fri May 04 08:54:31 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: 041112_DX.RE

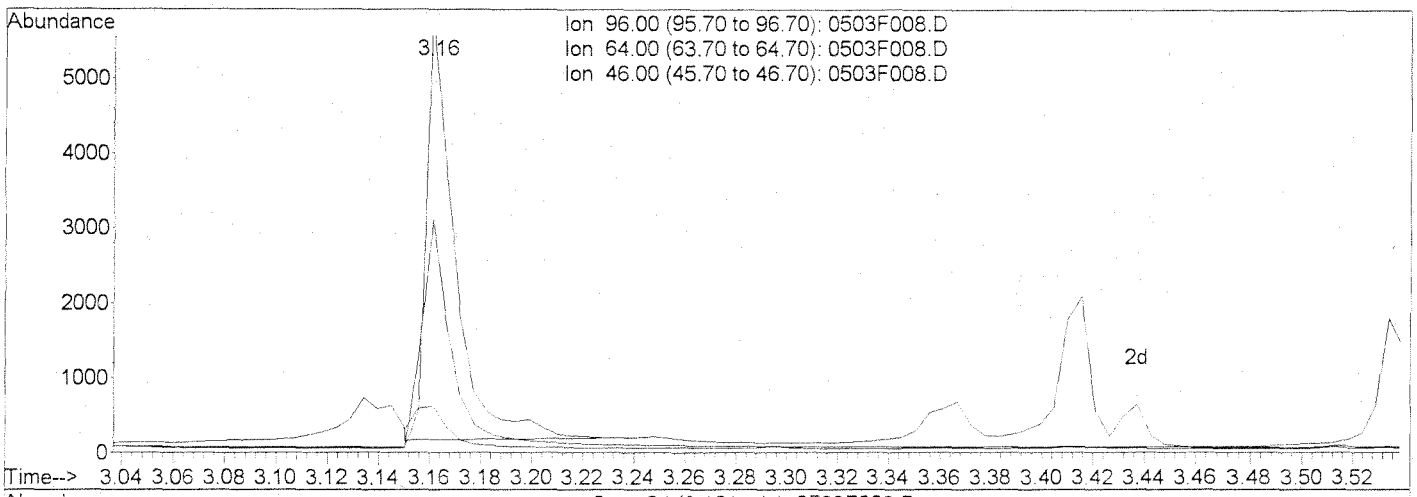
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

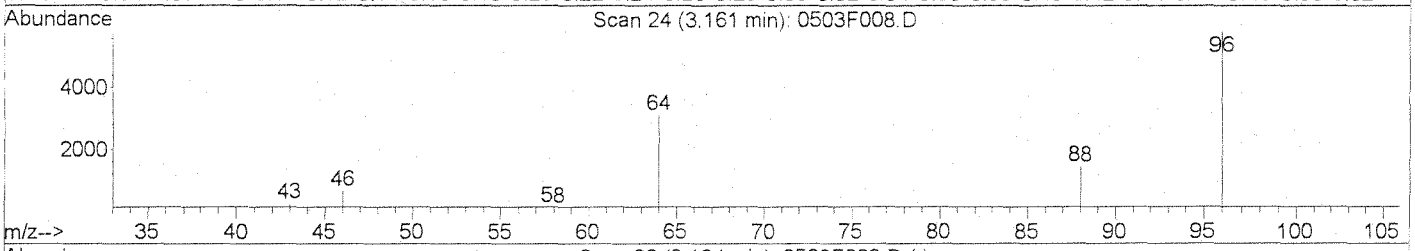


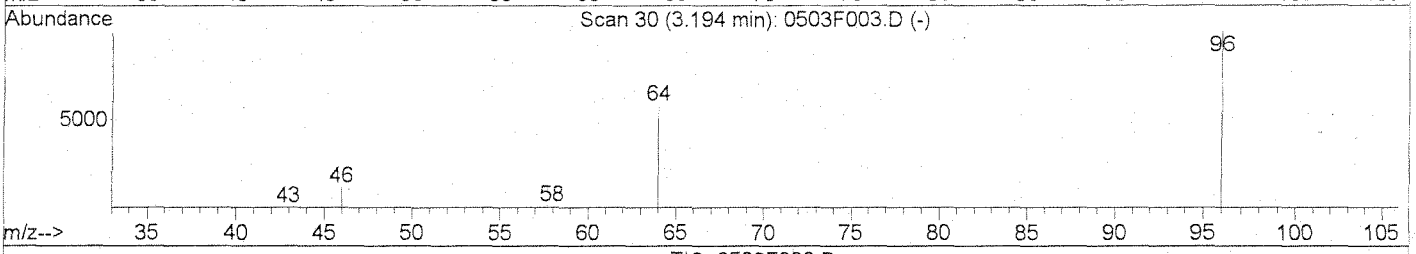
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F008.D

(2) 1,4-Dioxane-d8 (S)

3.16min 41.83ng/ml

response 4364

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	54.05
46.00	9.50	10.07
0.00	0.00	0.00

Manual Integration:

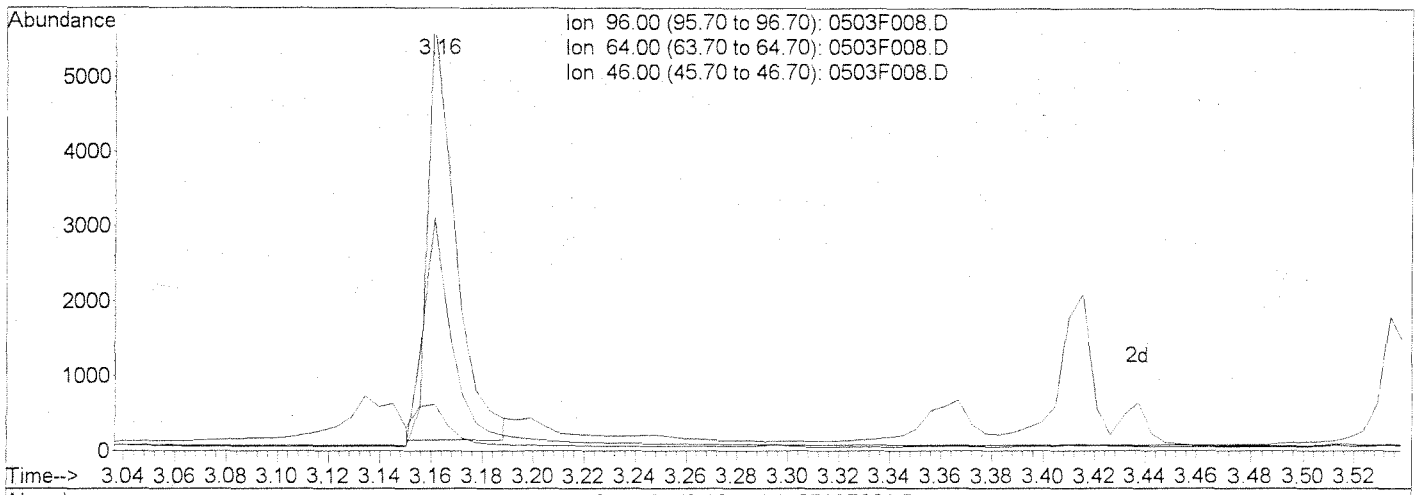
Before

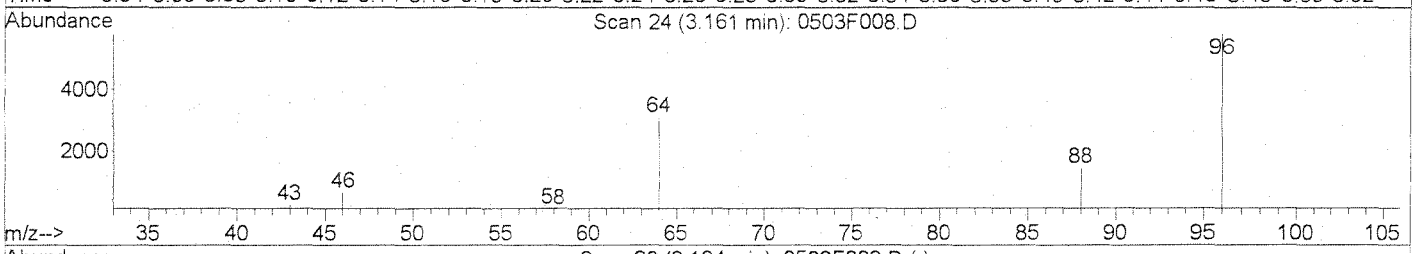
0503F008.D 041112_DX.M Fri May 04 08:47:37 2012

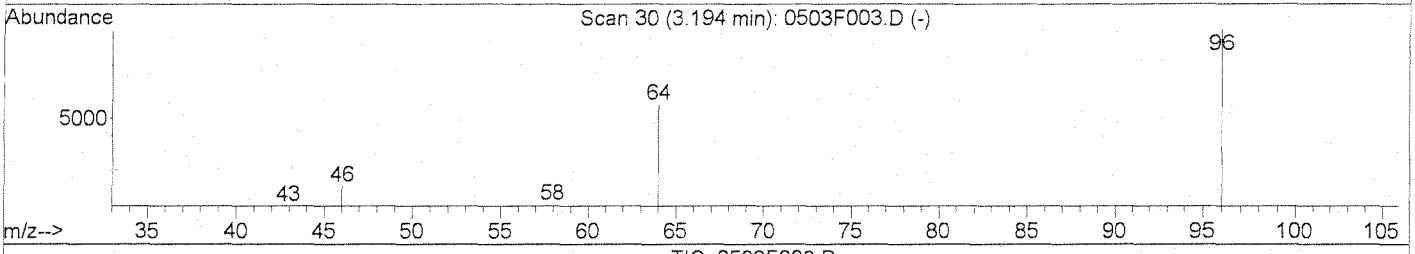
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F008.D

(2) 1,4-Dioxane-d8 (S)

3.16min 40.03ng/ml m

response 4176

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	53.53
46.00	9.50	10.74
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

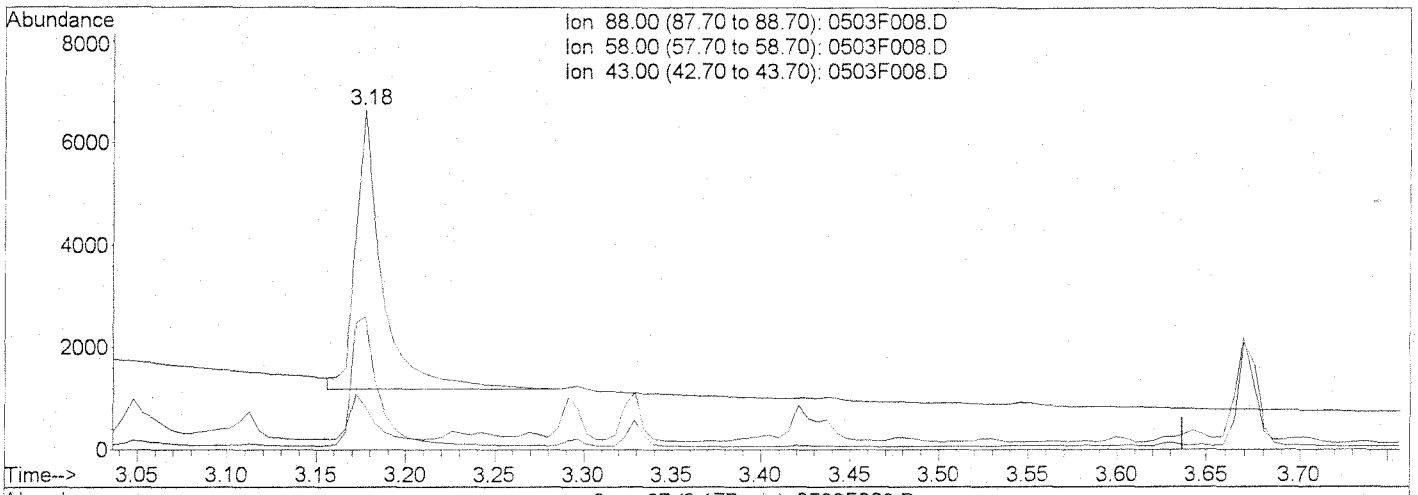
CM LB

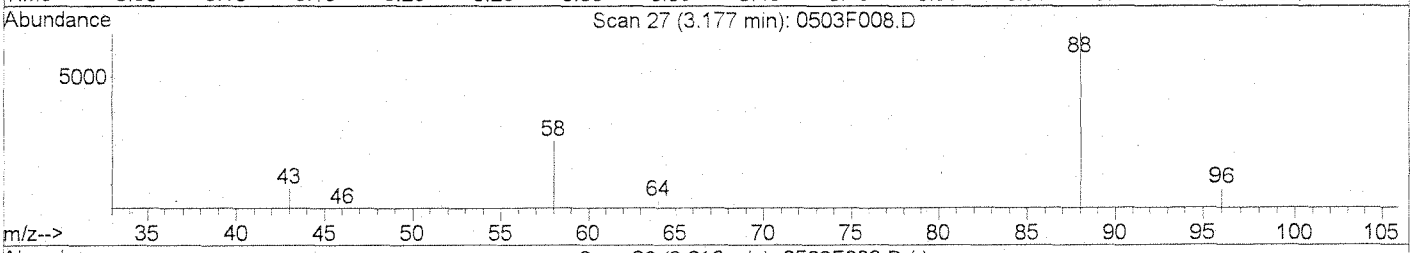
0503F008.D 041112_DX.M Fri May 04 08:47:45 2012

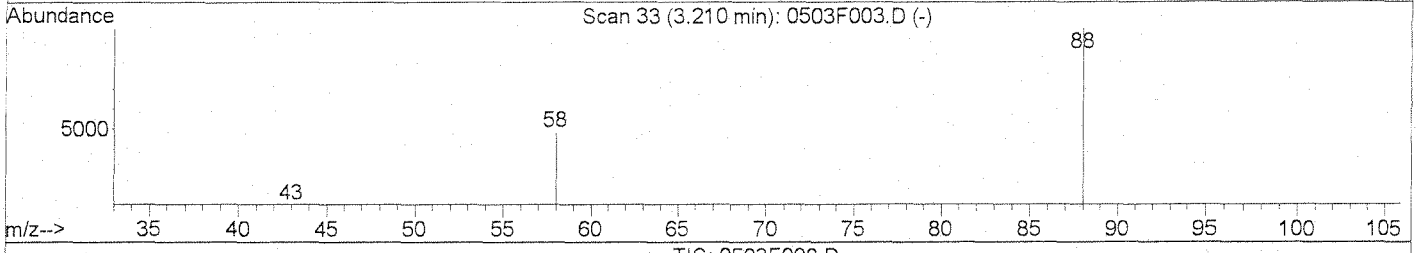
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F008.D

(3) 1,4-Dioxane (T)

3.18min 54.17ng/ml

response 5635

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	46.28#
43.00	15.90	11.78
0.00	0.00	0.00

Manual Integration:

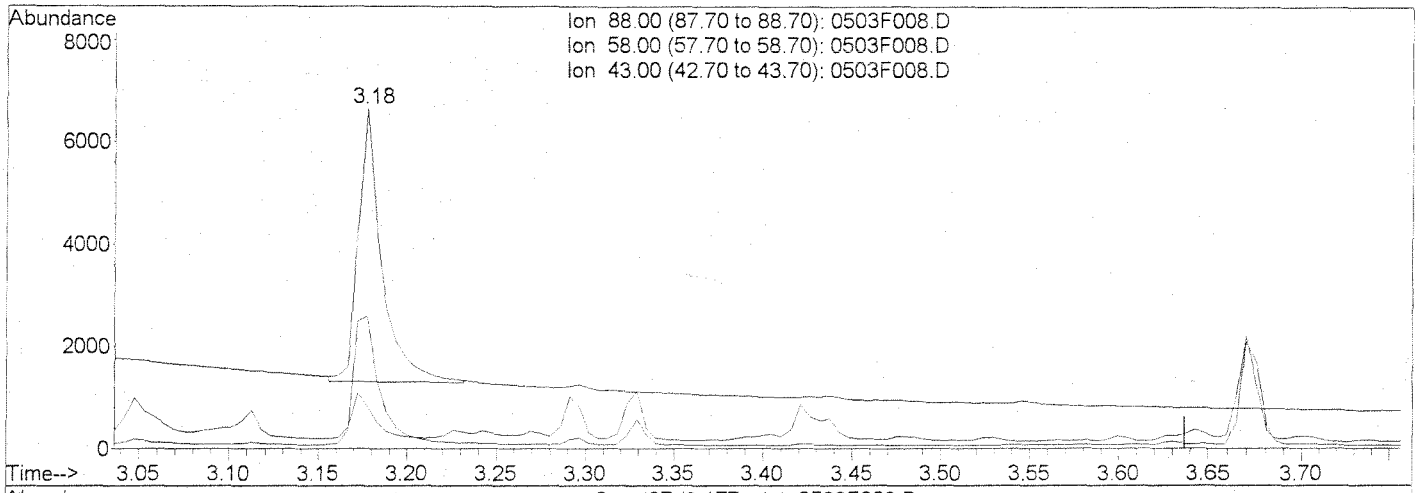
Before

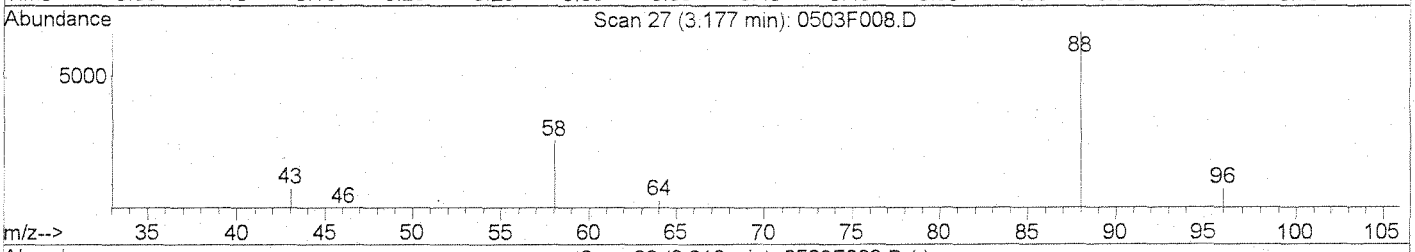
0503F008.D 041112_DX.M Fri May 04 08:47:49 2012

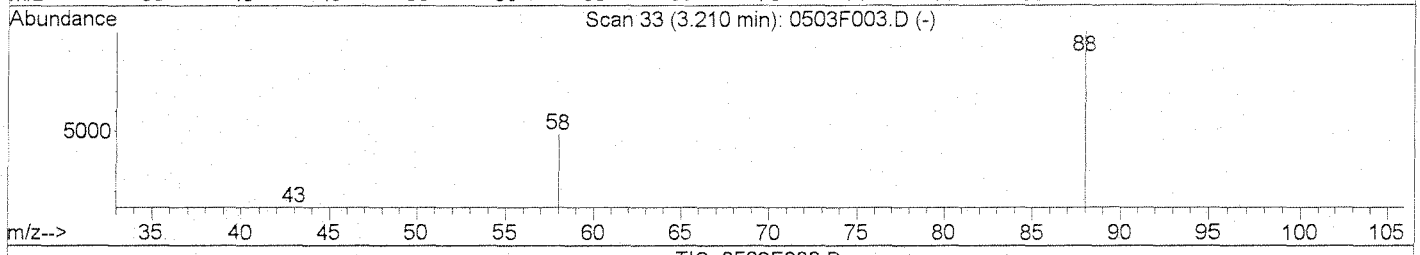
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F008.D Vial: 8
Acq On : 3 May 2012 6:05 pm Operator: KBailey
Sample : KWG1204380-2 | DMS K1203834-003DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F008.D

(3) 1,4-Dioxane (T)

3.18min 47.51ng/ml m

response 4942

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	39.25#
43.00	15.90	12.67
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

0503F008.D 041112_DX.M Fri May 04 08:47:57 2012

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Sample Matrix: Water

Service Request: P1201630
Date Collected: NA
Date Received: NA

1,4-Dioxane by GC/MS

Sample Name: Lab Control Sample
Lab Code: KWG1204380-3

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**23.6**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	93	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F005.D
Lab ID: KWG1204380-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/03/2012 17:08
Date Quantitated: 05/04/2012 08:46
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

L3834
L3902
P1573
P1588
P1604
P1630

Primary Review: MAY 04 2012

Secondary Review: 05 04.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F005.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 17:08	**Quant Date:**	05/04/2012 08:46	**Vial:**	5
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1204380-3			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121265	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	0.00?	152	15930	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.20	0.01	0.00	96	5614	46.34	93	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.22	0.01	0.00	88	5706m	47.23	23.6		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F005.D Vial: 5
Acq On : 3 May 2012 5:08 pm Operator: KBailey
Sample : KWG1204380-3 | LCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

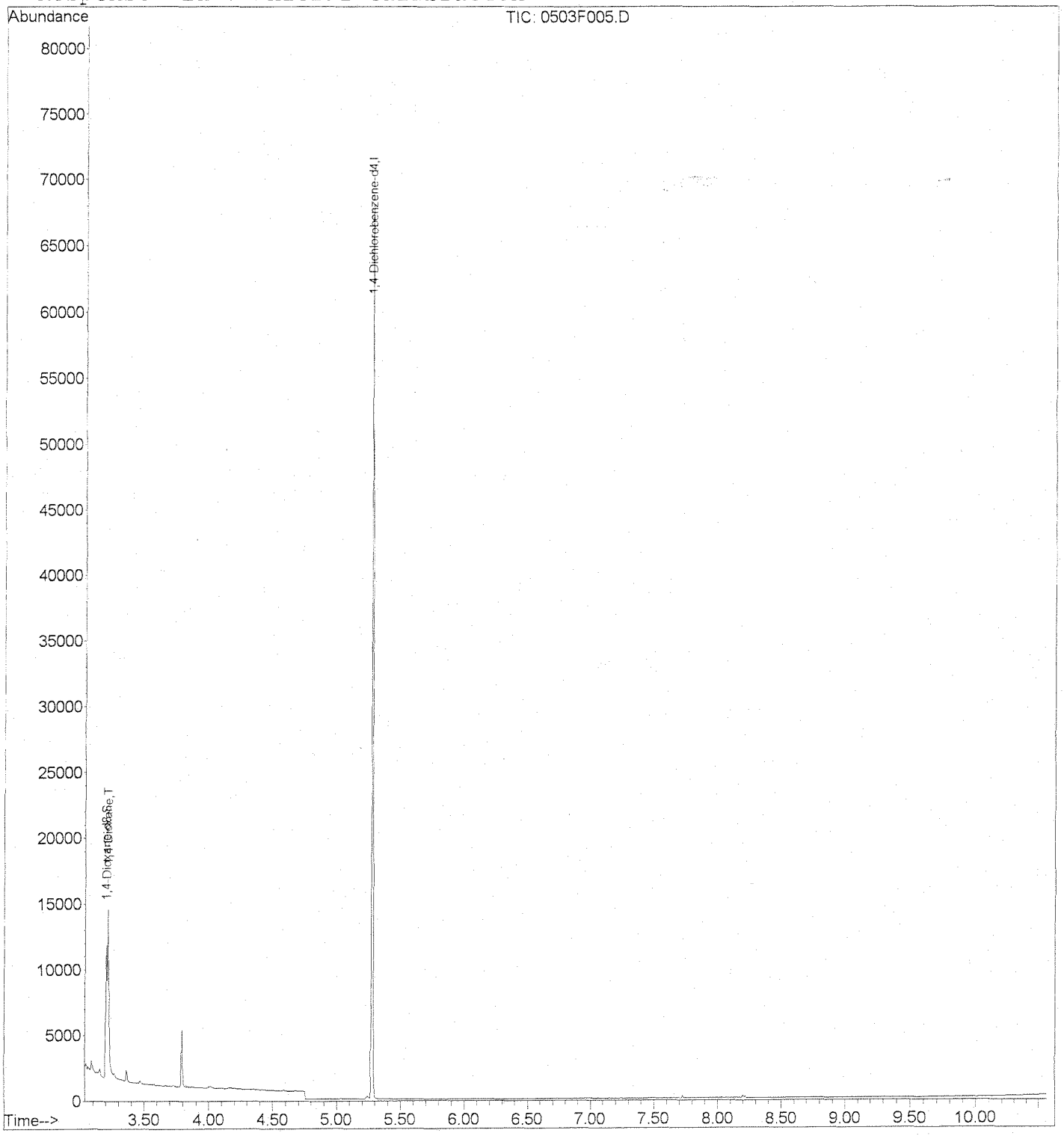
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	15930	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.20	96	5614	46.34	ng/ml	-0.02
Spiked Amount 50.000			Recovery = 92.68%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.22	88	5706m	47.23	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F005.D 041112_DX.M Fri May 04 08:54:29 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F005.D Vial: 5
Acq On : 3 May 2012 5:08 pm Operator: KBailey
Sample : KWG1204380-3 | LCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

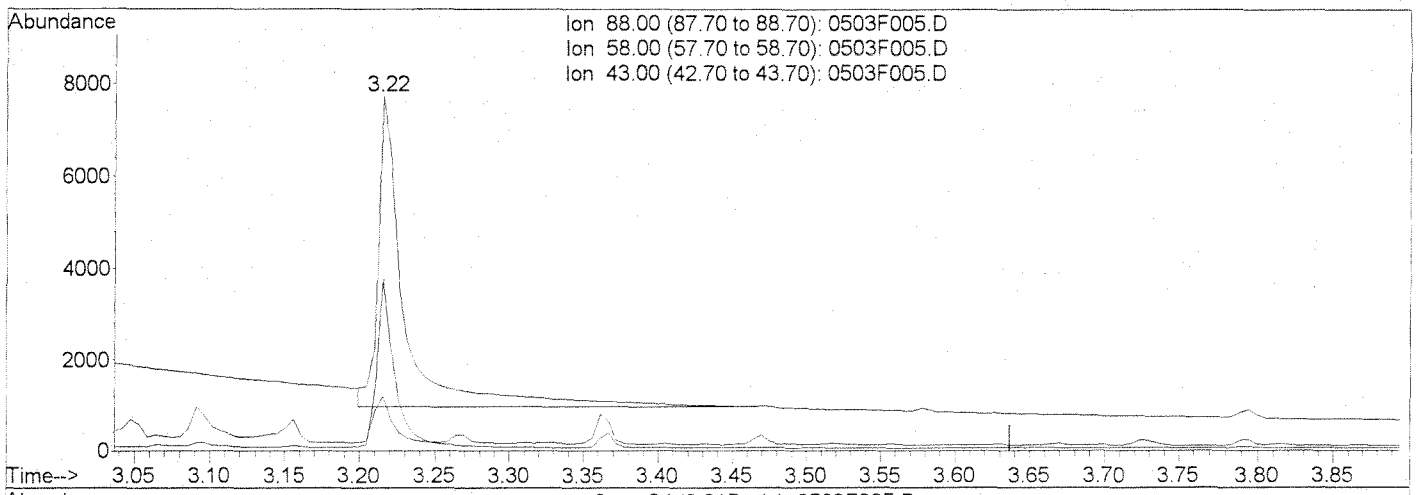


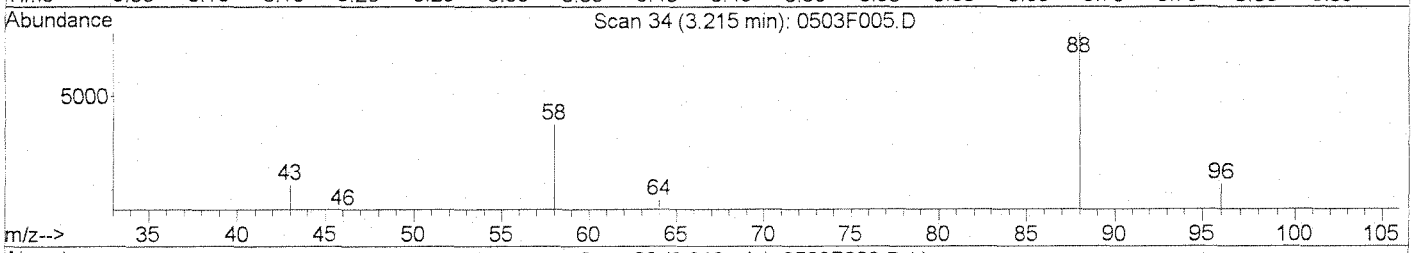
Quantitation Report (Qedit)

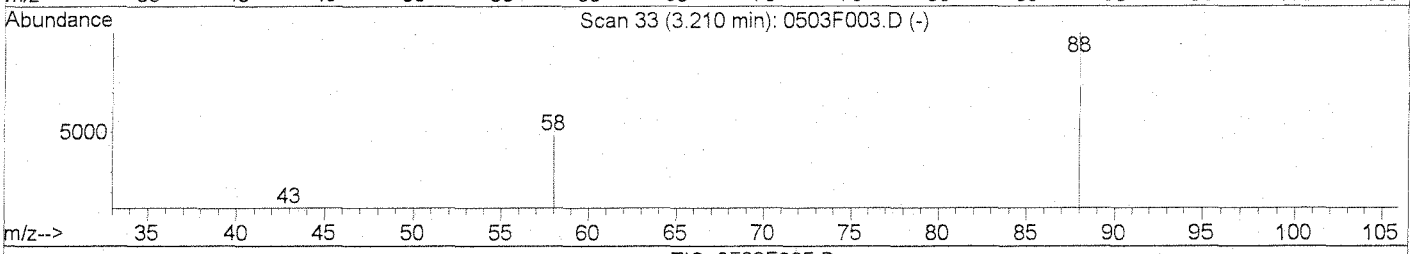
Data File : J:\MS26\DATA\050312\0503F005.D
Acq On : 3 May 2012 5:08 pm
Sample : KWG1204380-3 | LCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012

Vial: 5
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F005.D

(3) 1,4-Dioxane (T)

3.22min 71.24ng/ml

response 8606

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	54.96#
43.00	15.90	15.21
0.00	0.00	0.00

Manual Integration:

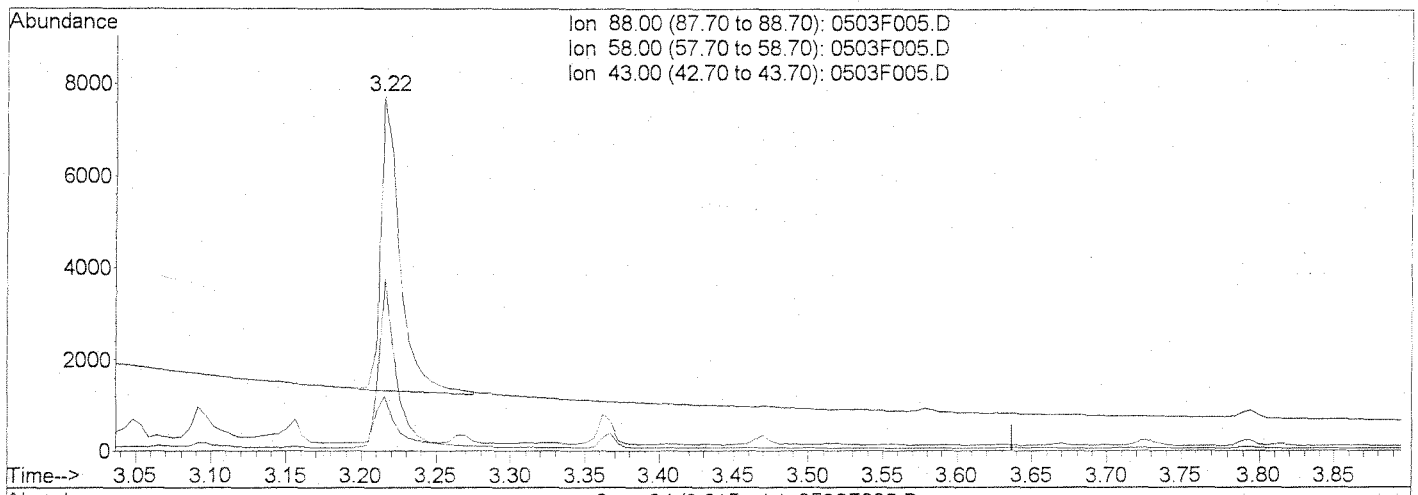
Before

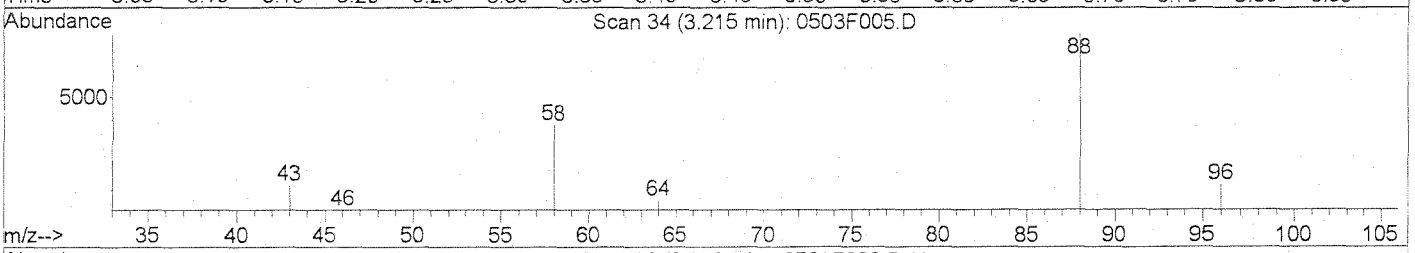
0503F005.D 041112_DX.M Fri May 04 08:46:42 2012

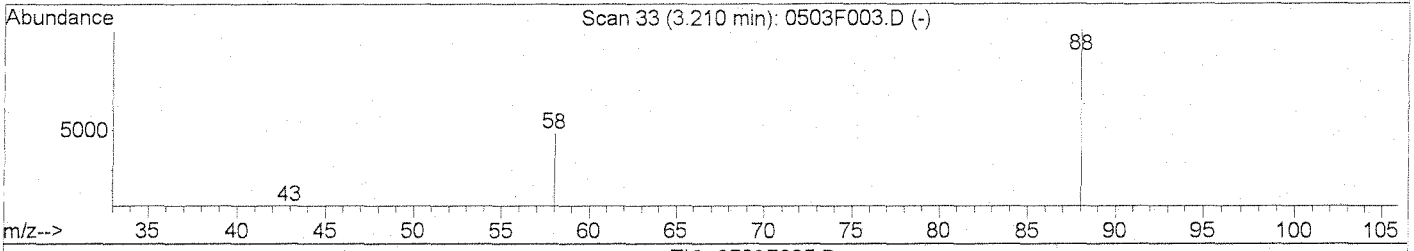
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F005.D Vial: 5
Acq On : 3 May 2012 5:08 pm Operator: KBailey
Sample : KWG1204380-3 | LCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F005.D

(3) 1,4-Dioxane (T)

3.22min 47.23ng/ml m

response 5706

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	48.89#
43.00	15.90	15.60
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

OK LB

0503F005.D 041112_DX.M Fri May 04 08:46:49 2012

Client:	Battelle	**Service Request:**	P1201630
Project:	JPL GW Mon. 2Q12/100006114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

1,4-Dioxane by GC/MS

Sample Name:	Duplicate Lab Control Sample	**Units:**	ug/L
Lab Code:	KWG1204380-4	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**22.8**		1.0	0.16	1	04/30/12	05/03/12	KWG1204380	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	96	48-118	05/03/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\050312\0503F006.D
Lab ID: KWG1204380-4
RunType: DLCS
Matrix: WATER

Date Acquired: 05/03/2012 17:27
Date Quantitated: 05/04/2012 08:47
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

L3834
L3902
P1573
P1588
P1L04
P1L30

Primary Review: MAY 04 2012

Secondary Review: CH 05·04·12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F006.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 17:27	**Quant Date:**	05/04/2012 08:47	**Vial:**	6
Run Type:	DLCS			**Dilution:**	1.0
Lab ID:	KWG1204380-4			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/02/2012

Analysis Lot:	KWG1204586	**Prep Lot:**	KWG1204380	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1121266	**Prep Date:**	04/30/2012		

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M	**Calibration ID:**	CAL11446
Title:			
Tune Ref:	J:\MS26\DATA\050312\0503F002.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\050312\0503F004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.27	-0.01?	152	14308	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.17	-0.02	0.00	96	5246	48.21	96	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.18	-0.03	0.00	88	4957m	45.68	22.8		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F006.D Vial: 6
Acq On : 3 May 2012 5:27 pm Operator: KBailey
Sample : KWG1204380-4 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:46:20 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

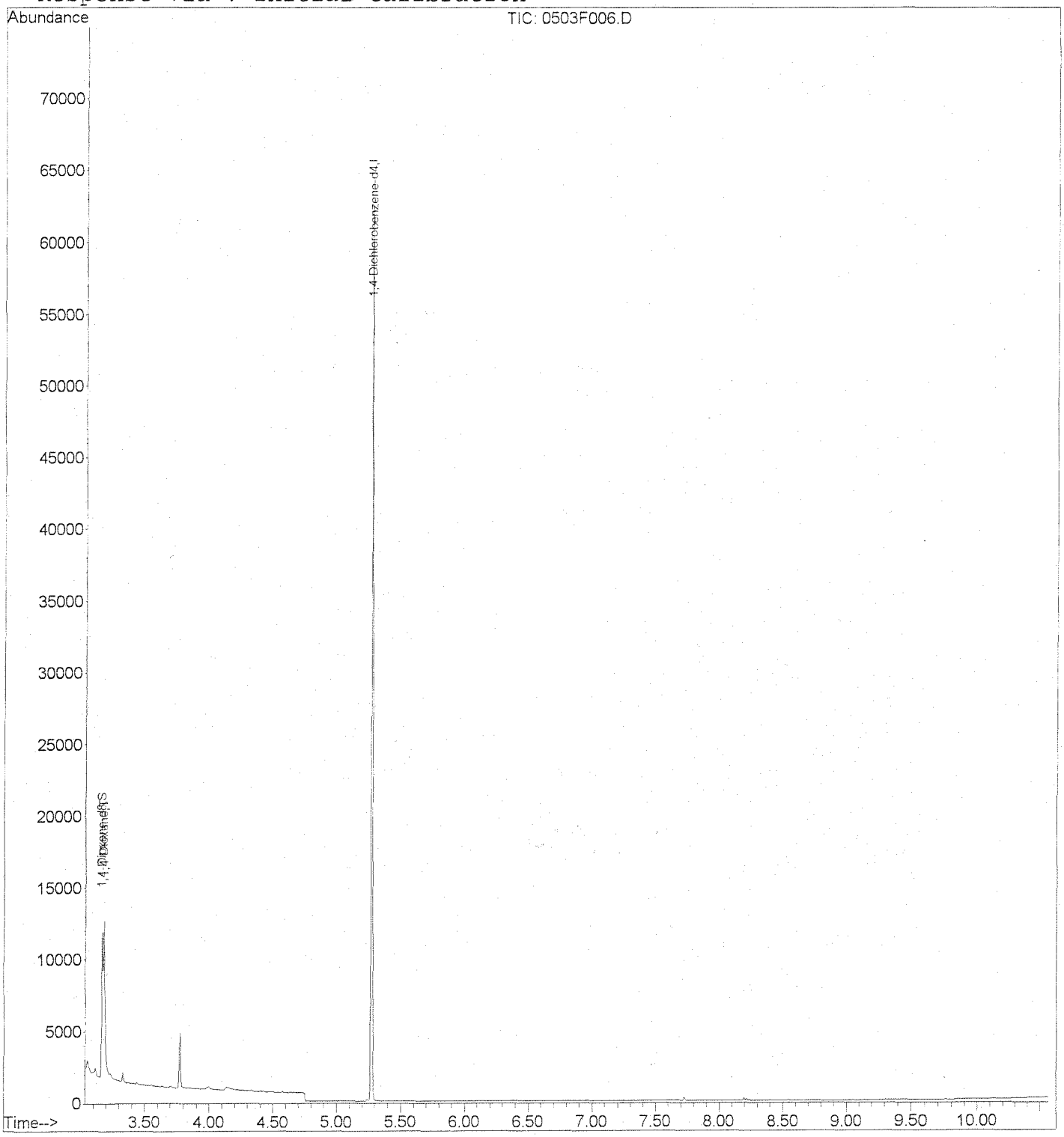
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.27	152	14308	50.00	ng/ml	-0.01
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.17	96	5246	48.21	ng/ml	-0.06
Spiked Amount 50.000			Recovery = 96.42%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.18	88	4957m	45.68	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F006.D 041112_DX.M Fri May 04 08:54:30 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F006.D Vial: 6
Acq On : 3 May 2012 5:27 pm Operator: KBailey
Sample : KWG1204380-4 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Initial Calibration

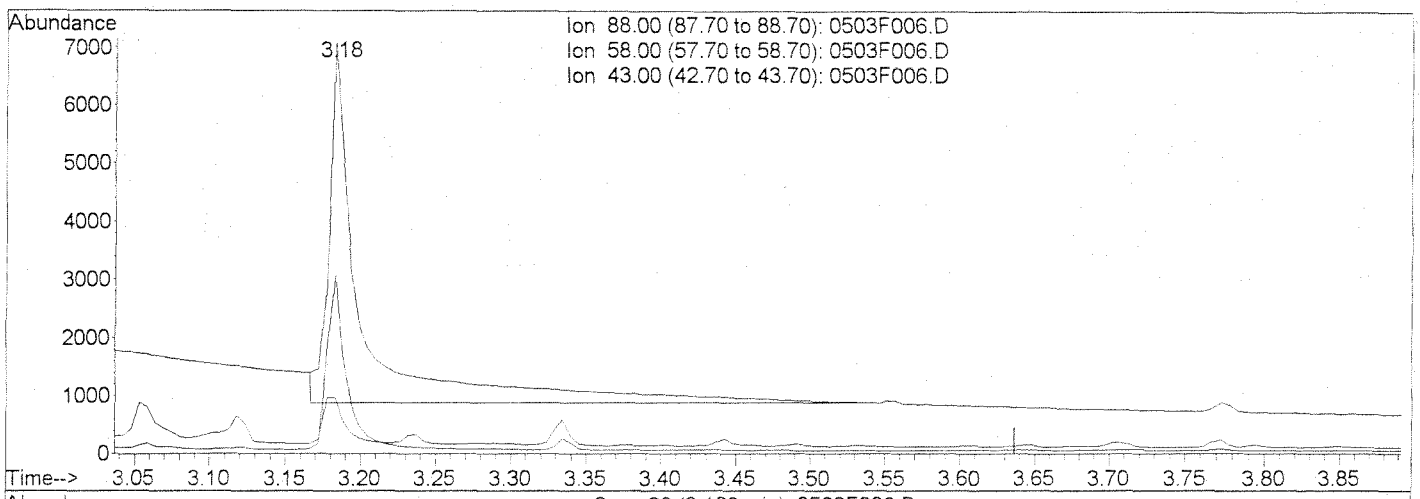


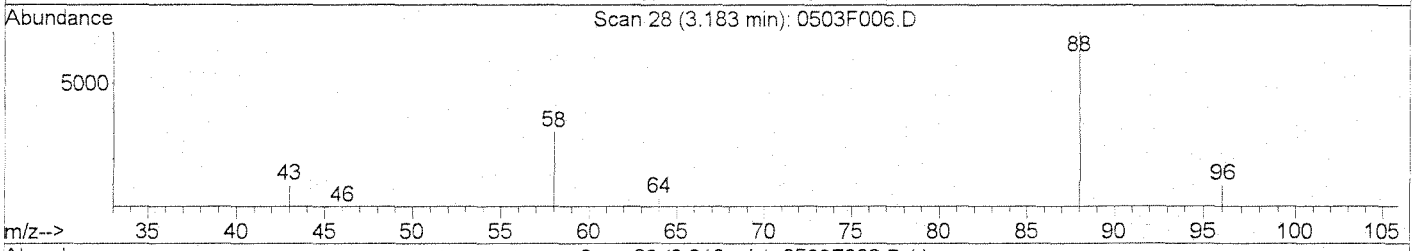
Quantitation Report (Qedit)

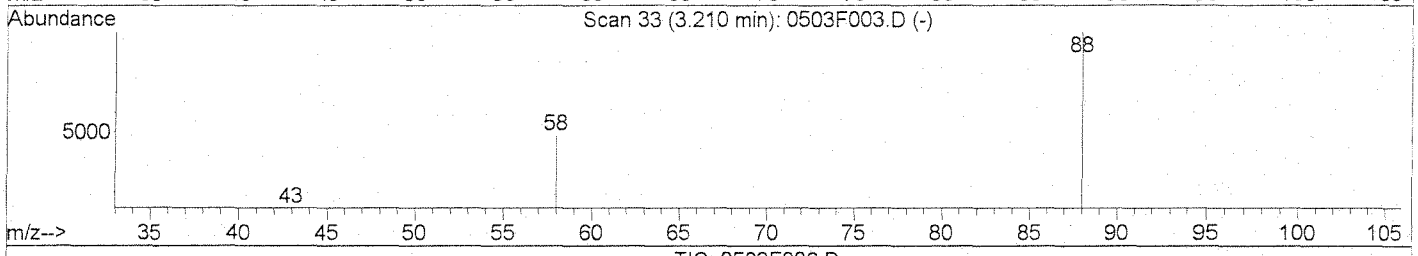
Data File : J:\MS26\DATA\050312\0503F006.D
Acq On : 3 May 2012 5:27 pm
Sample : KWG1204380-4 | DLCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 4 8:46 2012

Vial: 6
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F006.D

(3) 1,4-Dioxane (T)

3.18min 89.94ng/ml

response 9759

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	48.55#
43.00	15.90	13.38
0.00	0.00	0.00

Manual Integration:

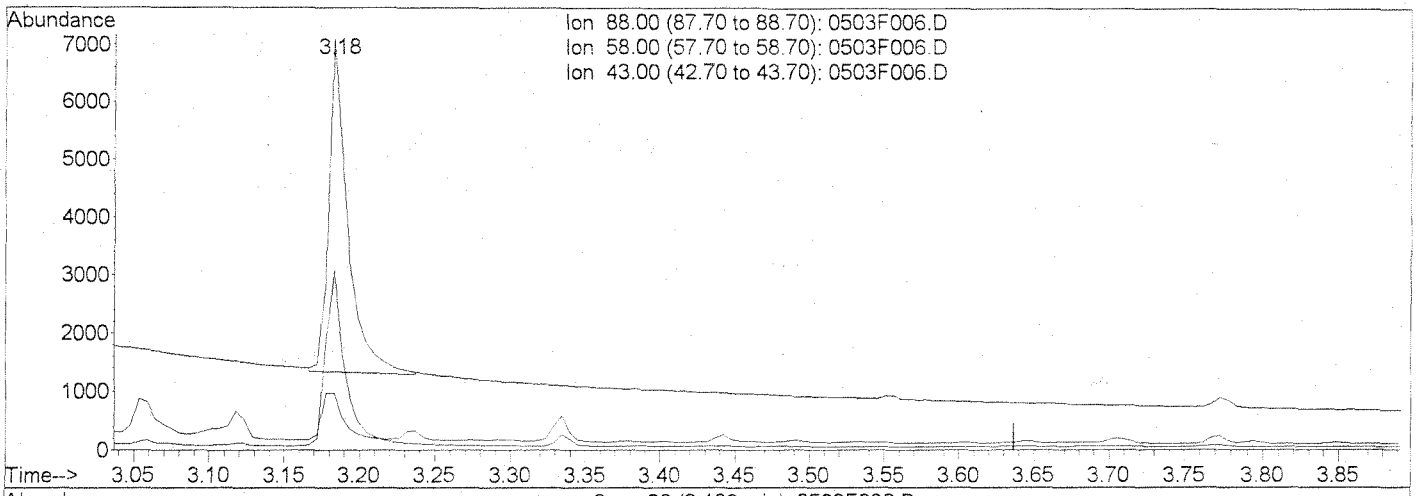
Before

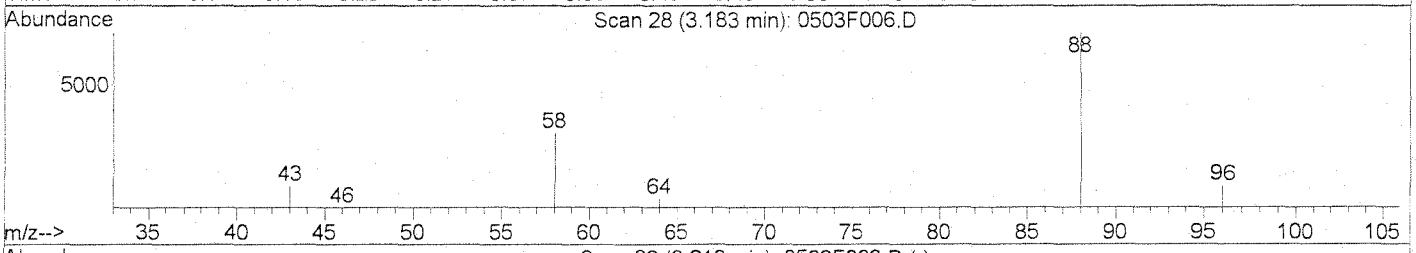
0503F006.D 041112_DX.M Fri May 04 08:46:57 2012

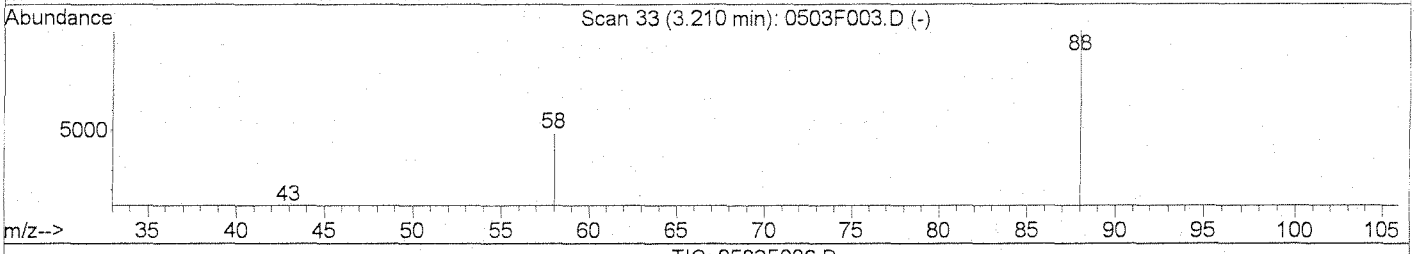
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F006.D Vial: 6
Acq On : 3 May 2012 5:27 pm Operator: KBailey
Sample : KWG1204380-4 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:47 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Fri May 04 08:45:53 2012
Response via : Multiple Level Calibration







TIC: 0503F006.D

(3) 1,4-Dioxane (T)

3.18min 45.68ng/ml m

response 4957

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	43.34#
43.00	15.90	13.74
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

CM LB

0503F006.D 041112_DX.M Fri May 04 08:47:04 2012

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Standards Data

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/03/2012
Time Analyzed: 16:10

Tune Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\050312\0503F002.D
Instrument ID: MS26
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1204586

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.9	55287	PASS
68	69	0	2	1.3	1000	PASS
69	198	0	100	23.0	75190	PASS
70	69	0	2	0.4	321	PASS
127	198	10	80	41.2	134864	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	53.1	327258	PASS
199	198	5	9	6.7	22072	PASS
275	198	10	60	28.6	93752	PASS
365	442	1	50	2.1	12870	PASS
441	443	0	100	73.0	87834	PASS
442	442	100	100	100.0	615872	PASS
443	442	15	24	19.5	120280	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1204586-2	J:\MS26\DATA\050312\0503F003.D	05/03/2012	16:29	
Method Blank	KWG1204380-5	J:\MS26\DATA\050312\0503F004.D	05/03/2012	16:48	
Lab Control Sample	KWG1204380-3	J:\MS26\DATA\050312\0503F005.D	05/03/2012	17:08	
Duplicate Lab Control Sample	KWG1204380-4	J:\MS26\DATA\050312\0503F006.D	05/03/2012	17:27	
Batch QCMS	KWG1204380-1	J:\MS26\DATA\050312\0503F007.D	05/03/2012	17:46	
Batch QCDMS	KWG1204380-2	J:\MS26\DATA\050312\0503F008.D	05/03/2012	18:05	
Batch QC	K1203834-003	J:\MS26\DATA\050312\0503F009.D	05/03/2012	18:24	
MW-4-1	P1201630-005	J:\MS26\DATA\050312\0503F019.D	05/03/2012	21:35	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Exception Report

Data File: J:\MS26\DATA\050312\0503F002.D
Lab ID: KWG1204586-1
RunType: TUNE
Matrix: WATER

Date Acquired: 05/03/2012 16:10
Date Quantitated:
Batch ID: KWG1204586
Analysis Method: DFTPP
ListJoinID: LJ1965

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Ion Ratio	NA	NA	NA	x	

Primary Review: MAY 04 2012

Secondary Review: 05.12

Printed: 05/04/2012 09:11:28
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F002.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 16:10	**Quant Date:**		**Vial:**	2
Run Type:	TUNE			**Dilution:**	1.0
Lab ID:	KWG1204586-1			**Soln Conc. Units:**	

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-DIOXA	**Collect Date:**		**Receive Date:**	05/04/2012

Analysis Lot:	KWG1204586	**Prep Lot:**		**Report Group:**	
Analysis Method:	DFTPP	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS26\METHODS\SIM\A_DFTPP.M			**Calibration ID:**	CAL11446
Title:				**Report List ID:**	LJ1965
Tune Ref:				**Method ID:**	MJ190
MB Ref:				**Quant based on Report List**	

Tune Results

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	16.9	55287	Pass
68	69	0	2	1.3	1000	Pass
69	198	0	100	23.0	75190	Pass
70	69	0	2	0.4	321	Pass
127	198	10	80	41.2	134864	Pass
197	198	0	2	0.0	0	Pass
198	442	30	100	53.1	327258	Pass
199	198	5	9	6.7	22072	Pass
275	198	10	60	28.6	93752	Pass
365	442	1	50	2.1	12870	Pass
441	443	0.01	100	73.0	87834	Pass
442	442	100	100	100.0	615872	Pass
443	442	15	24	19.5	120280	Pass

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

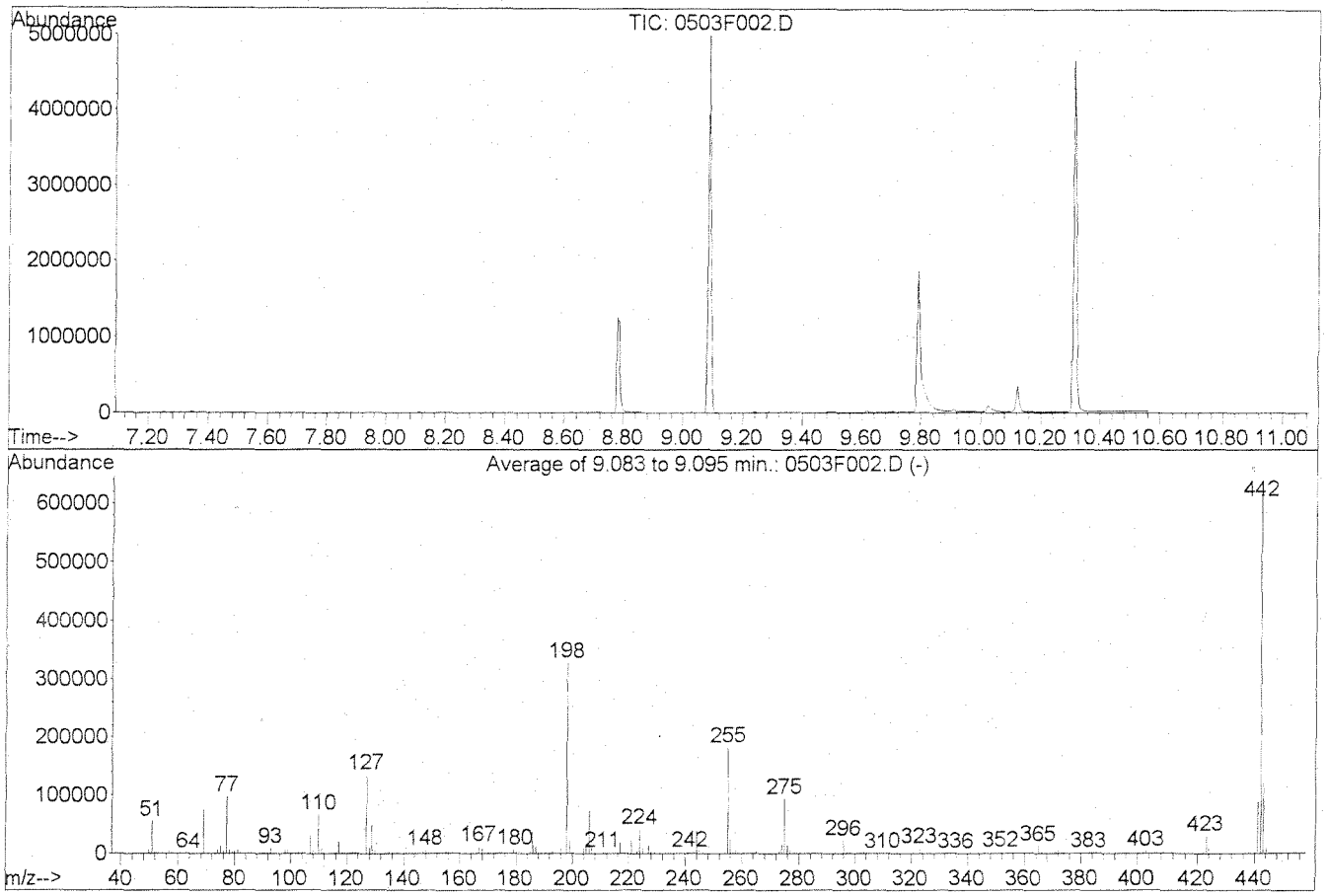
D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

DFTPP

Data File : J:\MS26\DATA\050312\0503F002.D
Acq On : 3 May 2012 4:10 pm
Sample : 3.0ug/mL DFTPP | SVM38-66A
Misc :
MS Integration Params: rteint.p
Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix

Vial: 2
Operator: KBailey
Inst : MS26
Multiplr: 1.00



AutoFind: Scans 1048, 1049, 1050; Background Corrected with Scan 1044

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	16.9	55287	PASS
68	69	0.00	2	1.3	1000	PASS
69	198	0.00	100	23.0	75190	PASS
70	69	0.00	2	0.4	321	PASS
127	198	10	80	41.2	134864	PASS
197	198	0.00	2	0.0	0	PASS
198	442	30	100	53.1	327258	PASS
199	198	5	9	6.7	22072	PASS
275	198	10	60	28.6	93752	PASS
365	442	1	50	2.1	12870	PASS
441	443	0.01	100	73.0	87834	PASS
442	442	30	100	100.0	615872	PASS
443	442	15	24	19.5	120280	PASS

0503F002.D A_DFTPP.M Fri May 04 08:45:18 2012

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
50.00	6876	64.00	352	78.10	6815	88.95	161
51.10	55287	65.00	1502	79.00	5089	91.00	1410
52.05	2927	65.95	106	80.00	4015	92.00	1577
53.00	135	68.00	1000	81.00	6202	93.00	9215
55.00	256	69.00	75190	82.00	1575	94.00	617
56.00	1557	70.00	321	83.00	1681	95.05	167
57.00	4279	73.00	509	83.90	104	96.00	498
58.00	188	74.00	6705	85.00	1392	96.90	79
61.00	705	75.00	11971	85.95	1570	97.10	99
62.00	796	76.00	4210	87.00	908	98.00	6875
63.00	2549	77.10	97394	88.00	337	99.00	6754

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
100.00	510	111.00	9455	123.00	3121	134.00	1247
101.00	4100	112.00	1239	124.00	1428	135.00	3756
102.00	218	113.00	306	125.00	1441	136.00	1479
103.00	1256	114.10	50	126.05	241	137.00	2070
104.00	2334	116.00	1561	127.00	134864	137.85	421
105.00	2171	117.00	19510	128.00	10194	138.95	163
106.00	689	118.00	1575	129.00	47451	139.95	508
107.00	31702	118.90	255	130.00	4014	141.00	5477
108.00	5271	120.00	381	131.00	749	142.00	1958
109.00	781	121.00	66	132.00	455	142.95	1384
110.00	66449	122.00	1934	132.95	258	144.00	325

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
144.95	293	156.00	5404	167.00	12018	177.95	713
146.00	931	157.00	1113	168.00	7575	179.00	8907
147.00	2906	157.95	1089	169.00	1154	180.00	6888
148.00	5927	159.00	825	169.95	362	181.00	3151
149.00	1447	160.00	1871	170.90	470	182.00	433
149.95	396	161.00	2982	172.00	984	182.90	281
151.10	779	162.00	848	173.00	1464	184.00	658
151.80	181	163.00	239	174.00	2668	185.00	4322
153.00	1783	164.00	326	175.00	5114	186.00	37907
154.00	1449	165.00	2037	176.00	1660	187.00	10647
155.00	3313	166.00	1818	177.00	2145	188.00	1095

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
189.00	1957	201.50	1683	214.90	632	226.00	1108
189.95	311	203.00	1589	216.00	1430	227.00	14673
191.00	1030	204.00	9553	217.00	18216	228.00	2135
192.00	3098	205.00	16374	218.00	2285	229.00	3510
193.00	3297	206.00	72696	219.00	194	230.00	469
194.00	720	207.00	9550	220.20	60	231.00	1631
194.95	438	208.00	2084	221.00	20205	231.95	261
196.00	9416	209.00	728	221.80	408	232.95	236
198.00	327258	210.20	153	223.00	4122	234.00	937
199.00	22072	211.00	2734	224.00	41417	235.00	1098
200.00	1602	213.00	198	225.00	10316	236.00	677

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
237.00	1501	247.90	239	259.00	1465	273.00	6086
237.95	195	249.00	1370	259.95	224	274.00	15645
239.00	586	249.95	241	260.95	308	275.00	93752
240.00	473	250.90	238	263.00	52	276.00	12590
240.95	912	251.95	217	263.95	241	277.00	6285
242.00	2242	252.95	657	265.00	3503	278.00	1128
243.00	2447	253.95	792	265.90	436	279.00	194
244.05	37994	255.00	181877	267.90	55	280.90	105
245.00	5014	256.00	27027	269.80	111	281.95	229
246.00	5672	257.00	2053	270.95	281	283.00	795
247.00	1174	258.00	8980	272.00	425	284.00	583

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
285.00	1358	298.00	177	314.00	1192	327.00	1587
286.00	192	301.00	341	315.00	2593	328.00	870
289.00	224	302.00	432	316.00	1598	328.90	91
290.00	256	303.00	2986	317.00	300	332.00	676
291.00	84	304.00	753	320.00	58	333.00	886
292.00	322	304.90	56	321.00	882	334.00	6024
293.00	1644	308.00	368	322.00	456	335.10	1591
294.00	405	309.00	166	323.00	9485	336.00	110
295.00	401	310.00	396	324.00	1758	338.90	91
296.00	22619	310.90	51	325.10	108	340.00	82
297.00	3206	313.00	150	325.90	110	341.00	1104

Average of 9.083 to 9.095 min.: 0503F002.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
342.00	334	366.90	75	391.00	630	423.00	30156
346.00	2241	369.95	281	392.05	411	424.00	7187
347.00	379	371.00	928	400.90	431	425.10	825
351.00	103	372.00	6222	402.00	2732	441.05	87834
352.00	3157	373.00	1596	403.00	4078	442.10	615872
353.00	2071	374.00	106	404.00	1407	443.05	120280
354.00	3214	376.90	100	405.00	235	444.05	11372
355.00	604	383.00	1794	409.90	62	445.05	660
359.00	223	384.00	501	415.00	172		
365.00	12870	385.00	87	421.00	3968		
366.00	2005	390.00	921	422.00	3564		

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26

Column: MS

Level ID	File ID
A	J:\MS26\DATA\041112\0411F009.D
B	J:\MS26\DATA\041112\0411F010.D
C	J:\MS26\DATA\041112\0411F011.D
D	J:\MS26\DATA\041112\0411F012.D
E	J:\MS26\DATA\041112\0411F013.D
F	J:\MS26\DATA\041112\0411F014.D
G	J:\MS26\DATA\041112\0411F015.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,4-Dioxane	A	2.0	0.346	B	4.0	0.323	C	10	0.385	D	20	0.376	E	50	0.406
	F	100	0.417	G	200	0.401									
1,4-Dioxane-d8	A	2.0	0.360	B	4.0	0.348	C	10	0.389	D	20	0.384	E	50	0.381
	F	100	0.407	G	200	0.394									

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114
Service Request: P1201630
Calibration Date: 04/11/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11446
Instrument ID: MS26
Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,4-Dioxane	MS	AverageRF	% RSD	9.0		≤ 20	0.379		0.01
1,4-Dioxane-d8	SURR	AverageRF	% RSD	5.4		≤ 20	0.380		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Calibration Date: 04/11/2012
Date Analyzed: 04/11/2012

Second Source Calibration Verification
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL11446
Units: ng/ml

File ID: J:\MS26\DATA\041112\0411F016.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	21	0.379	0.404	7	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Injection Log

Directory: J:\MS26\DATA\041112

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0411F001.d	1.	PR		11 Apr 2012 08:4
2	1	0411F002.d	1.	PR		11 Apr 2012 09:0
3	1	0411F003.d	1.	PR		11 Apr 2012 09:2
4	1	0411F004.d	1.	PR		11 Apr 2012 09:4
5	1	0411F005.d	1.	PR		11 Apr 2012 10:0
6	1	0411F006.d	1.	PR		11 Apr 2012 10:2
7	1	0411F007.d	1.	3.0ug/mL DFTPP | SVM37-61C		11 Apr 2012 10:4
8	2	0411F008.d	1.	IB		11 Apr 2012 11:0
9	3	0411F009.d	1.	2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A		11 Apr 2012 11:1
10	4	0411F010.d	1.	4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B		11 Apr 2012 11:3
11	5	0411F011.d	1.	10ng/mL ICAL 1,4-Dioxane | SVM37-76C		11 Apr 2012 11:5
12	6	0411F012.d	1.	20ng/mL ICAL 1,4-Dioxane | SVM37-76D / CCV		11 Apr 2012 12:1
13	7	0411F013.d	1.	50ng/mL ICAL 1,4-Dioxane | SVM37-76E		11 Apr 2012 12:3
14	8	0411F014.d	1.	100ng/mL ICAL 1,4-Dioxane | SVM37-76F		11 Apr 2012 12:5
15	9	0411F015.d	1.	200ng/mL ICAL 1,4-Dioxane | SVM37-76G		11 Apr 2012 13:1
16	10	0411F016.d	1.	20ng/mL ICV 1,4-Dioxane | SVM38-29B		11 Apr 2012 13:3
17	11	0411F017.d	1.	KWG1202790-5 | MB		11 Apr 2012 14:0
18	12	0411F018.d	1.	KWG1202790-1 | LOD		11 Apr 2012 14:2
19	13	0411F019.d	1.	KWG1202790-2 | LOD		11 Apr 2012 14:4
20	14	0411F020.d	1.	KWG1202790-3 | LOD	Soil LOD's / LOQ	11 Apr 2012 14:5
21	15	0411F021.d	1.	KWG1202790-4 | LOQ		11 Apr 2012 15:1
22	16	0411F022.d	1.	KWG1202878-8 | MB		11 Apr 2012 15:3
23	17	0411F023.d	1.	KWG1202878-4 | LOD		11 Apr 2012 15:5
24	18	0411F024.d	1.	KWG1202878-5 | LOD		11 Apr 2012 16:1
25	19	0411F025.d	1.	KWG1202878-6 | LOD		11 Apr 2012 16:3
26	20	0411F026.d	1.	KWG1202878-7 | LOQ		11 Apr 2012 16:5

NR

NR

CAL 1144L

LB

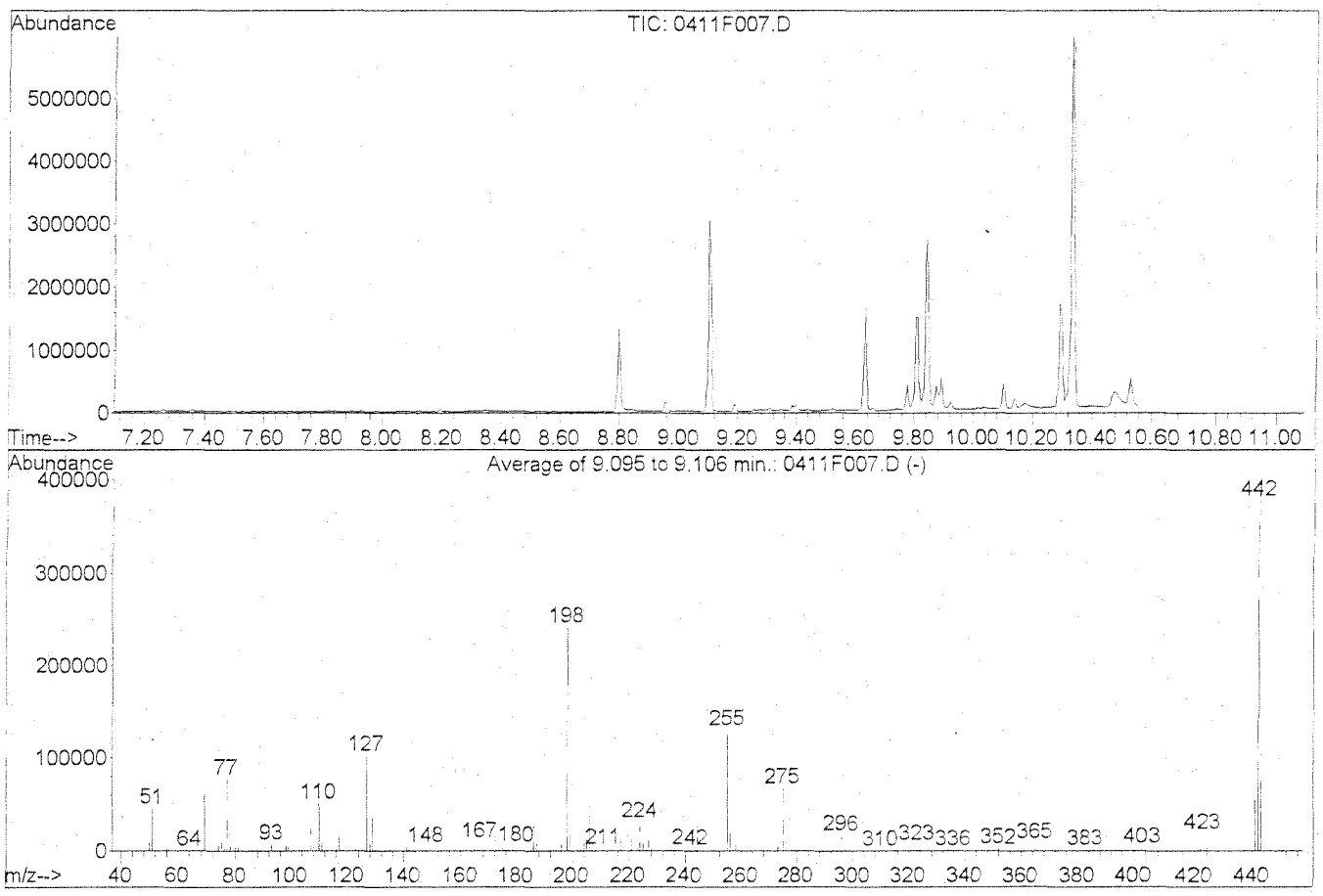
APR 2 0 2012

CA 04-23-12

DFTPP

Data File : J:\MS26\DATA\041112\0411F007.D
Acq On : 11 Apr 2012 10:41 am
Sample : 3.0ug/mL DFTPP | SVM37-61C
Misc :
MS Integration Params: rteint.p
Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix

Vial: 1
Operator: KBailey
Inst : MS26
Multiplr: 1.00



AutoFind: Scans 1050, 1051, 1052; Background Corrected with Scan 1046

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	18.8	45513	PASS
68	69	0.00	2	1.3	787	PASS
69	198	0.00	100	25.2	60927	PASS
70	69	0.00	2	0.6	395	PASS
127	198	10	80	42.4	102442	PASS
197	198	0.00	2	0.0	81	PASS
198	442	30	100	63.0	241866	PASS
199	198	5	9	6.8	16472	PASS
275	198	10	60	27.6	66830	PASS
365	442	1	50	2.3	8721	PASS
441	443	0.01	100	72.5	54989	PASS
442	442	30	100	100.0	384122	PASS
443	442	15	24	19.7	75860	PASS

0411F007.D A_DFTPP.M Fri Apr 20 15:55:37 2012

APR 2 0 2012

APR 2 3 2012

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
50.05	9042	63.90	305	75.00	9570	87.00	741
51.00	45513	64.95	1170	76.10	3311	87.90	257
52.05	2433	65.90	27	77.05	76896	89.00	156
53.00	218	66.95	14	78.10	5645	91.00	1007
55.00	207	68.00	787	79.00	3998	92.00	1250
56.00	1413	69.00	60927	80.00	3175	93.00	7123
57.00	3547	70.00	395	81.00	4752	94.00	599
58.00	235	71.10	8	82.00	1230	94.95	117
61.00	612	72.00	158	83.00	1414	95.95	435
62.00	665	73.00	383	84.95	1127	97.05	223
63.00	2173	74.00	5511	85.90	761	98.00	5412

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
99.00	5076	110.00	50992	121.00	138	132.05	379
99.95	480	111.00	7373	122.00	1552	132.90	112
101.00	3277	111.95	963	123.00	2393	134.00	965
102.00	167	112.95	347	124.00	1200	135.00	2783
103.00	1009	113.90	53	125.00	1214	136.00	1175
104.00	1792	114.90	189	126.05	288	137.00	1568
105.00	1691	116.00	1246	127.00	102442	137.85	421
106.00	648	117.00	15489	128.00	7501	139.00	194
107.00	23908	118.00	1257	129.00	35771	139.95	460
108.00	4050	119.00	304	130.00	3102	141.00	4135
109.00	582	120.00	332	131.00	706	142.00	1473

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
142.95	1149	154.00	1125	165.00	1538	176.00	1237
144.00	339	155.00	2521	166.00	1349	177.00	1727
145.00	320	156.00	3927	167.00	9218	178.00	557
146.00	742	157.00	836	168.00	4967	179.00	6513
147.00	2358	157.95	818	169.00	829	180.00	4999
148.00	4480	159.00	634	170.00	293	181.00	2441
149.00	1168	160.00	1335	170.90	443	182.00	427
150.00	314	161.00	2203	171.95	758	182.95	246
151.15	648	161.95	670	173.00	1152	184.00	505
151.80	356	162.95	190	174.00	1988	185.00	3338
153.00	1442	164.00	297	175.05	3754	186.00	27785

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
187.00	7790	198.00	241866	210.30	505	224.00	30477
188.05	784	199.00	16472	211.00	2072	225.00	7686
189.00	1382	200.00	1269	213.00	130	226.00	775
190.00	266	201.50	1223	214.95	416	227.00	11131
191.10	777	203.00	1384	216.00	1045	228.00	1512
192.00	2338	204.00	7195	217.00	13414	229.00	2665
193.00	2567	205.00	12496	218.00	1765	230.00	408
194.00	604	206.00	53876	218.95	182	231.00	1191
195.05	293	207.00	7081	221.00	15072	232.00	193
196.00	7048	208.00	1454	221.80	200	232.95	187
196.90	81	209.00	601	223.00	3145	234.00	677

APR 23 2012 APR 2 0 2012

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
235.00	913	246.00	4147	257.00	1525	271.95	331
235.95	534	247.00	852	258.00	6574	273.00	4314
237.00	984	247.95	194	259.00	1050	274.00	11381
238.00	145	249.00	981	260.00	220	275.00	66830
239.00	386	249.95	182	260.95	214	276.00	9067
240.00	326	250.95	180	263.85	332	277.00	4502
241.00	685	251.95	167	265.00	2545	278.00	777
242.00	1745	253.00	442	265.85	393	278.95	149
243.05	1834	254.00	548	267.70	73	280.95	111
244.00	27432	255.00	130301	269.95	166	282.00	143
245.00	3713	256.00	19632	270.90	216	283.00	548

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
284.00	366	296.00	16243	314.00	897	328.00	621
285.00	860	297.00	2402	315.00	1899	328.90	61
286.00	179	298.00	153	316.00	1183	332.00	537
288.90	195	300.90	210	317.05	214	333.00	621
290.00	192	302.00	294	321.00	549	334.00	4228
290.80	51	303.05	2164	321.95	322	335.00	1082
291.00	60	304.00	521	323.00	6596	336.05	131
292.00	241	308.00	227	324.00	1317	338.90	57
293.00	1156	309.00	149	324.95	123	341.00	816
294.05	243	310.00	252	326.00	116	342.00	186
295.00	282	313.00	162	326.90	1122	346.00	1700

Average of 9.095 to 9.106 min.: 0411F007.D
3.0ug/mL DFTPP | SVM37-61C
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
346.95	309	370.95	575	402.00	1868	442.05	384122
350.95	132	372.00	4201	403.00	2705	443.05	75860
352.00	2094	373.00	935	404.00	981	444.10	7088
353.05	1360	374.00	59	404.95	135	445.00	402
354.00	2293	377.00	63	414.90	77		
355.10	420	383.00	1093	421.00	2436		
358.95	172	383.90	347	422.00	2275		
365.00	8721	390.00	554	423.00	18632		
366.00	1367	391.00	382	424.00	3795		
366.90	56	392.05	328	425.00	378		
370.00	215	400.95	281	441.05	54989		

APR 20 2012

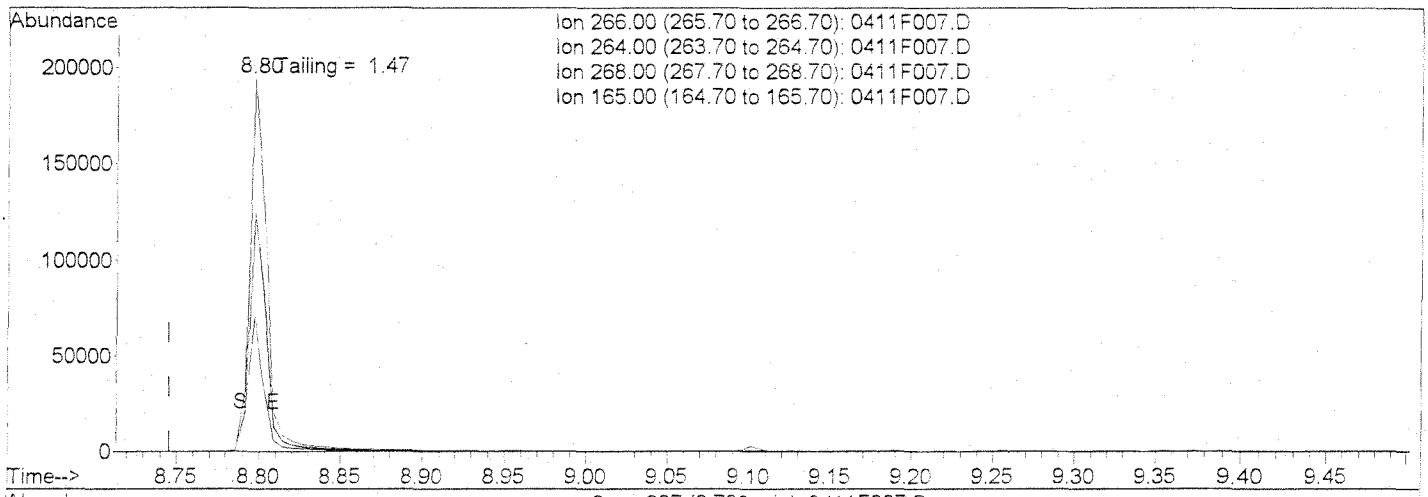
APR 23 2012

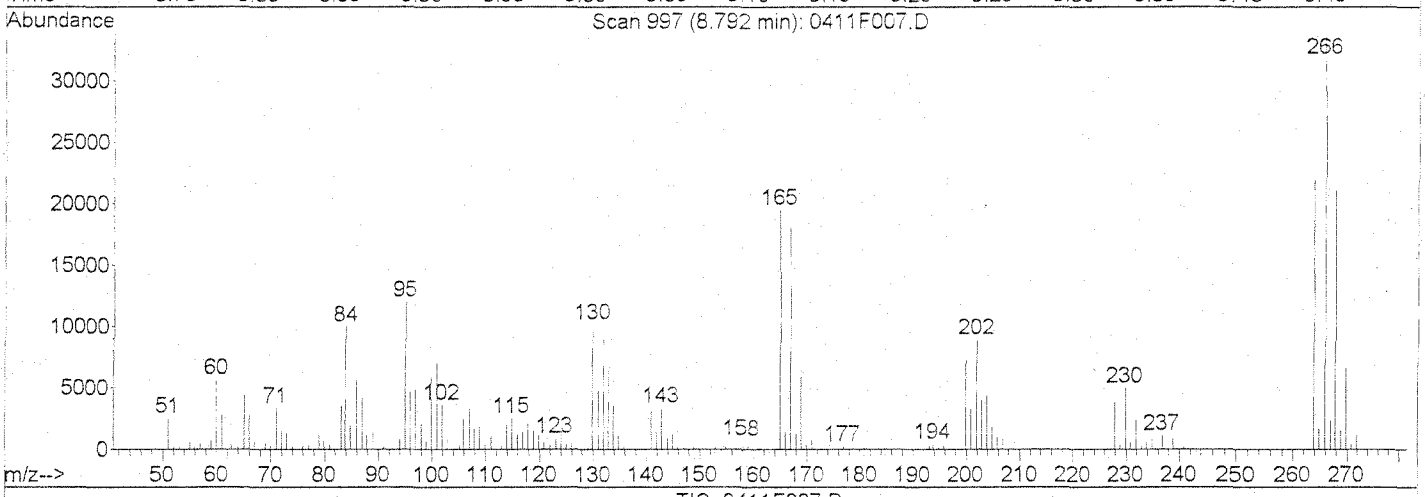
Quantitation Report

Data File : J:\MS26\DATA\041112\0411F007.D
Acq On : 11 Apr 2012 10:41 am
Sample : 3.0ug/mL DFTPP | SVM37-61C
Misc :
MS Integration Params: rteint.p

Vial: 1
Operator: KBailey
Inst : MS26
Multiplr: 1.00

Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix
Last Update : Tue Nov 22 15:57:47 2011
Response via : Initial Calibration





TIC: 0411F007.D

(1) Pentachlorophenol

Exp R.T. 9.25min

response 0

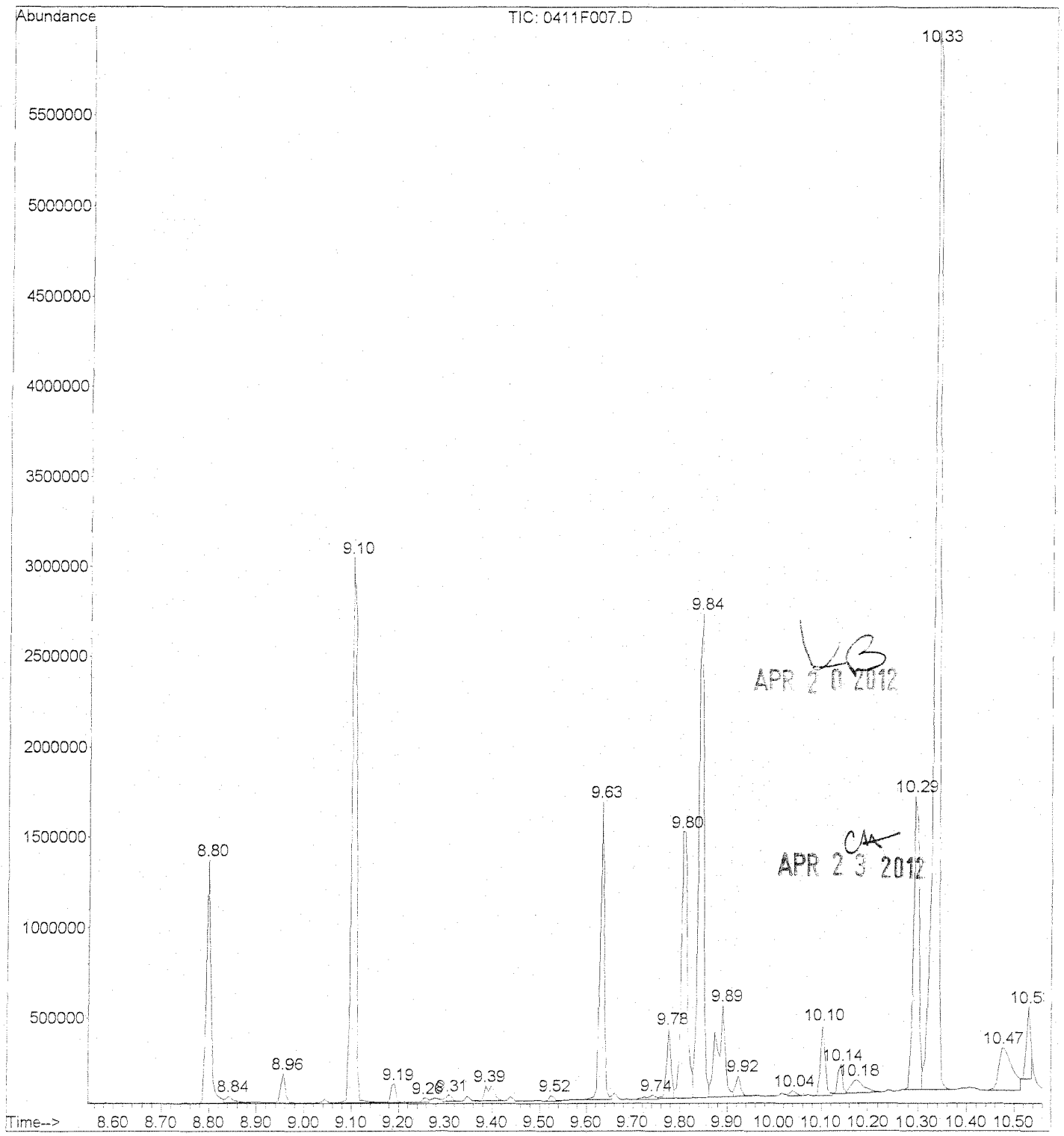
Ion	Exp%	Act%
266.00	100	100
264.00	0.00	64.74
268.00	0.00	62.17
165.00	0.00	57.67

APR 2 0 2012

APR 2 3 2012

0411F007.D A_DFTPP.M Fri Apr 20 15:55:57 2012

File : J:\MS26\DATA\041112\0411F007.D
Operator : KBailey
Acquired : 11 Apr 2012 10:41 am using AcqMethod TUNE14DX
Instrument : MS26
Sample Name: 3.0ug/mL DFTPP | SVM37-61C
Misc Info :
Vial Number: 1



1	3.791	rVB	0.069		33163	3.773	3.842
2	4.306	rVB	0.080		26100	4.288	4.368
3	4.849	rBV	0.040		24096	4.826	4.866
4	4.941	rVB	0.052		27968	4.918	4.969
5	5.278	rVB	0.034		23779	5.261	5.295
6	5.376	rBV	0.046		103298	5.353	5.398
7	5.507	rBV	0.080		90384	5.467	5.547
8	5.564	rBV	0.034		30855	5.547	5.582
9	5.650	rBV	0.046		27717	5.633	5.679
10	5.839	rVB	0.046		25401	5.816	5.862
11	6.142	rBV	0.040		24548	6.119	6.159
12	6.680	rVB	0.057		163712	6.657	6.714
13	7.264	rVB	0.069		28093	7.241	7.310
14	7.361	rBV	0.034		21076	7.344	7.378
15	8.196	rVB	0.097		37037	8.156	8.254
16	8.345	rVB	0.092		34196	8.305	8.397
17	8.797	rBV	0.063		919010	8.769	8.832
18	8.843	rVB	0.057		38087	8.832	8.889
19	8.957	rVB	0.063		113424	8.935	8.998
20	9.101	rBV	0.103		2248601	9.066	9.169
21	9.192	rVB	0.040		77660	9.169	9.209
22	9.255	rBV	0.034		23121	9.232	9.266
23	9.307	rVV	0.040		34046	9.295	9.335
24	9.387	rVB	0.063		113926	9.364	9.427
25	9.524	rBV	0.040		25688	9.507	9.547
26	9.633	rBV	0.063		1053543	9.593	9.656
27	9.741	rBV	0.046		38112	9.707	9.753
28	9.776	rVV	0.034		265686	9.753	9.787
29	9.804	rVV	0.040		1369413	9.787	9.827
30	9.844	rVV	0.034		2108008	9.827	9.862
31	9.890	rVV	0.052		617847	9.862	9.913
32	9.924	rVB	0.040	DDE	81597	9.913	9.953
33	10.039	rVB	0.034		24273	10.027	10.062
34	10.102	rBV	0.040		277908	10.085	10.125
35	10.142	rVV	0.029	DDD	114143	10.125	10.153
36	10.176	rVB	0.074		141948	10.153	10.228
37	10.291	rBV	0.040		1330979	10.268	10.308
38	10.331	rVB	0.063	DDT	4965607	10.308	10.371
39	10.474	rBV	0.069		484196	10.445	10.514
40	10.531	rBV	0.023		259658	10.514	10.537

Breakdown = 3.87.

LB
APR 2 0 2012

APR 2 3 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F008.D Vial: 2
Acq On : 11 Apr 2012 11:00 am Operator: KBailey
Sample : IB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 11 11:27:32 2012 Quant Results File: 040412_DX.RES

Quant Method : J:\MS26\METHODS\SIM\040412_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	13330	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	0.00	96	0	0.00	ng/ml	
Spiked Amount 50.000			Recovery =	0.00%		

Target Compounds Qvalue

APR 2 0 2012

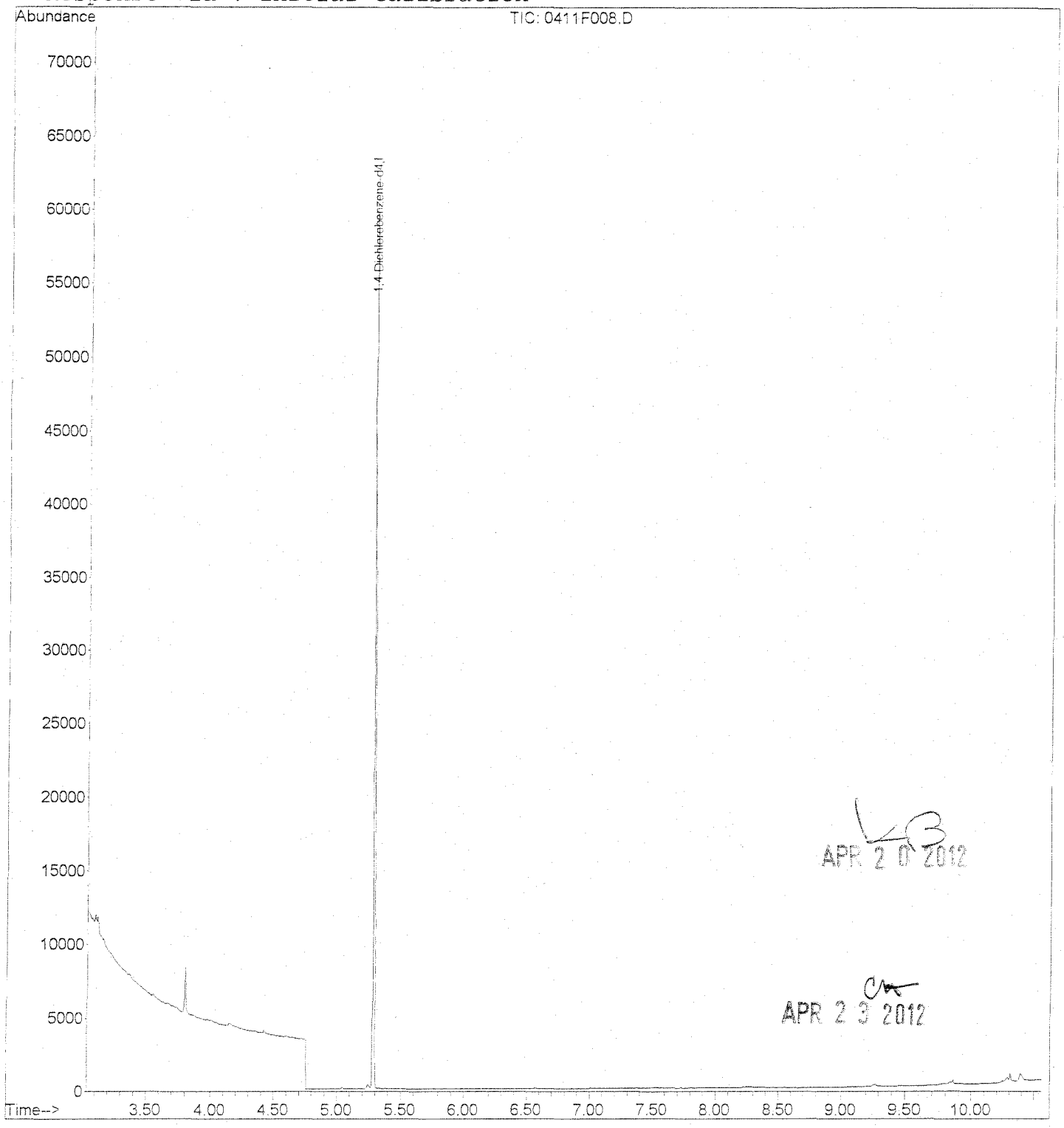
APR 2 3 2012

(#) = qualifier out of range (m) = manual integration
0411F008.D 040412_DX.M Fri Apr 20 15:56:43 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F008.D Vial: 2
Acq On : 11 Apr 2012 11:00 am Operator: KBailey
Sample : IB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 11 11:27 2012 Quant Results File: 040412_DX.RE

Method : J:\MS26\METHODS\SIM\040412_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration



APR 2 0 2012

APR 2 3 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:13 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14601	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	210m	1.99	ng/ml	0.00
Spiked Amount 50.000			Recovery =	3.98%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	202m	1.88	ng/ml	

APR 20 2012

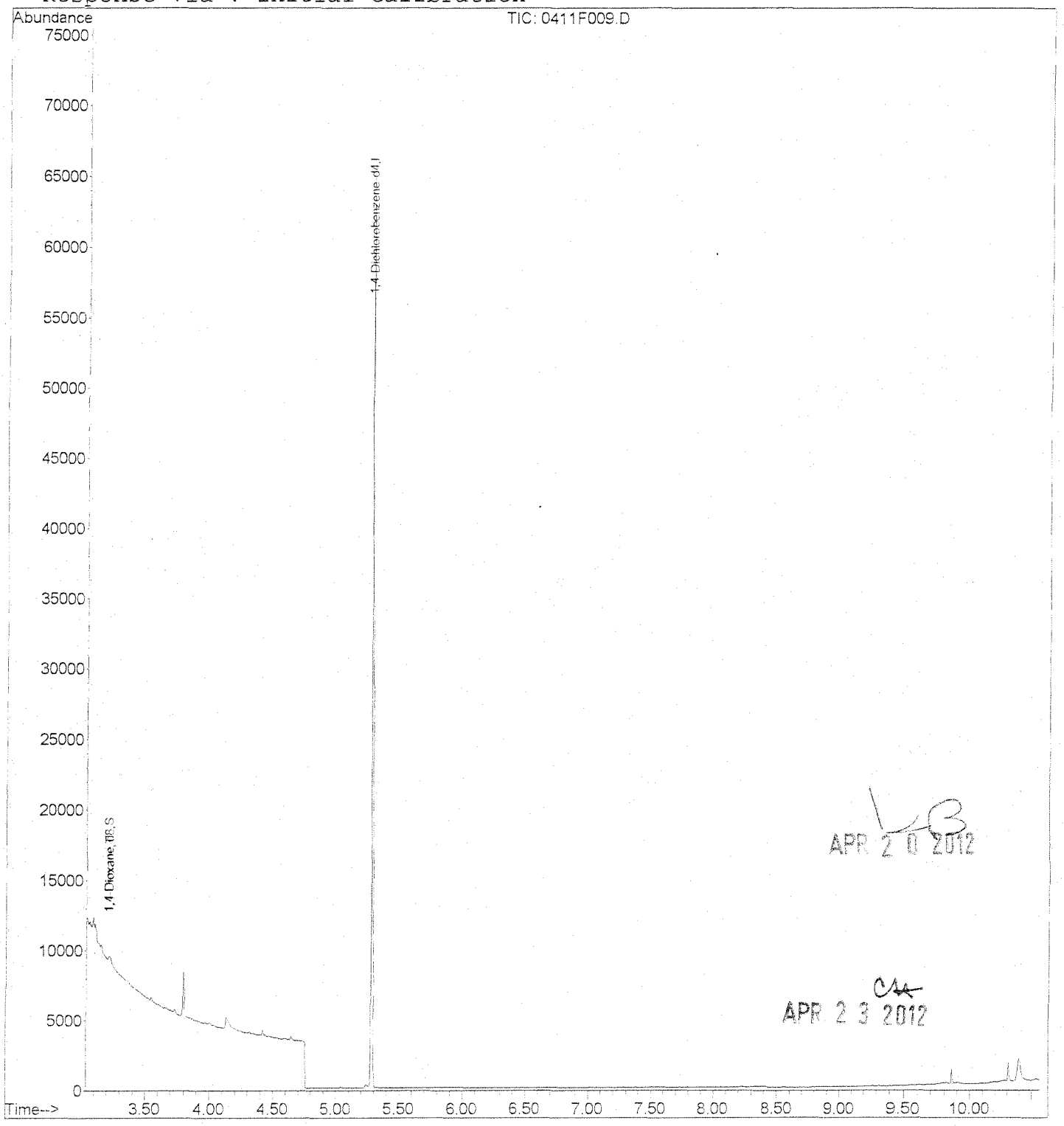
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F009.D 041112_DX.M Fri Apr 20 15:55:04 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: 041112_DX.RE

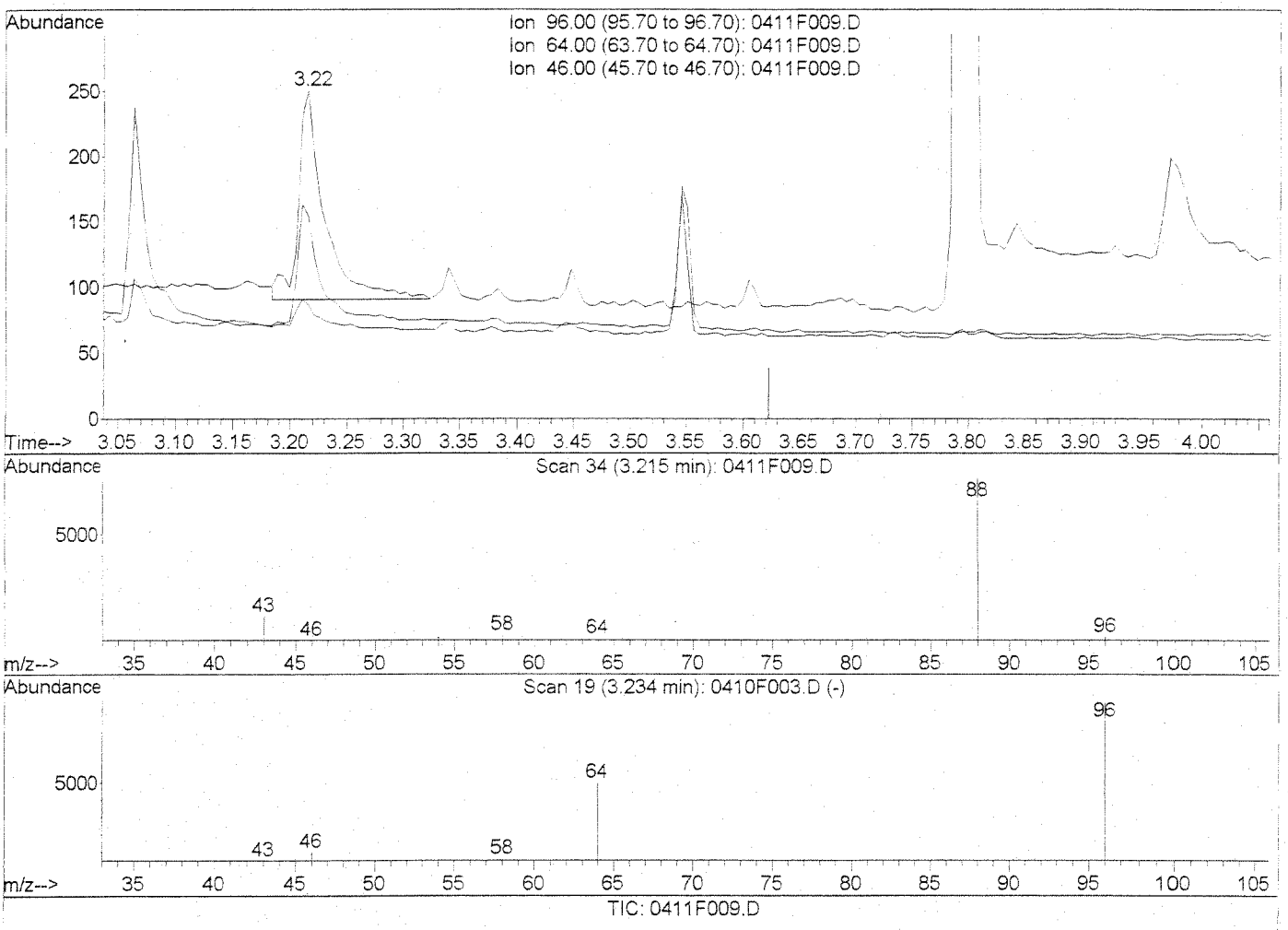
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F009.D

(2) 1,4-Dioxane-d8 (S)

3.22min 2.44ng/ml

response 258

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	52.50
46.00	9.50	11.88
0.00	0.00	0.00

Manual Integration:

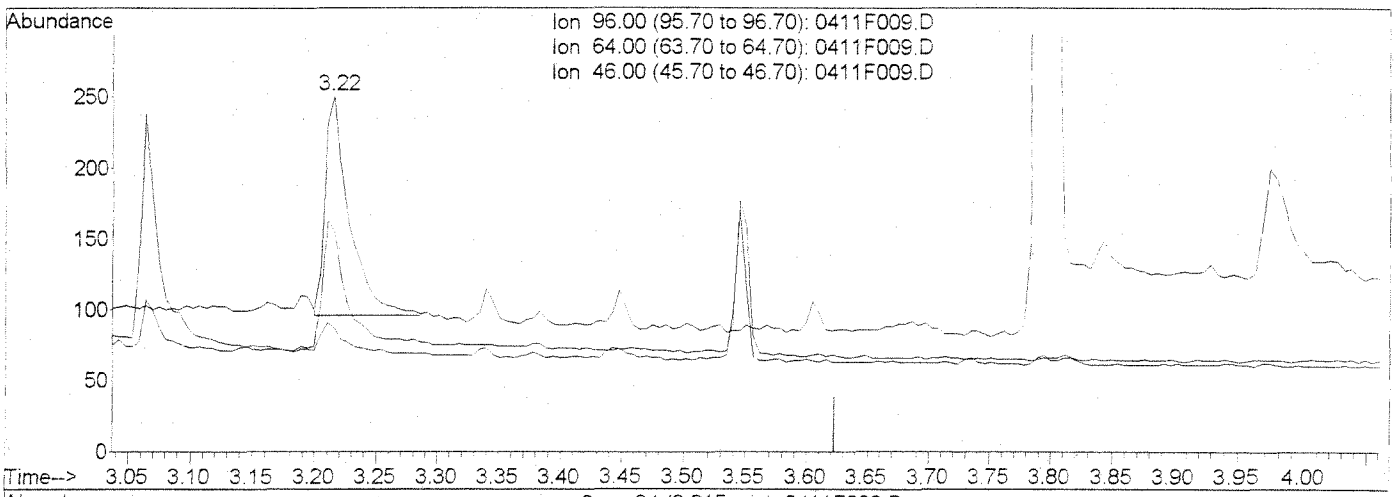
Before

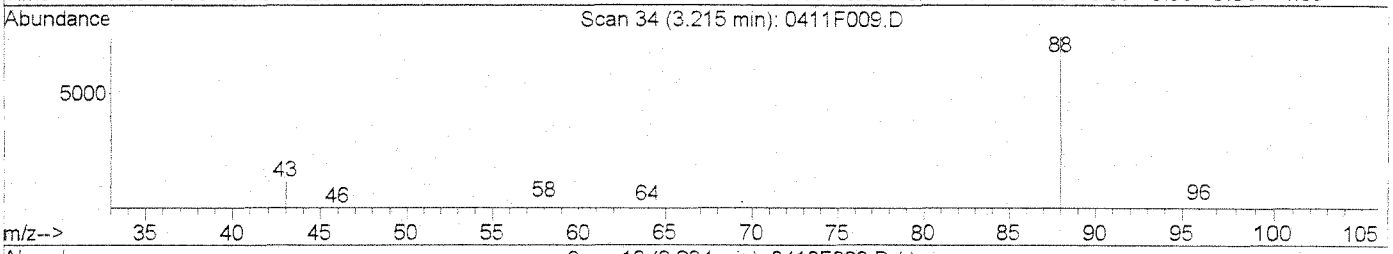
0411F009.D 041112_DX.M Thu Apr 19 19:36:34 2012

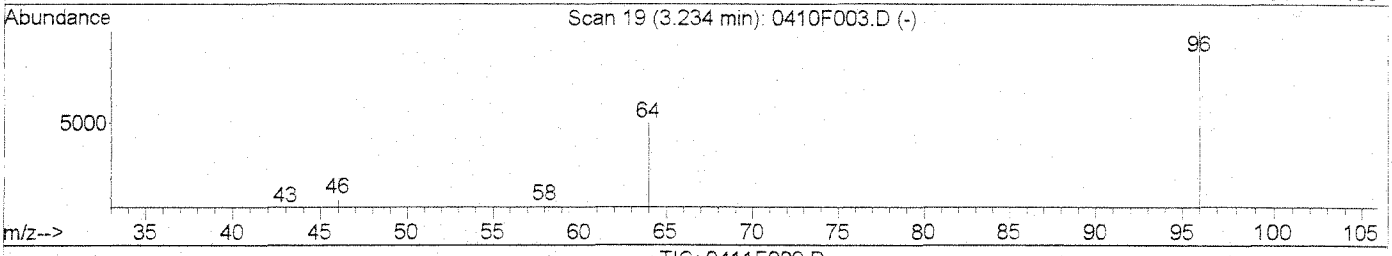
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F009.D

(2) 1,4-Dioxane-d8 (S)

3.22min 1.99ng/ml m

response 210

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	61.75
46.00	9.50	34.66#
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

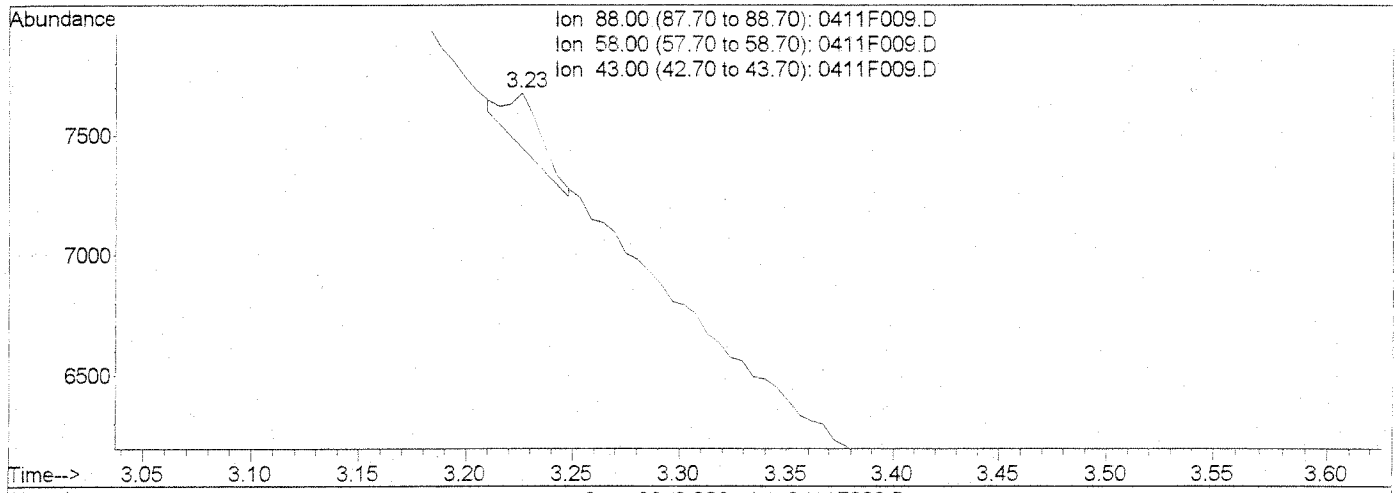
APR 23 2012

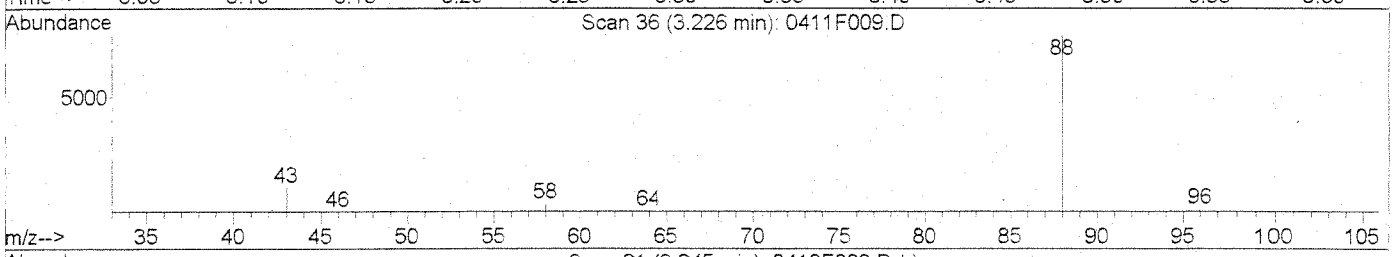
0411F009.D 041112_DX.M Thu Apr 19 19:36:43 2012

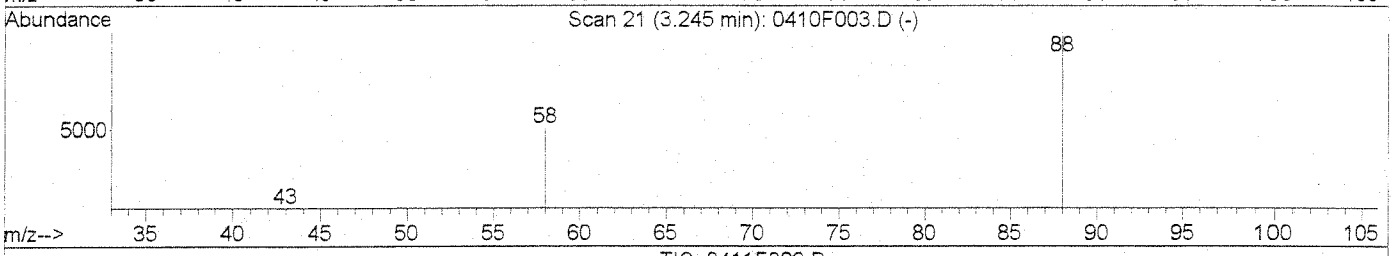
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F009.D Vial: 3
Acq On : 11 Apr 2012 11:19 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM37-76A Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F009.D

(3) 1,4-Dioxane (T)

3.23min 1.88ng/ml m

response 202

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	5.18
43.00	15.90	14.42
0.00	0.00	0.00

Manual Integration:

After

MP

04/19/12

APR 23 2012

0411F009.D 041112_DX.M Thu Apr 19 19:37:10 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14818	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	412m	3.84	ng/ml	0.00
Spiked Amount 50.000			Recovery =	7.68%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	383m	3.52	ng/ml	

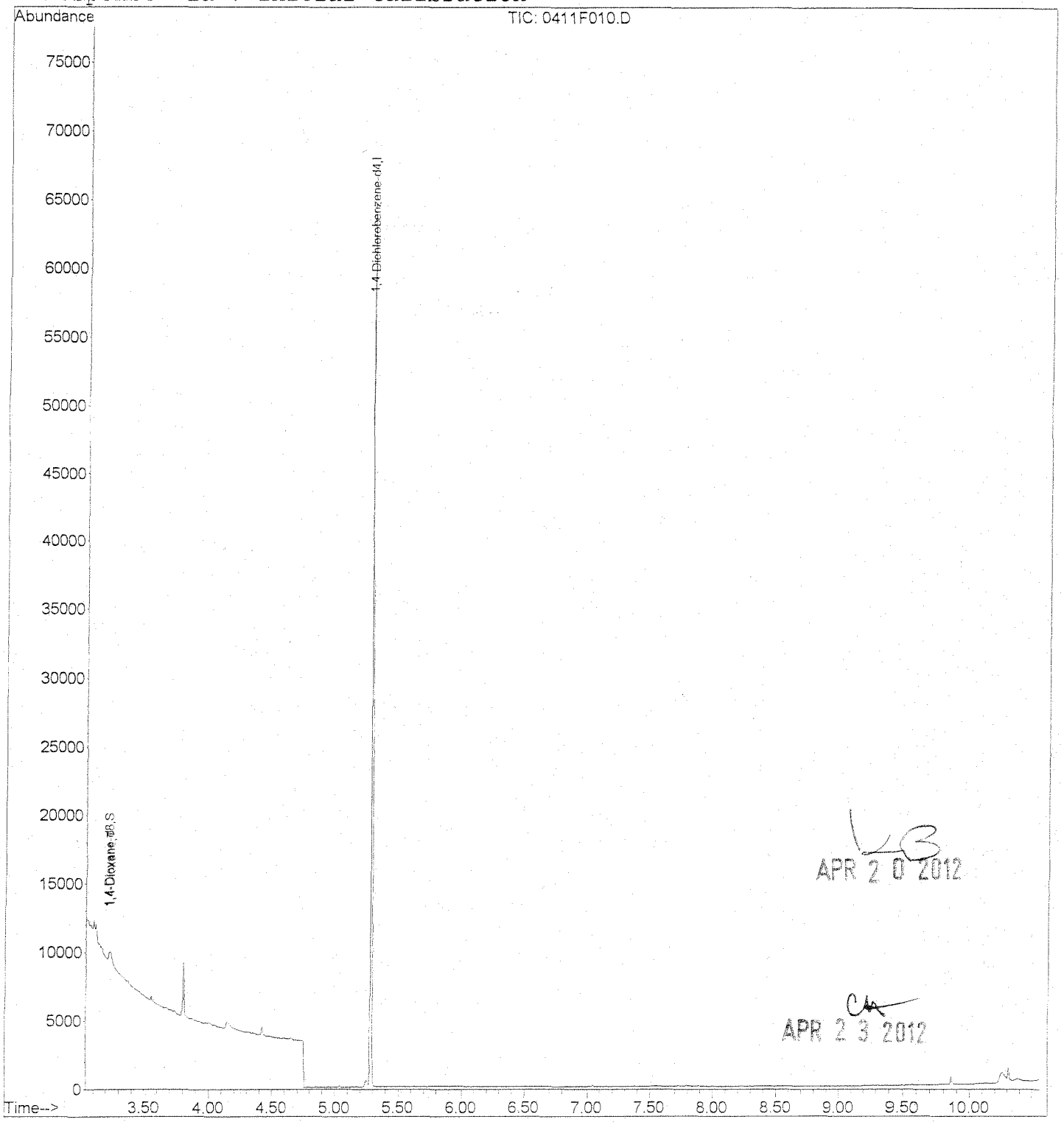
APR 20 2012

APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F010.D 041112_DX.M Fri Apr 20 15:55:04 2012 Page 1

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



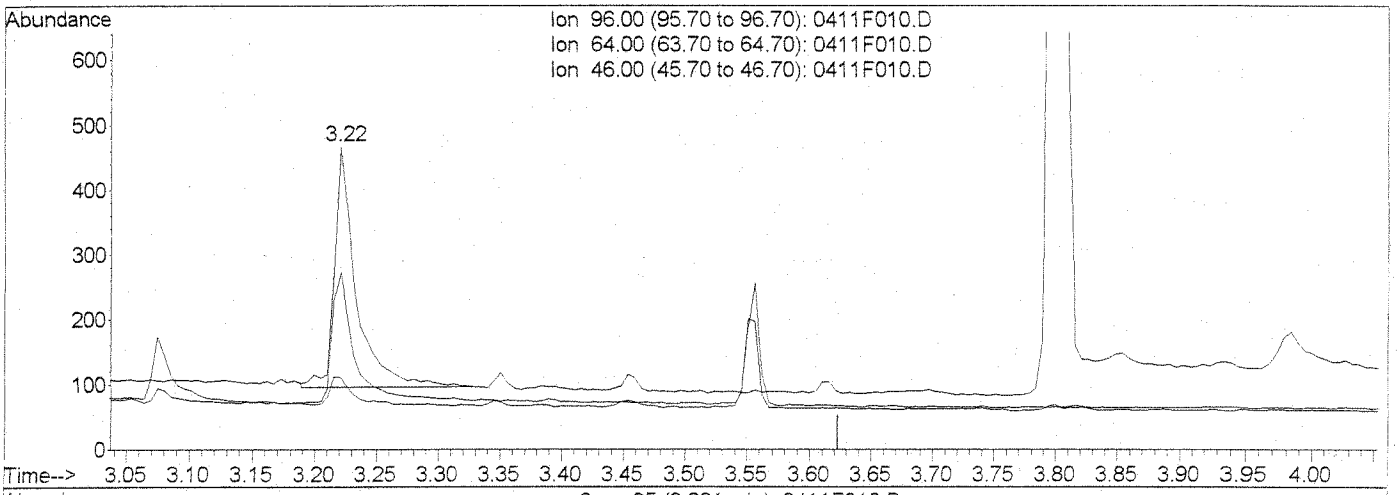
APR 20 2012

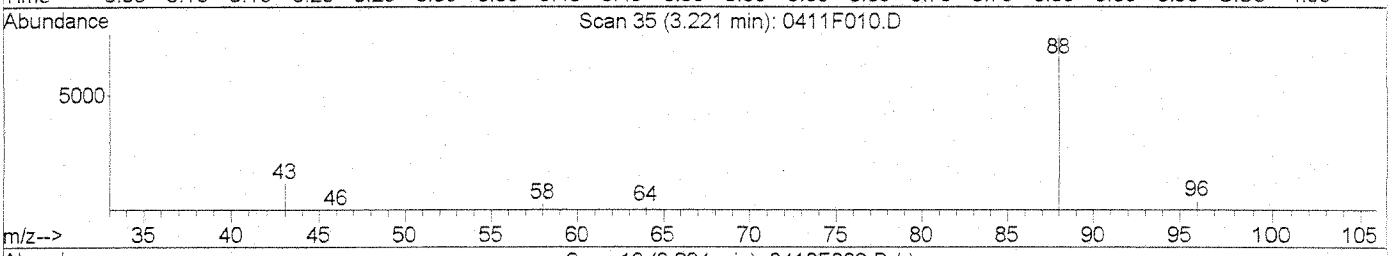
APR 23 2012

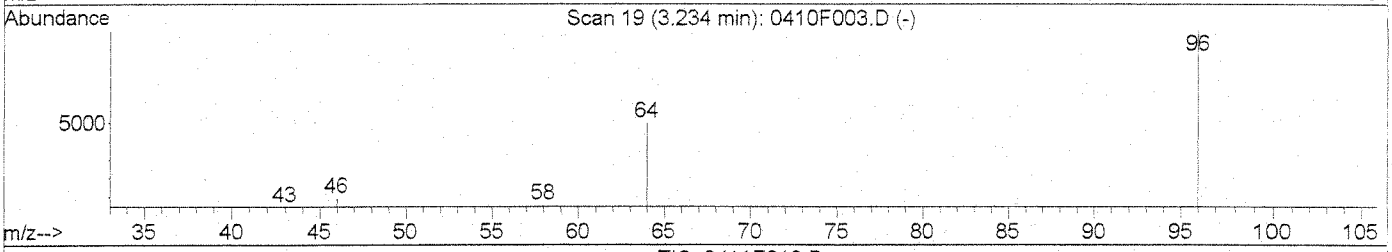
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F010.D

(2) 1,4-Dioxane-d8 (S)

3.22min 4.30ng/ml

response 461

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	54.18
46.00	9.50	11.59
0.00	0.00	0.00

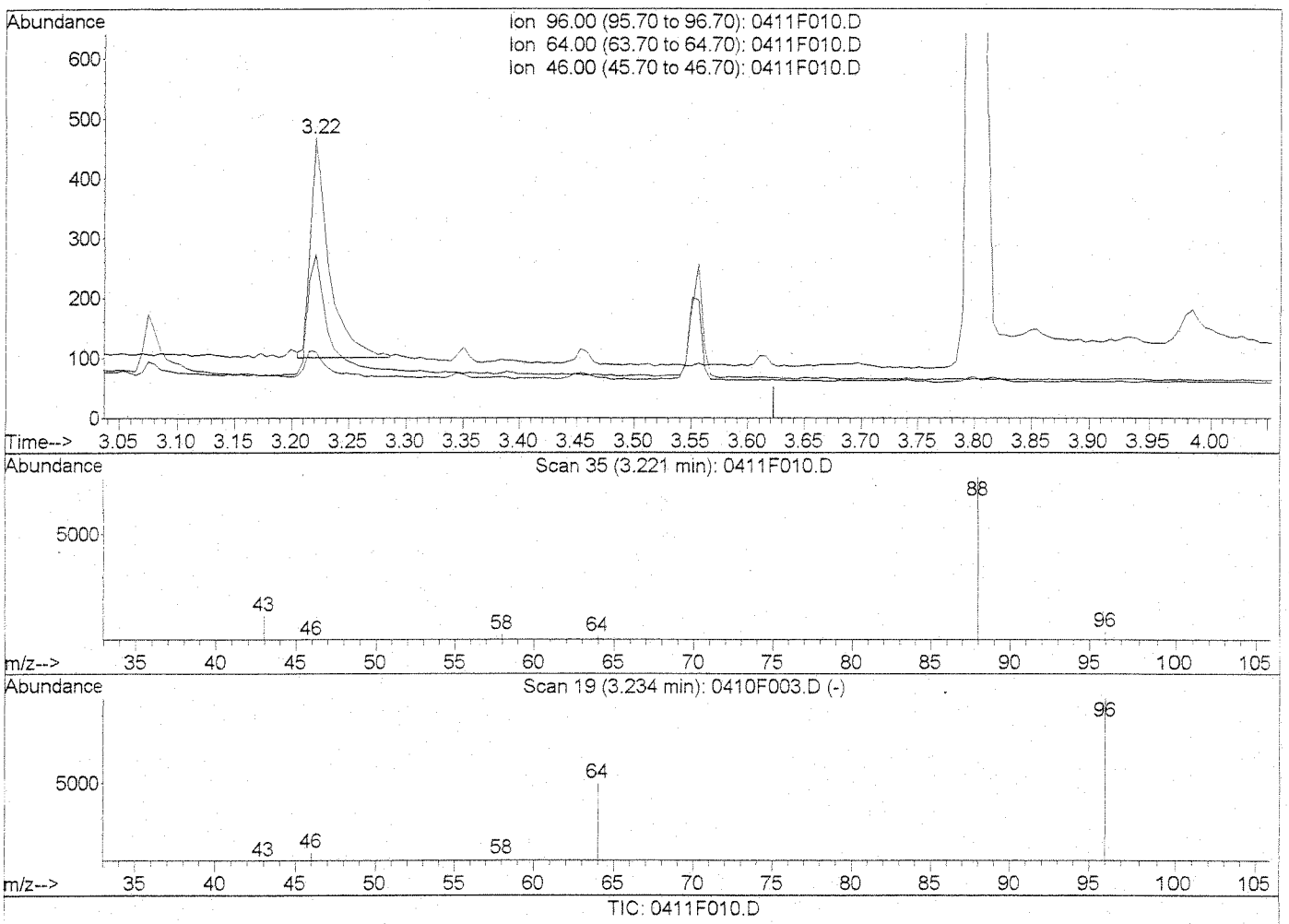
Manual Integration:

Before

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F010.D

(2) 1,4-Dioxane-d8 (S)

3.22min 3.84ng/ml m

response 412

Ion	Exp%	Act%
96.00	100	100
64.00	49.90	58.46
46.00	9.50	23.77
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

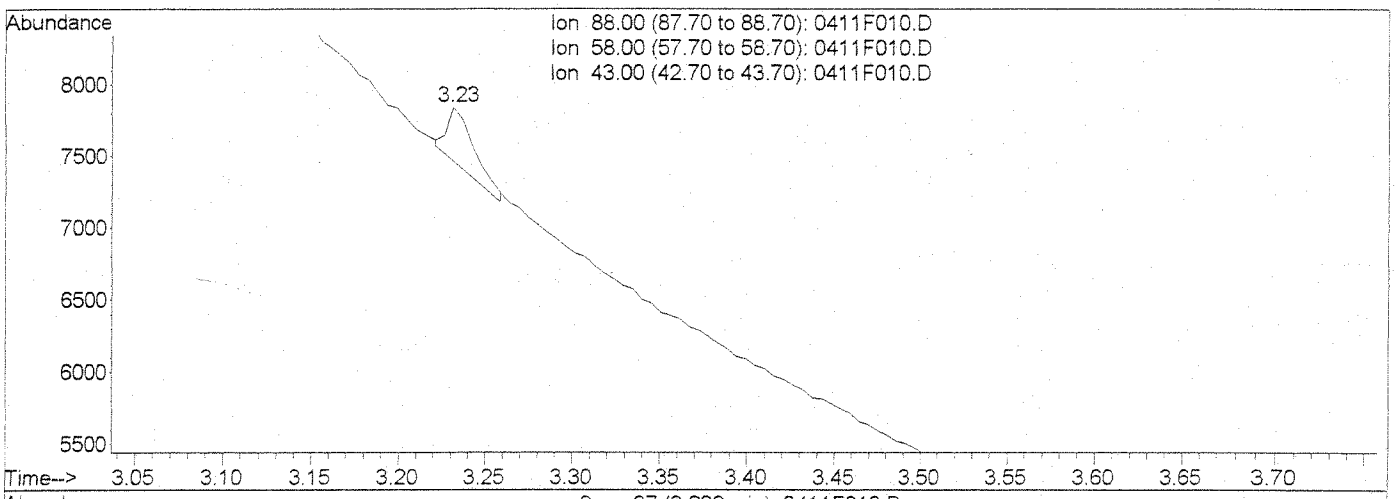
APR 2 3 2012

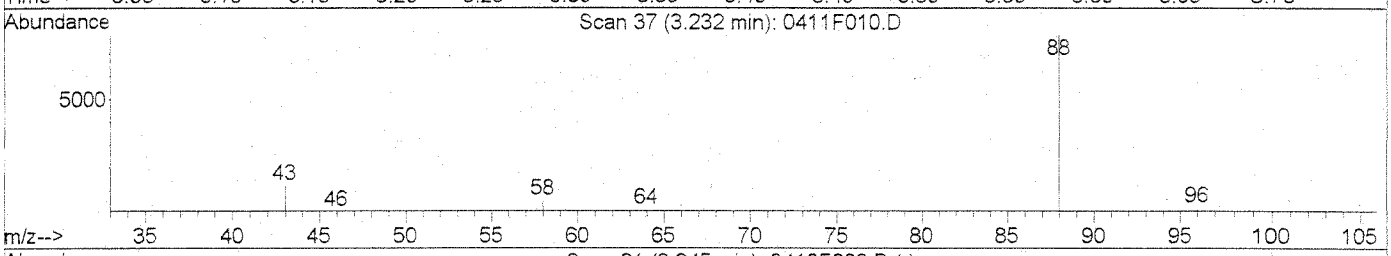
0411F010.D 041112_DX.M Thu Apr 19 19:37:28 2012

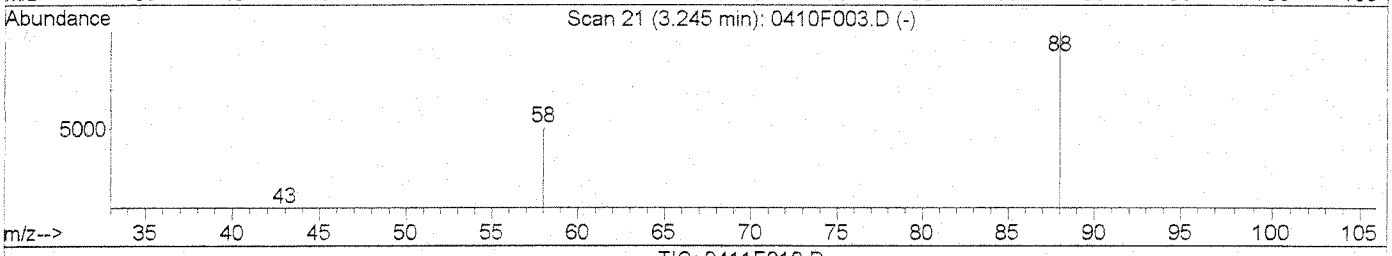
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F010.D Vial: 4
Acq On : 11 Apr 2012 11:38 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM37-76B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:37 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F010.D

(3) 1,4-Dioxane (T)

3.23min 3.52ng/ml m

response 383

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	6.89
43.00	15.90	15.57
0.00	0.00	0.00

Manual Integration:

After

MP

04/19/12

APR 2 3 2012

0411F010.D 041112_DX.M Thu Apr 19 19:37:44 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	14921	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	1162	10.75	ng/ml	0.00
Spiked Amount 50.000			Recovery =	21.50%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.24	88	1150m	10.49	ng/ml	

APR 20 2012

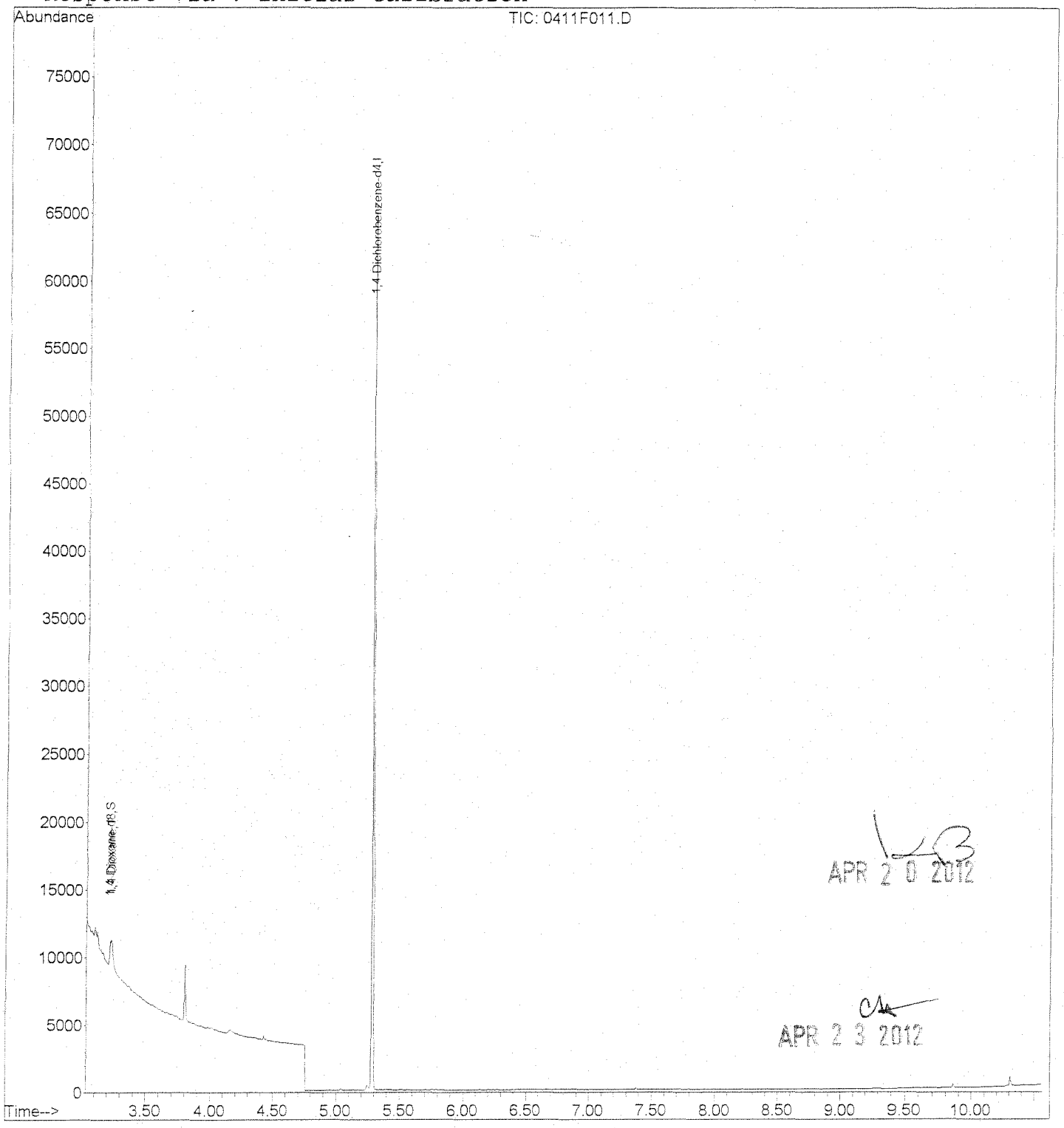
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F011.D 041112_DX.M Fri Apr 20 15:55:05 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

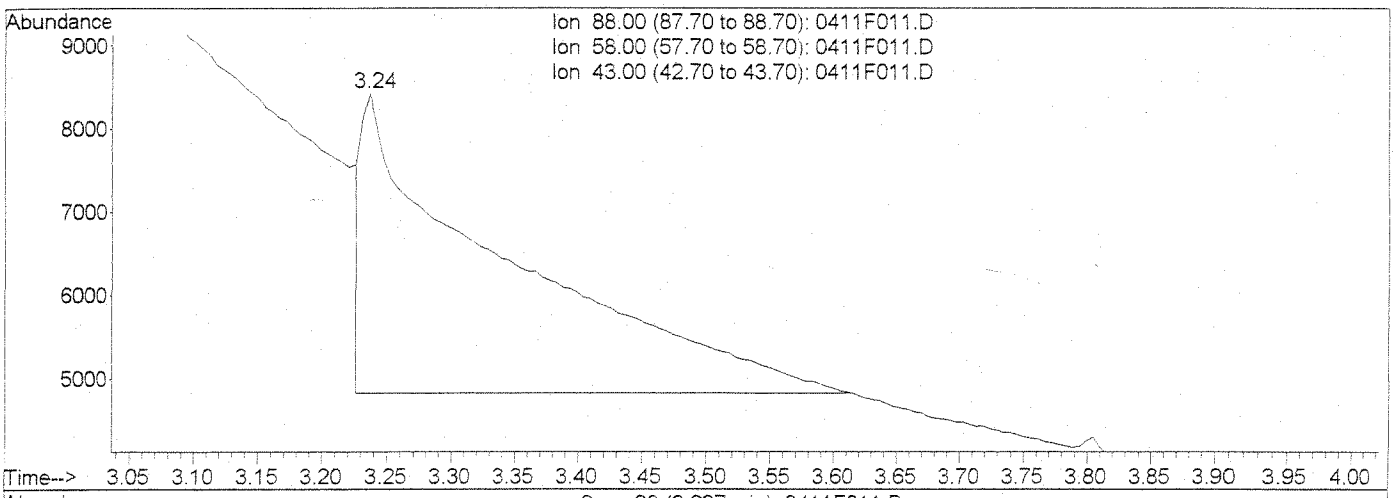
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration

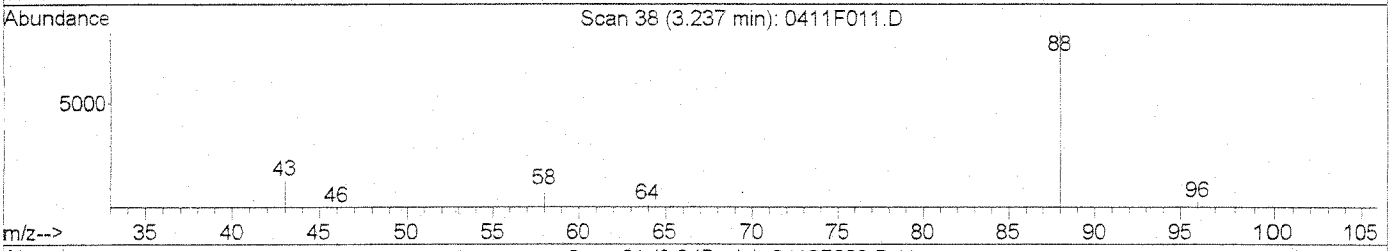


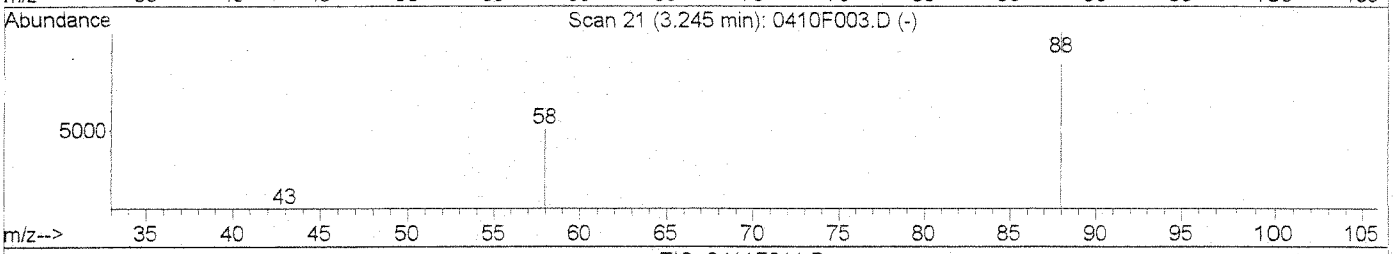
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F011.D

(3) 1,4-Dioxane (T)

3.24min 247.95ng/ml

response 27180

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	17.73
43.00	15.90	13.56
0.00	0.00	0.00

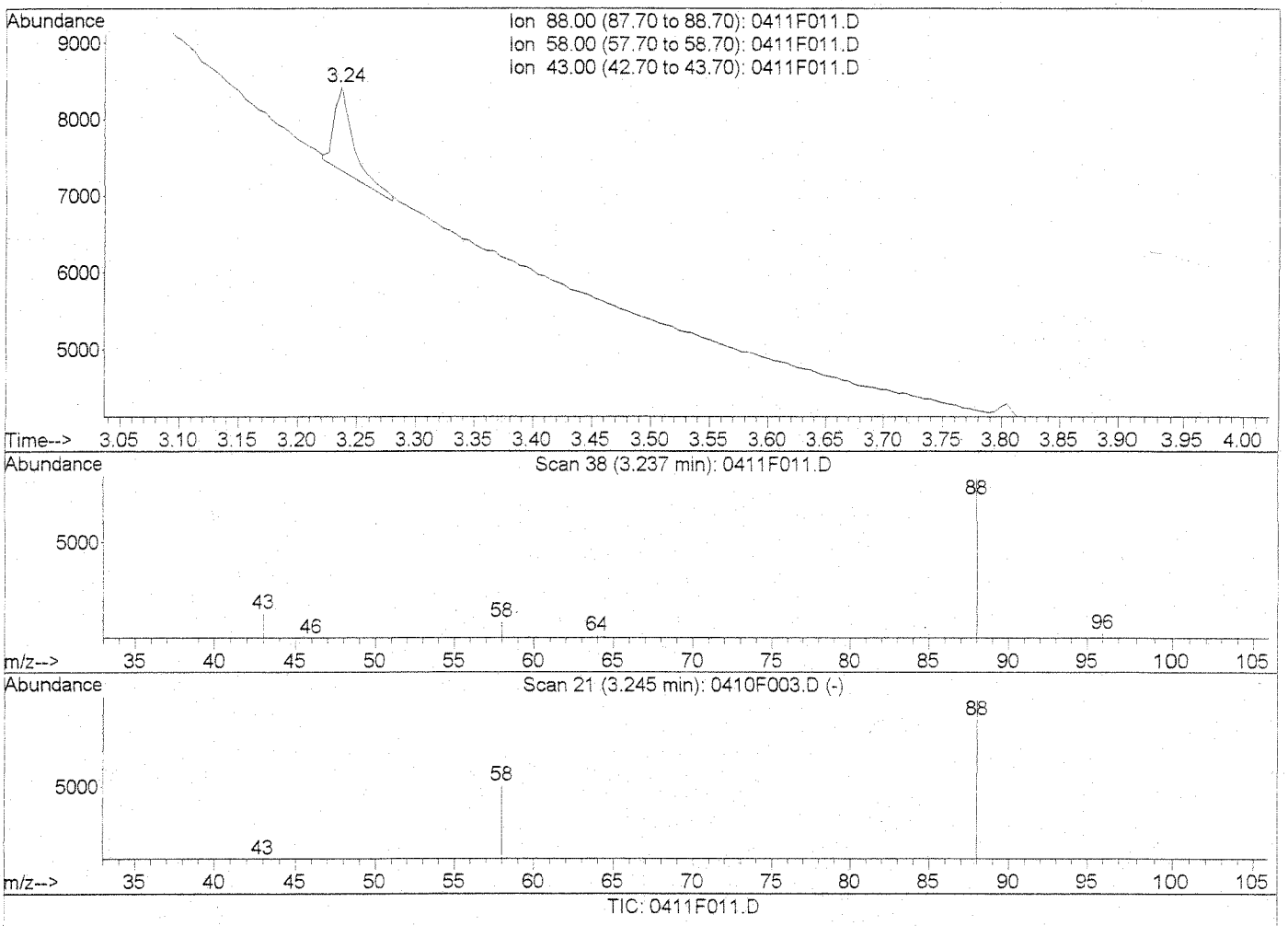
Manual Integration:

Before

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F011.D Vial: 5
Acq On : 11 Apr 2012 11:57 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM37-76C Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F011.D

(3) 1,4-Dioxane (T)

3.24min 10.49ng/ml m

response 1150

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	10.69
43.00	15.90	15.92
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

LG3

APR 23 2012

0411F011.D 041112_DX.M Thu Apr 19 19:38:10 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	15754	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.23	96	2418	21.19	ng/ml	0.00
Spiked Amount 50.000			Recovery = 42.38%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.24	88	2370m	20.48	ng/ml	

APR 20 2012

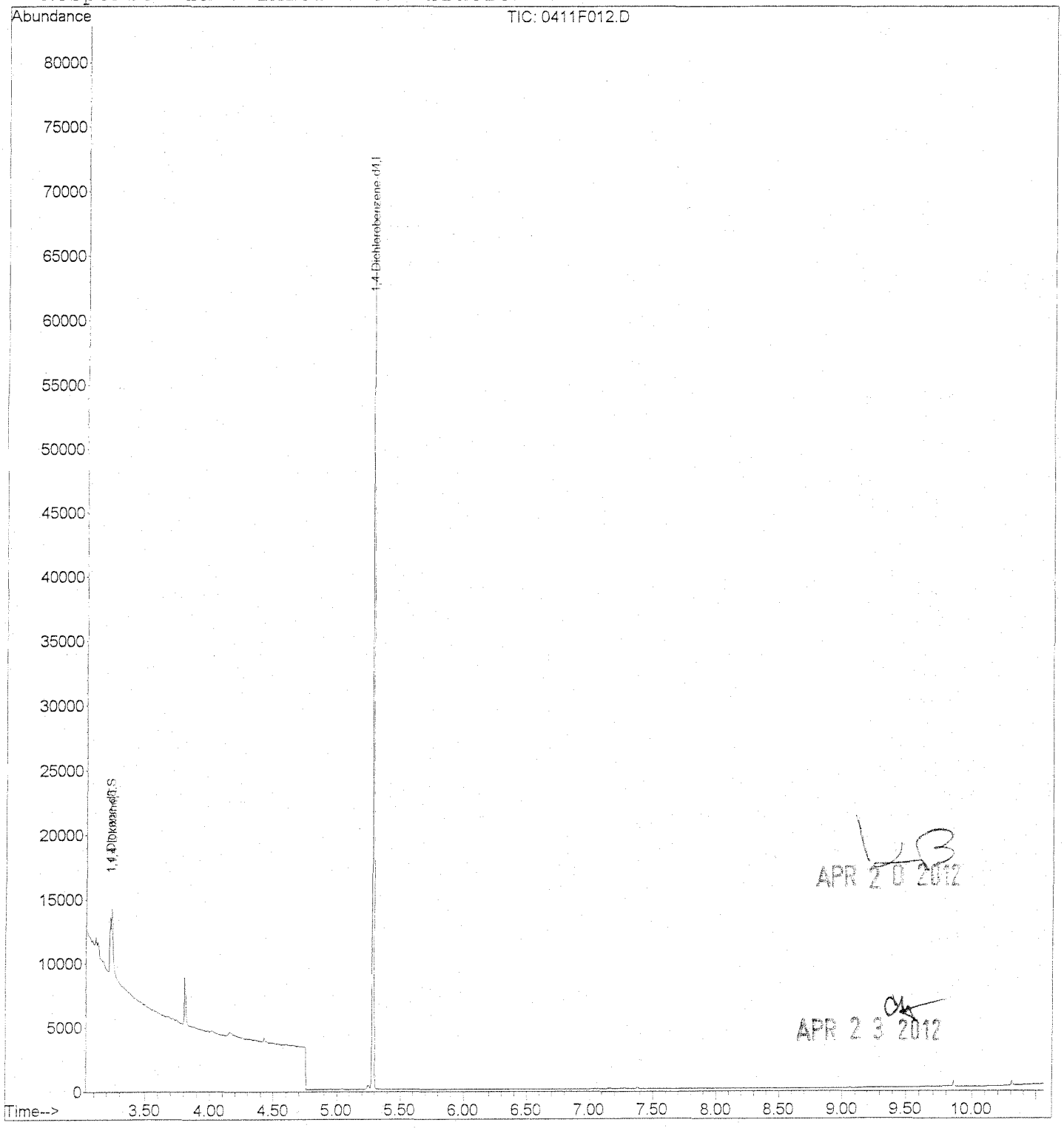
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F012.D 041112_DX.M Fri Apr 20 15:55:05 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



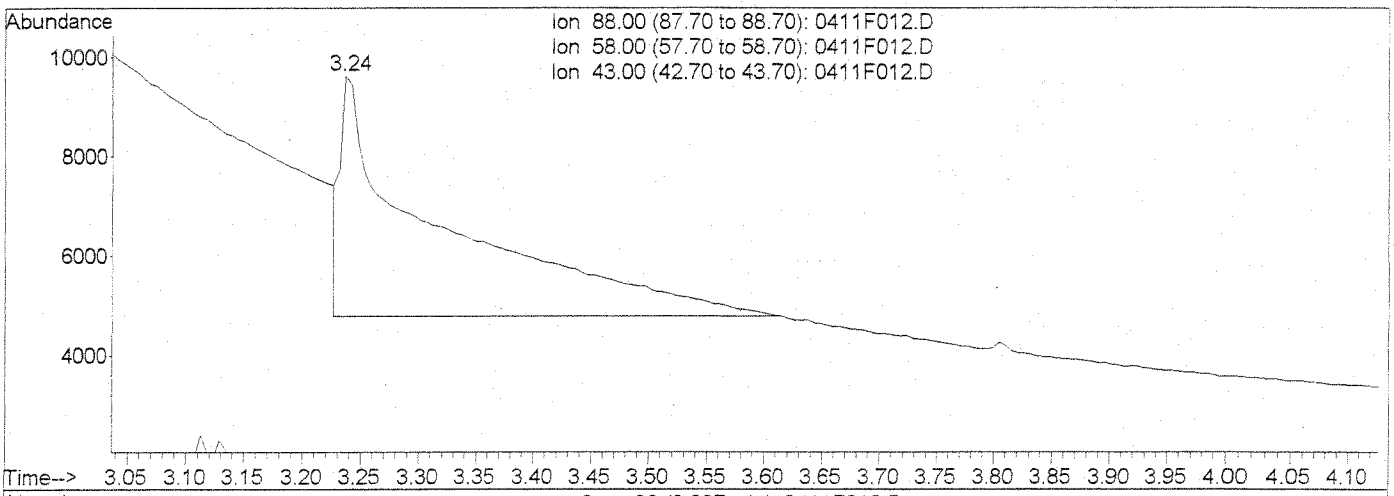
APR 20 2012

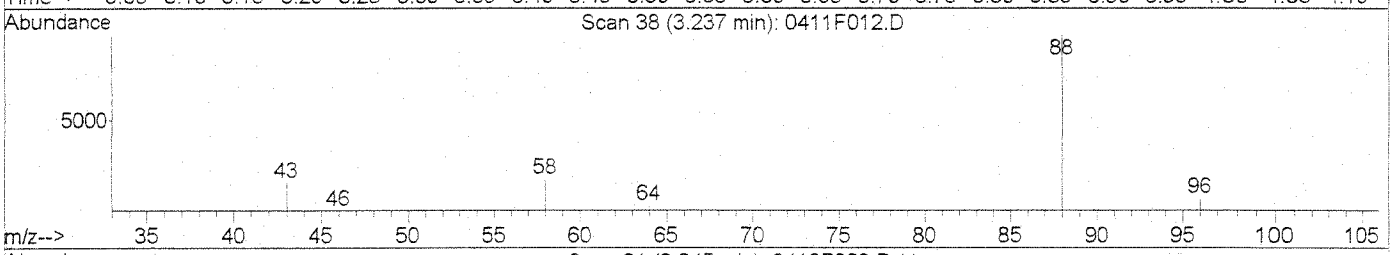
APR 23 2012

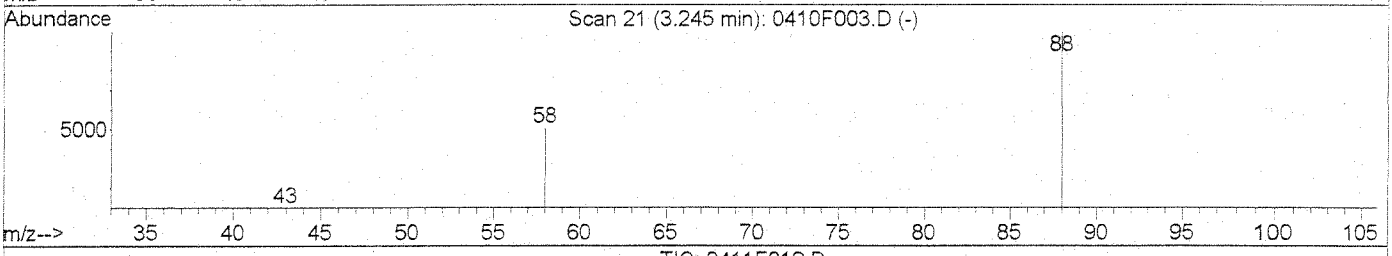
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F012.D

(3) 1,4-Dioxane (T)

3.24min 244.22ng/ml

response 28266

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	32.06
43.00	15.90	16.64
0.00	0.00	0.00

Manual Integration:

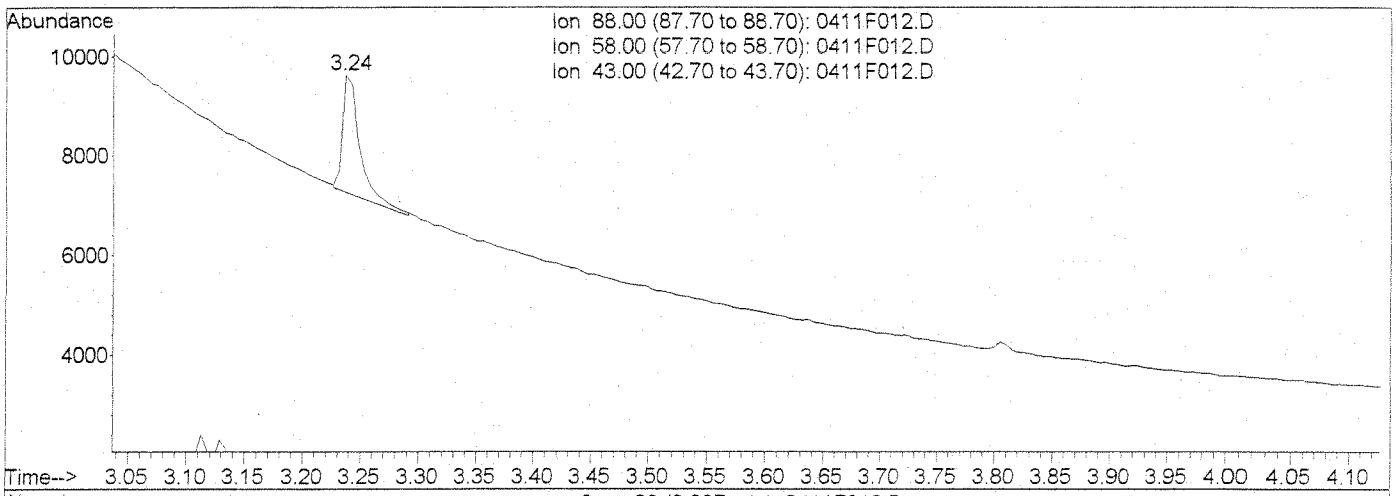
Before

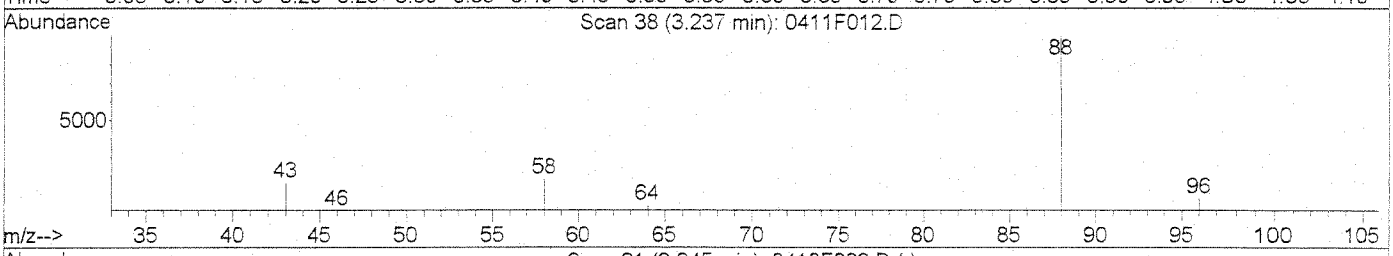
0411F012.D 041112_DX.M Thu Apr 19 19:38:20 2012

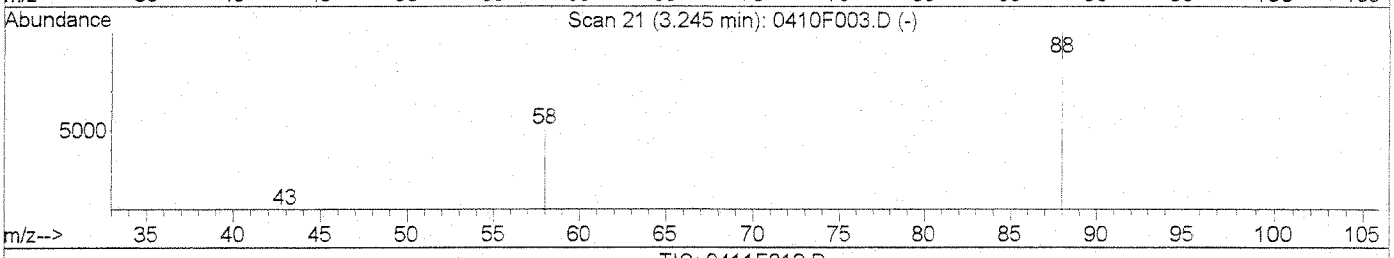
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F012.D Vial: 6
Acq On : 11 Apr 2012 12:16 pm Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM37-76D Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F012.D

(3) 1,4-Dioxane (T)

3.24min 20.48ng/ml m

response 2370

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	18.82
43.00	15.90	16.96
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F012.D 041112_DX.M Thu Apr 19 19:38:26 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:14 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14927	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	5680	52.55	ng/ml	0.00
Spiked Amount 50.000			Recovery =	105.10%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.24	88	6061m	55.27	ng/ml	

APR 20 2012

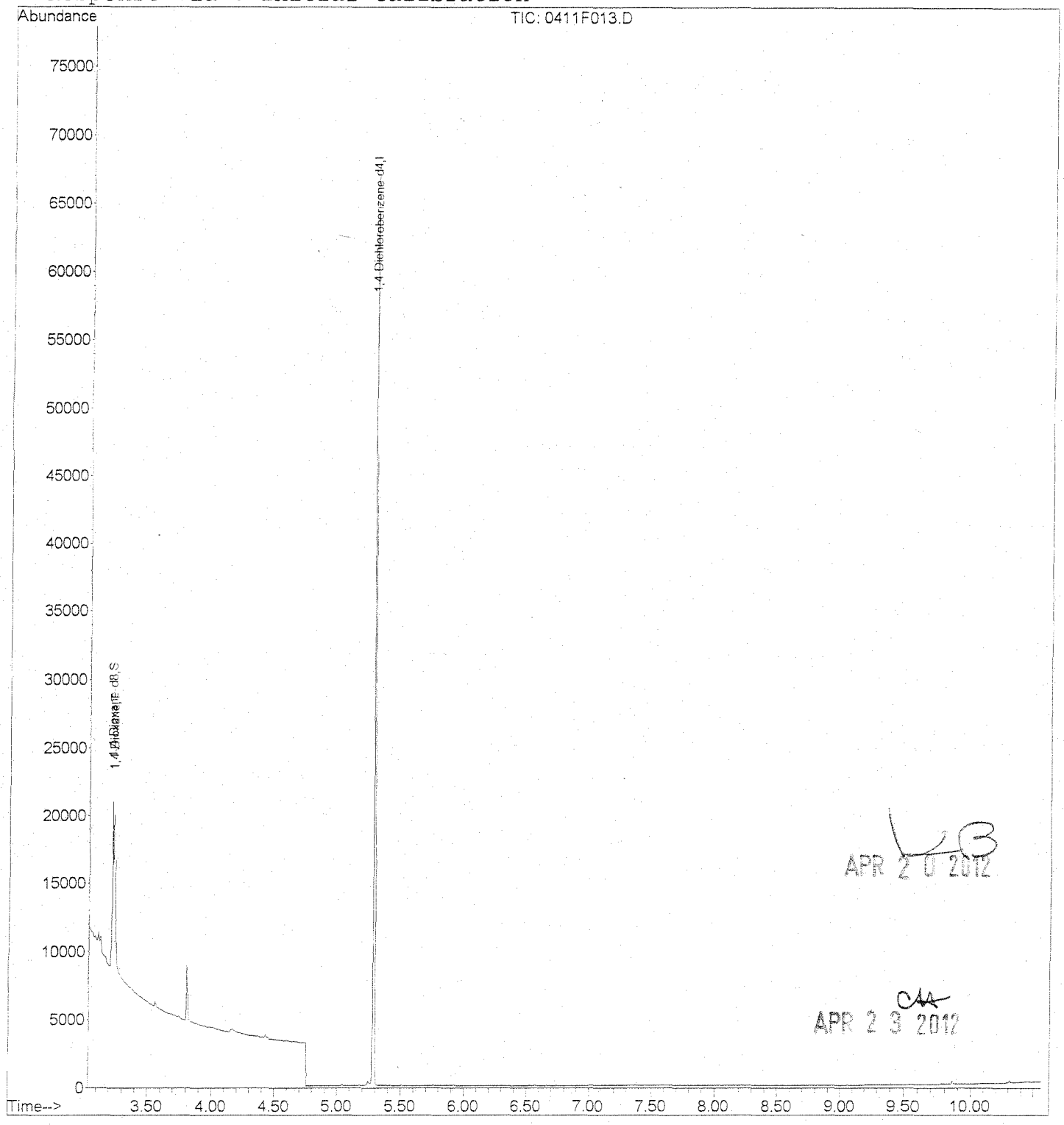
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F013.D 041112_DX.M Fri Apr 20 15:55:06 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



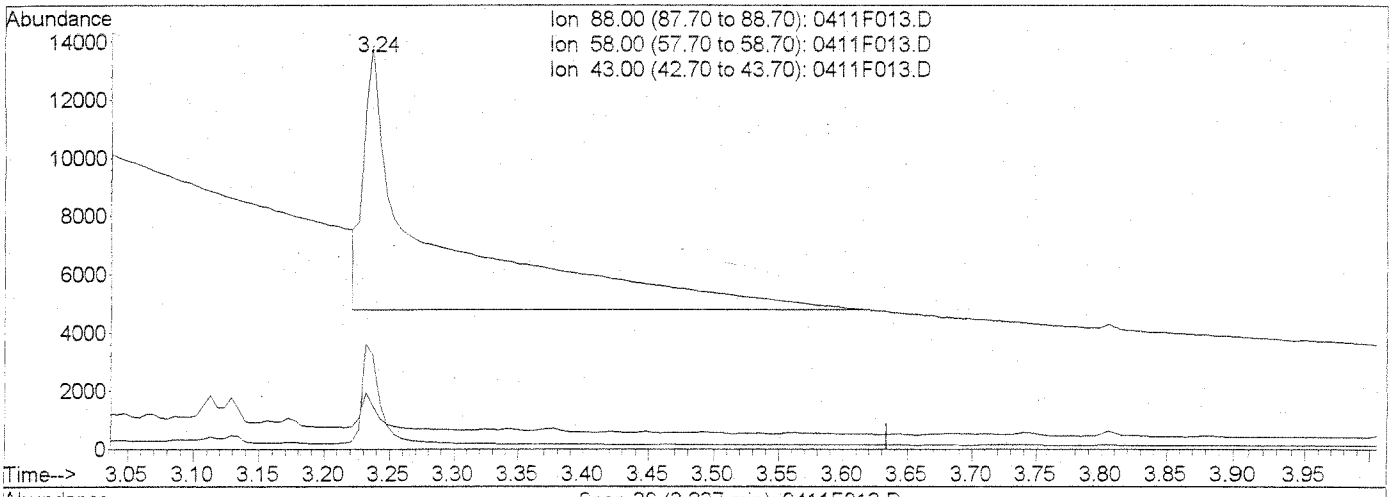
APR 20 2012

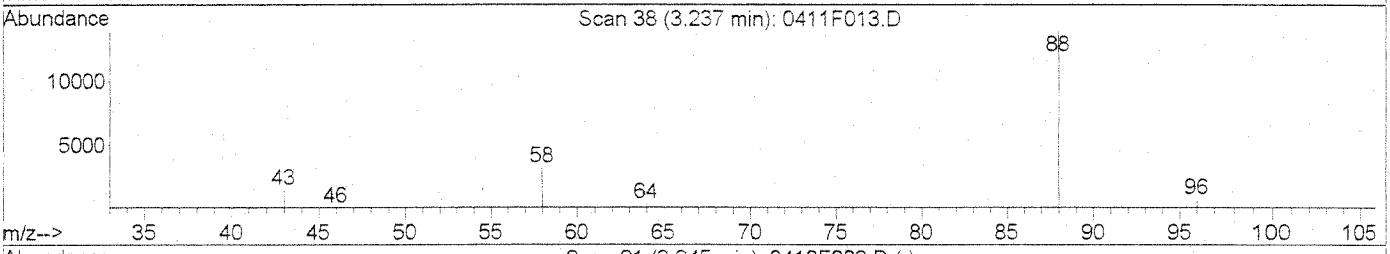
APR 23 2012

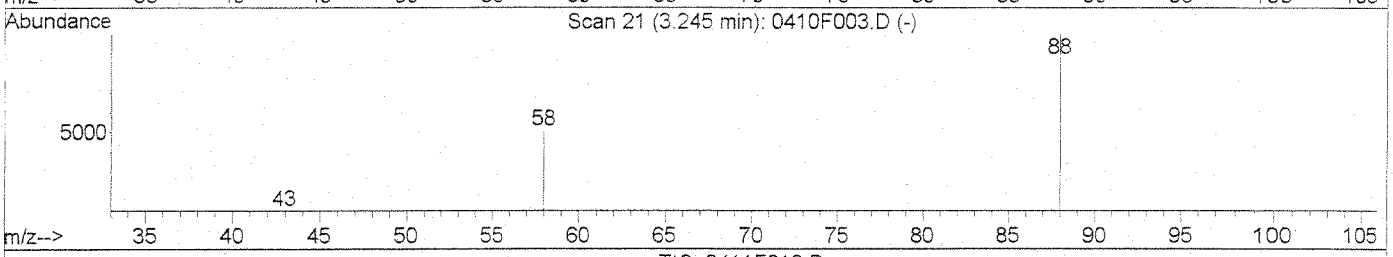
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F013.D

(3) 1,4-Dioxane (T)

3.24min 302.49ng/ml

response 33172

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	33.96
43.00	15.90	10.53
0.00	0.00	0.00

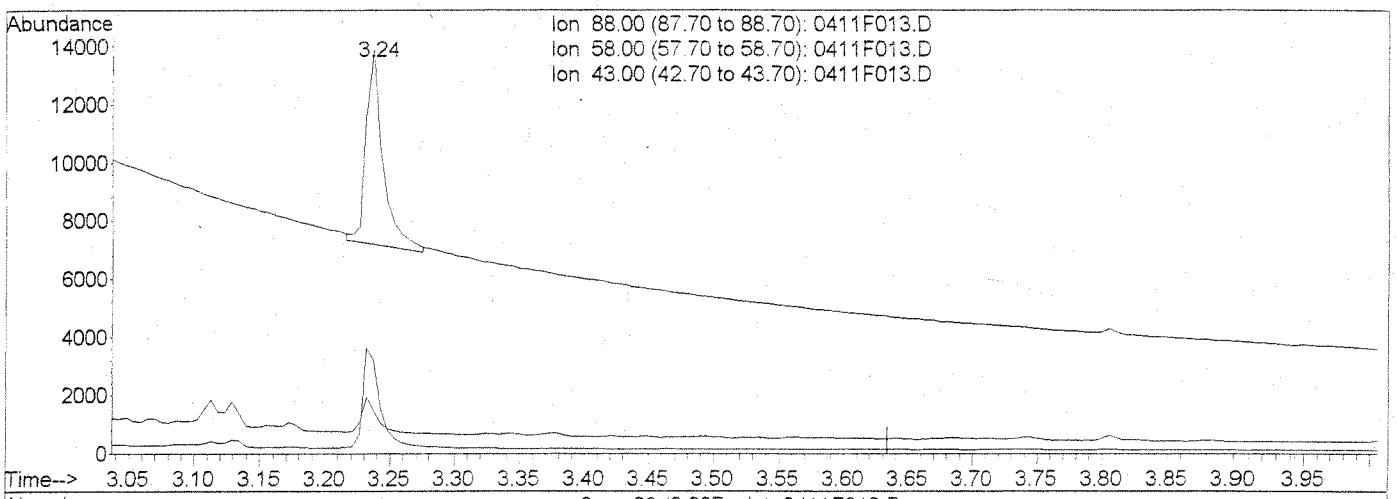
Manual Integration:

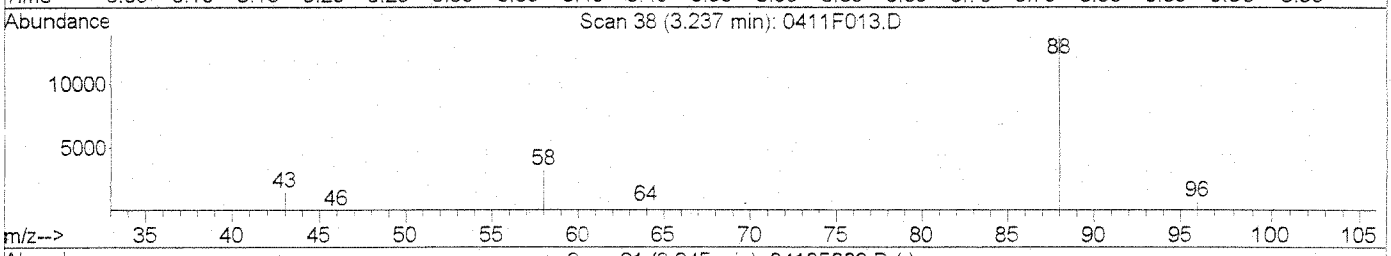
Before

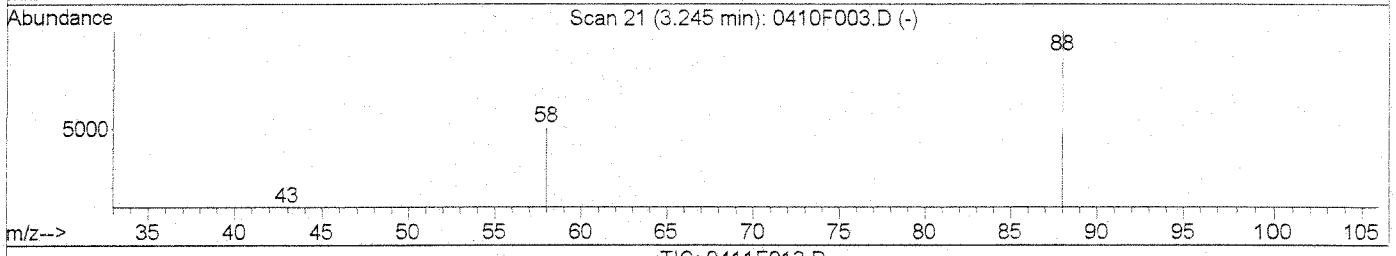
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F013.D Vial: 7
Acq On : 11 Apr 2012 12:35 pm Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM37-76E Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F013.D

(3) 1,4-Dioxane (T)

3.24min 55.27ng/ml m

response 6061

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	23.28
43.00	15.90	10.69
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

LB

APR 23 2012

0411F013.D 041112_DX.M Thu Apr 19 19:38:38 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:15 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	15153	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	12332	112.38	ng/ml	0.00
Spiked Amount 50.000			Recovery =	224.76%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	12635m	113.50	ng/ml	

APR 20 2012

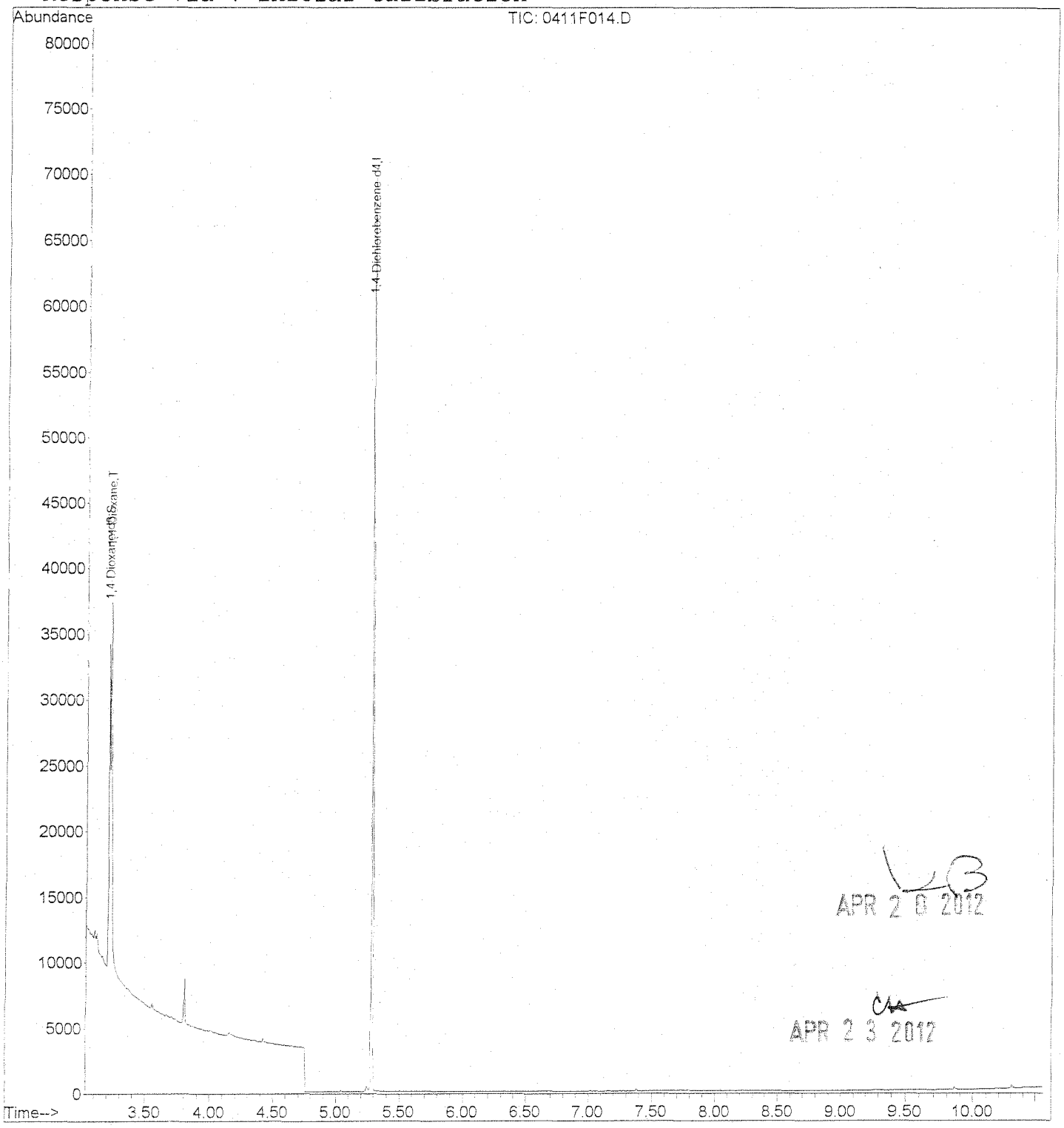
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F014.D 041112_DX.M Fri Apr 20 15:55:07 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



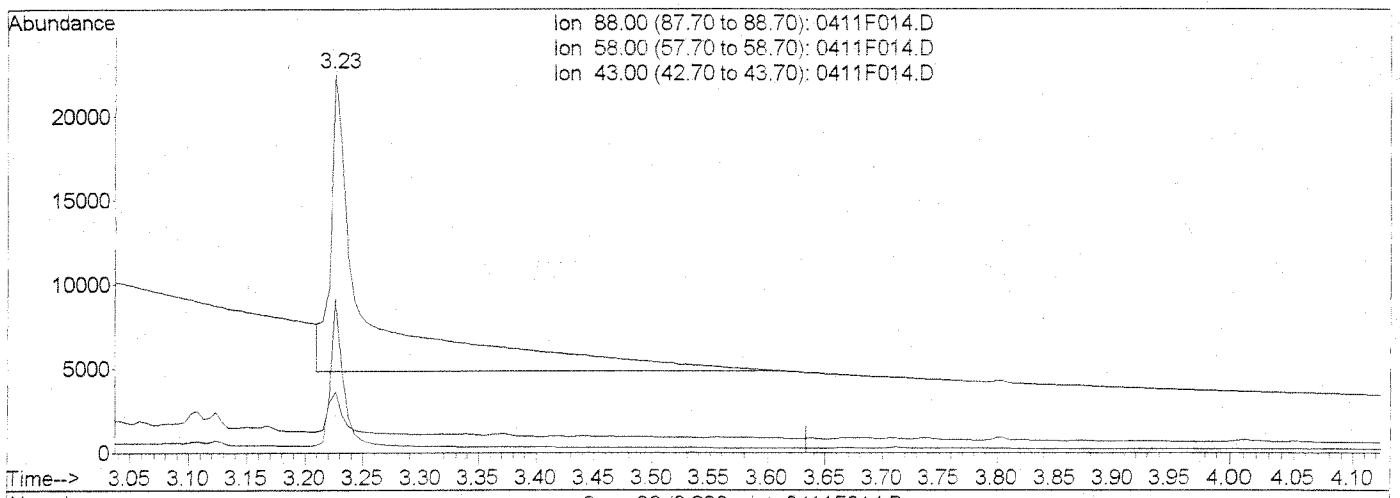
APR 2 0 2012

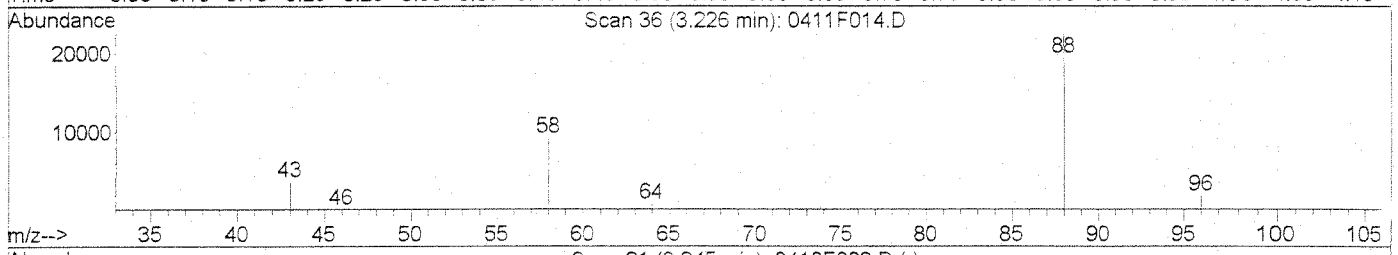
APR 2 3 2012

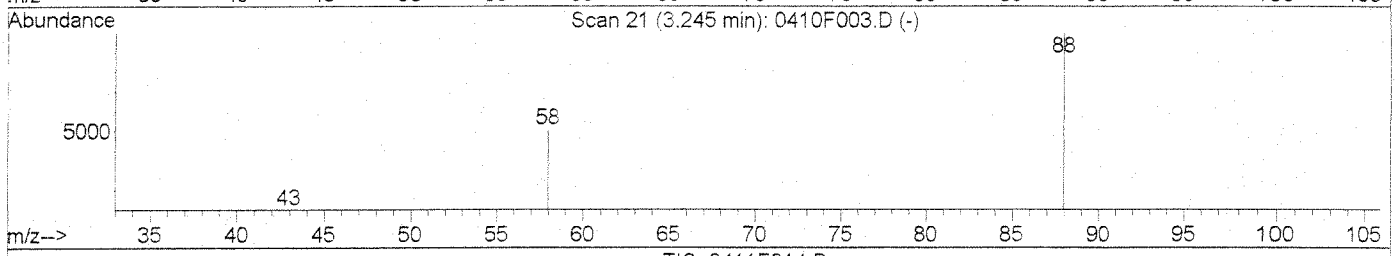
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F014.D

(3) 1,4-Dioxane (T)

3.23min 371.62ng/ml

response 41370

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	50.15#
43.00	15.90	15.75
0.00	0.00	0.00

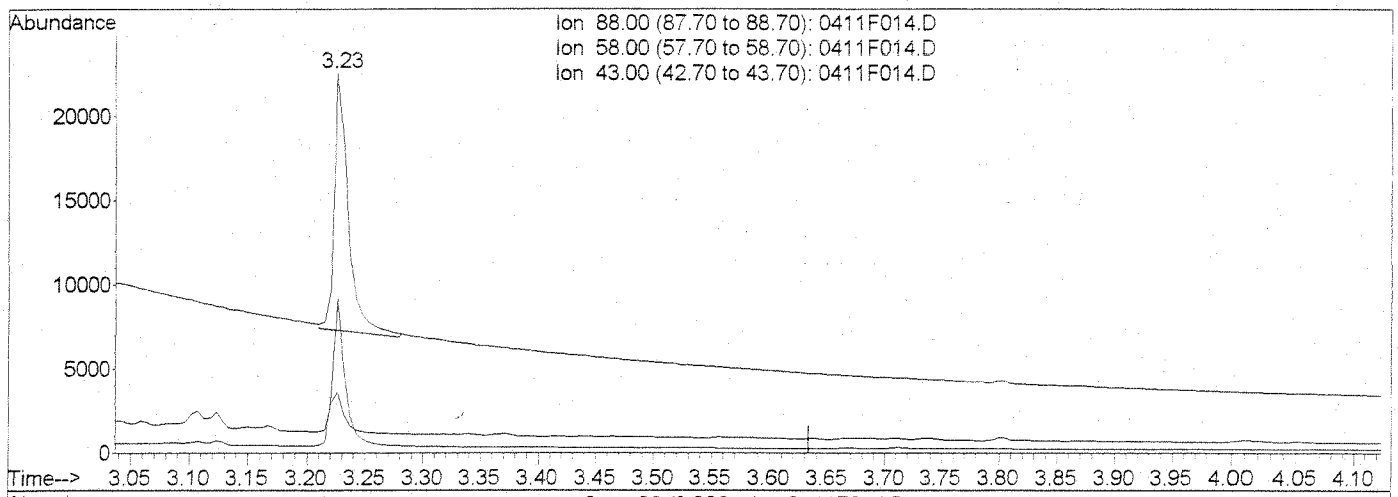
Manual Integration:

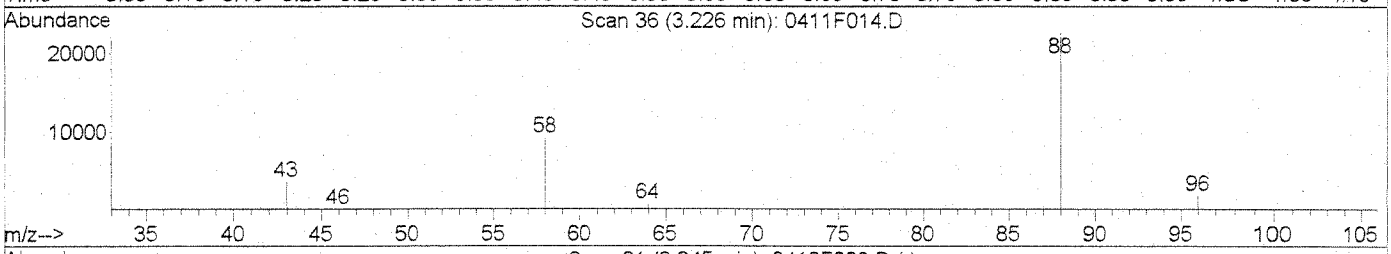
Before

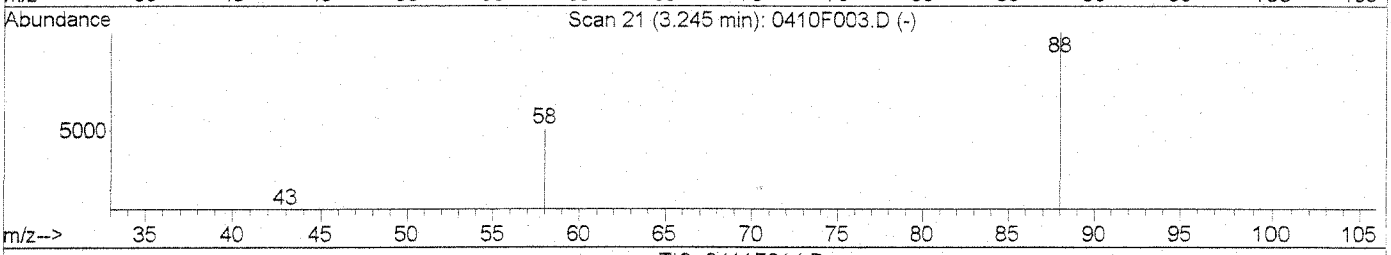
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F014.D Vial: 8
Acq On : 11 Apr 2012 12:54 pm Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM37-76F Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:38 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F014.D

(3) 1,4-Dioxane (T)

3.23min 113.50ng/ml m

response 12635

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	40.65#
43.00	15.90	16.18
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

LB

APR 2 3 2012

0411F014.D 041112_DX.M Thu Apr 19 19:39:00 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36:15 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	16838	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.21	96	26537	217.63	ng/ml	-0.01
Spiked Amount 50.000			Recovery = 435.26%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	26999m	218.26	ng/ml	

APR 20 2012

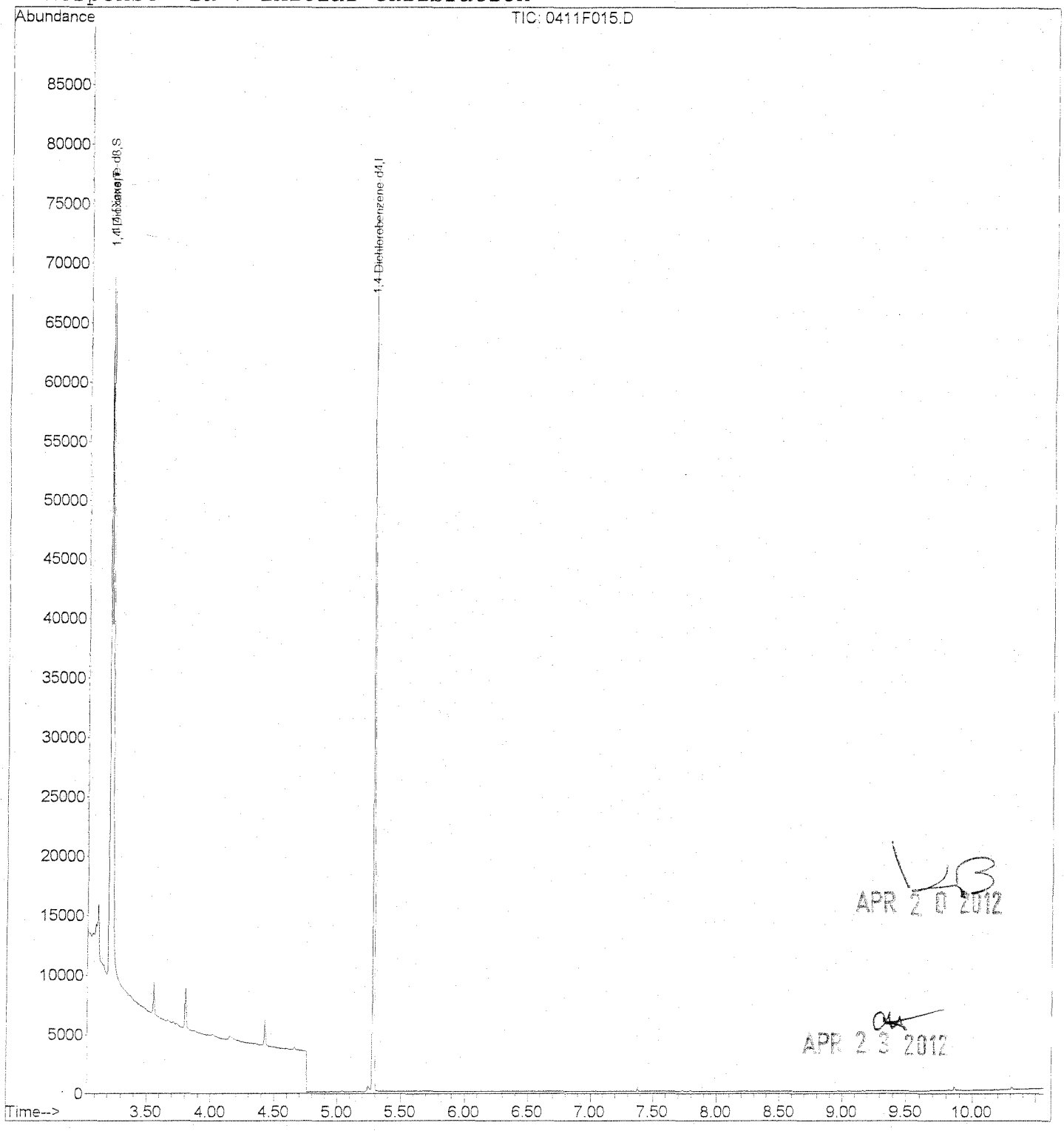
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F015.D 041112_DX.M Fri Apr 20 15:55:07 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:39 2012 Quant Results File: 041112_DX.RE

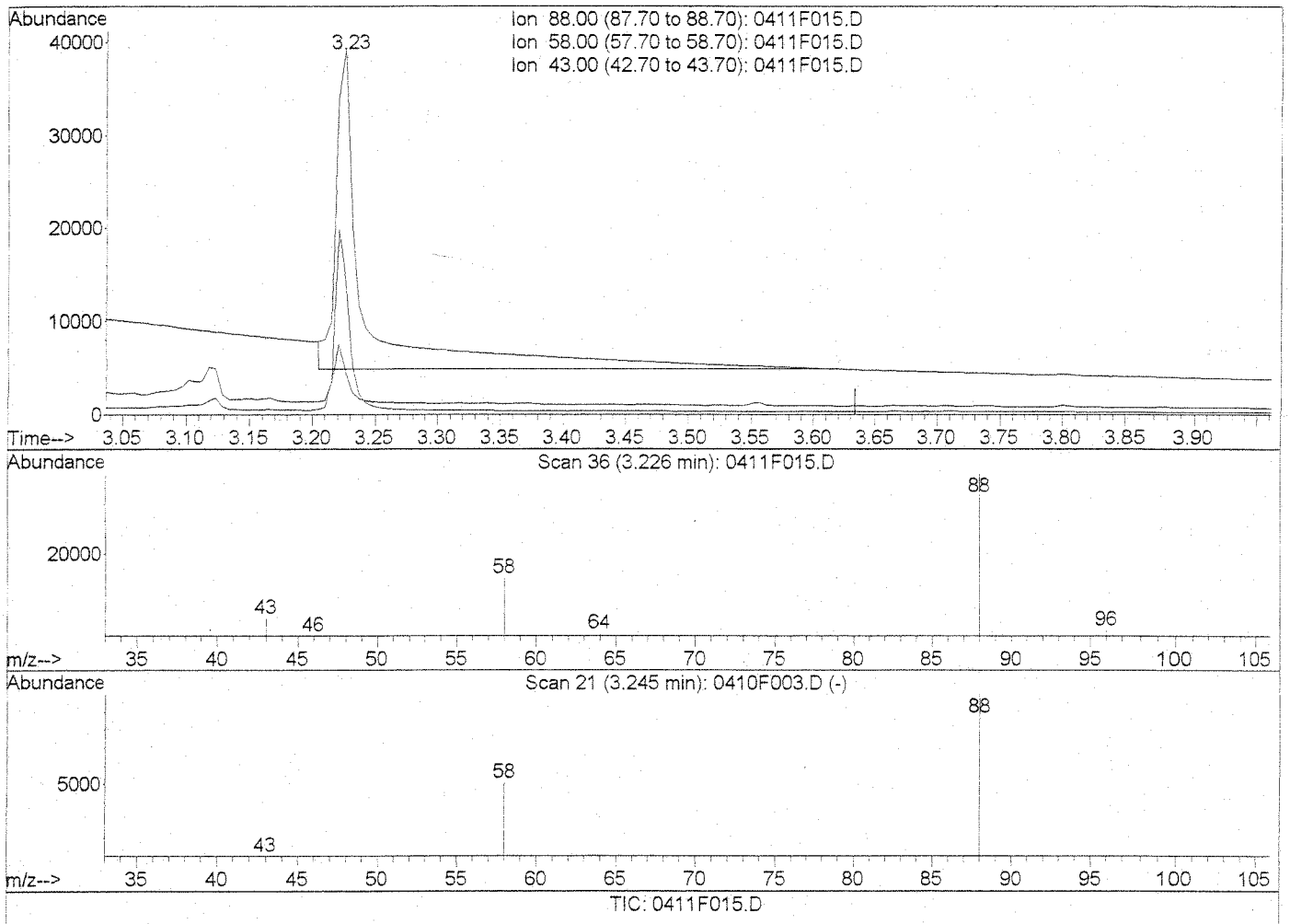
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:36 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration



TIC: 0411F015.D

(3) 1,4-Dioxane (T)

3.23min 462.03ng/ml

response 57154

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	39.94#
43.00	15.90	10.01
0.00	0.00	0.00

Manual Integration:

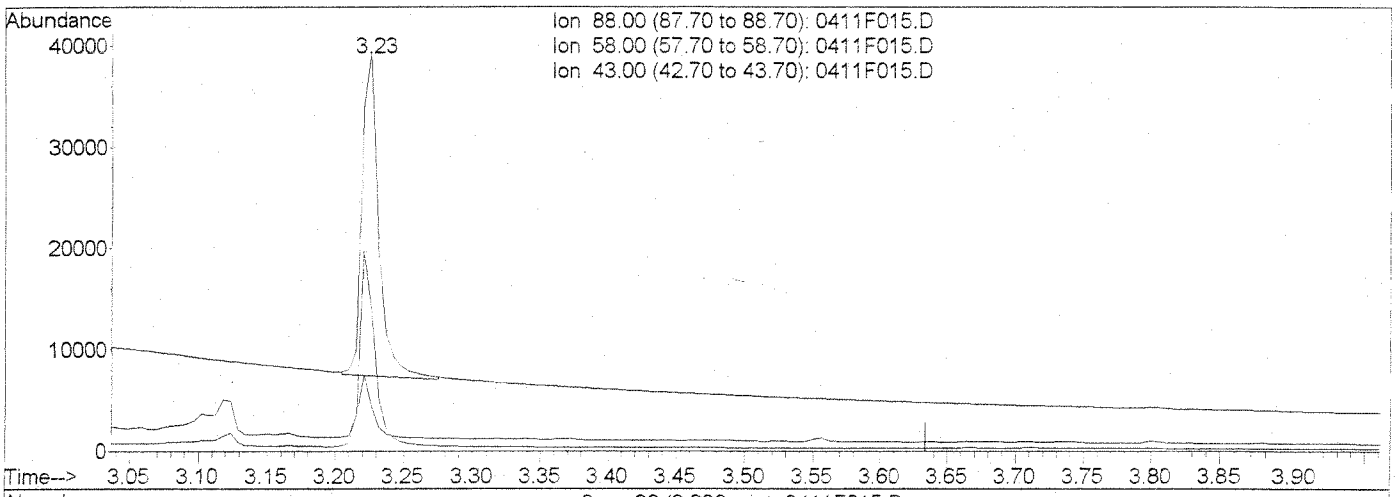
Before

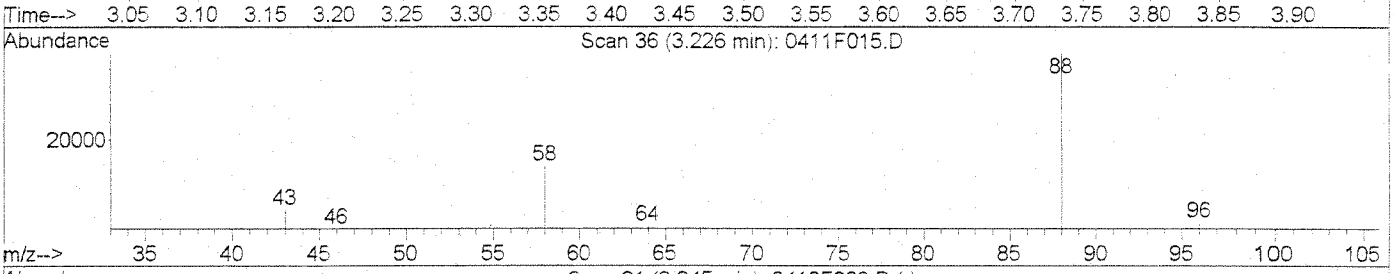
0411F015.D 041112_DX.M Thu Apr 19 19:39:07 2012

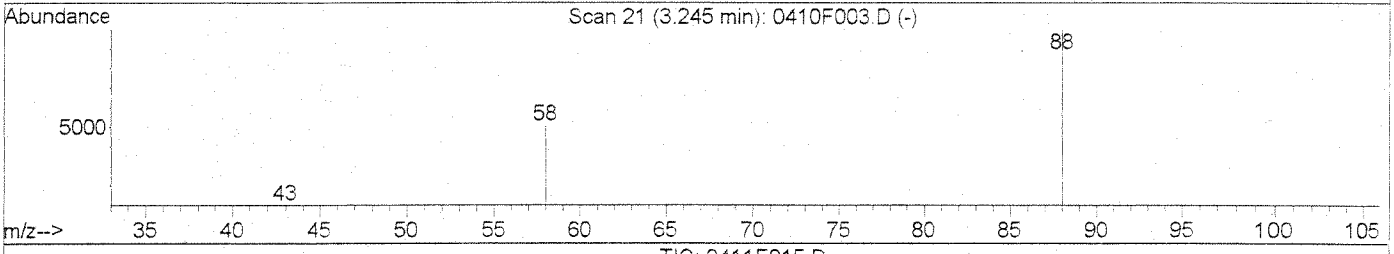
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F015.D Vial: 9
Acq On : 11 Apr 2012 1:13 pm Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM37-76G Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:39 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed Apr 04 17:20:02 2012
Response via : Multiple Level Calibration







TIC: 0411F015.D

(3) 1,4-Dioxane (T)

3.23min 218.26ng/ml m

response 26999

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	35.79#
43.00	15.90	11.12
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 2 3 2012

0411F015.D 041112_DX.M Thu Apr 19 19:39:14 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:41:00 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.29	152	14739	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.22	96	2243	20.01	ng/ml	-0.01
Spiked Amount 50.000			Recovery = 40.02%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.23	88	2384m	21.33	ng/ml	

APR 20 2012

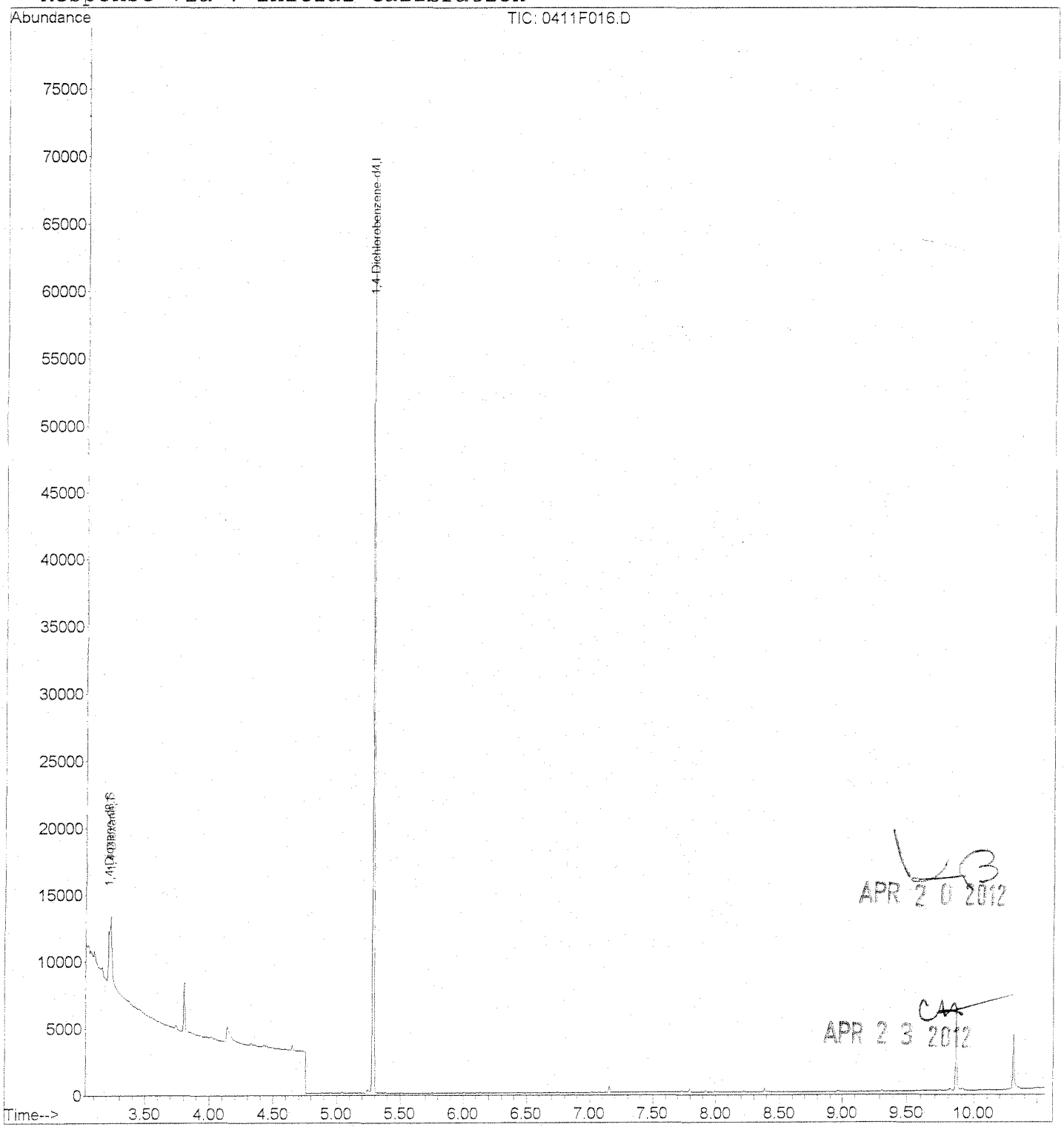
APR 23 2012

(#) = qualifier out of range (m) = manual integration
0411F016.D 041112_DX.M Fri Apr 20 15:55:08 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:41 2012 Quant Results File: 041112_DX.RE

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration



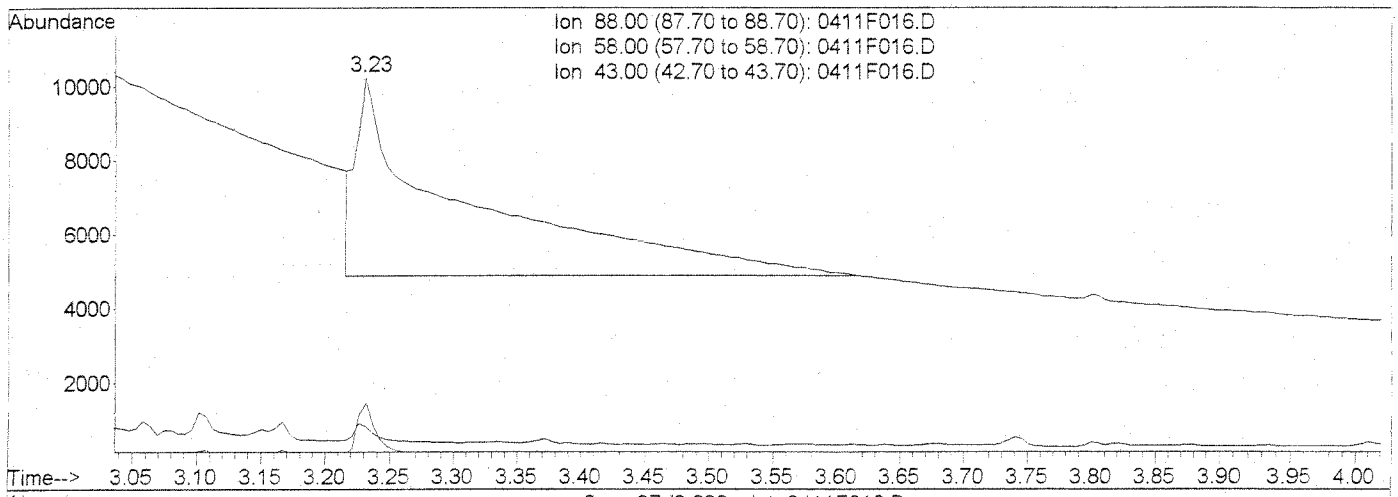
APR 20 2012

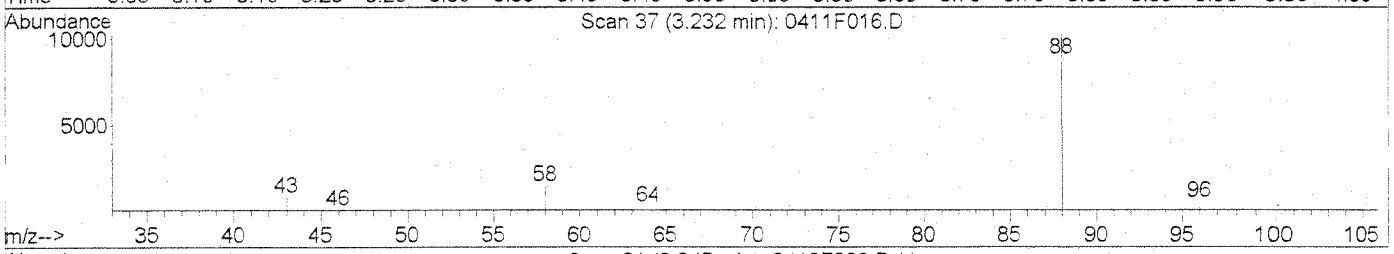
APR 23 2012

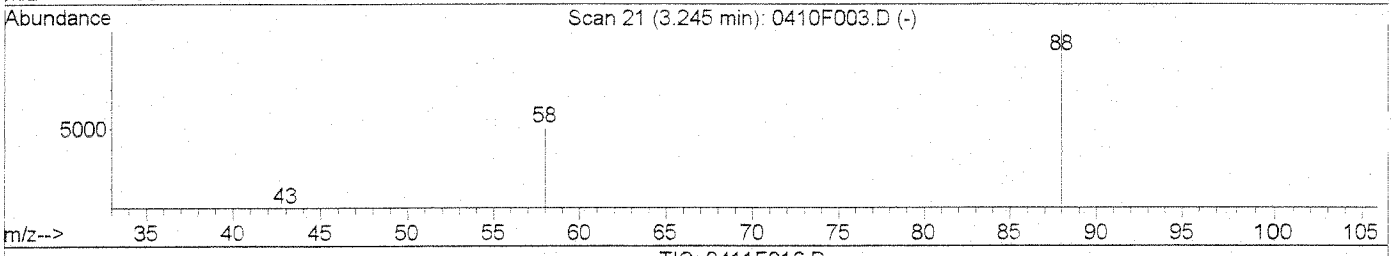
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:40 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0411F016.D

(3) 1,4-Dioxane (T)

3.23min 281.47ng/ml

response 31461

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	26.09
43.00	15.90	9.16
0.00	0.00	0.00

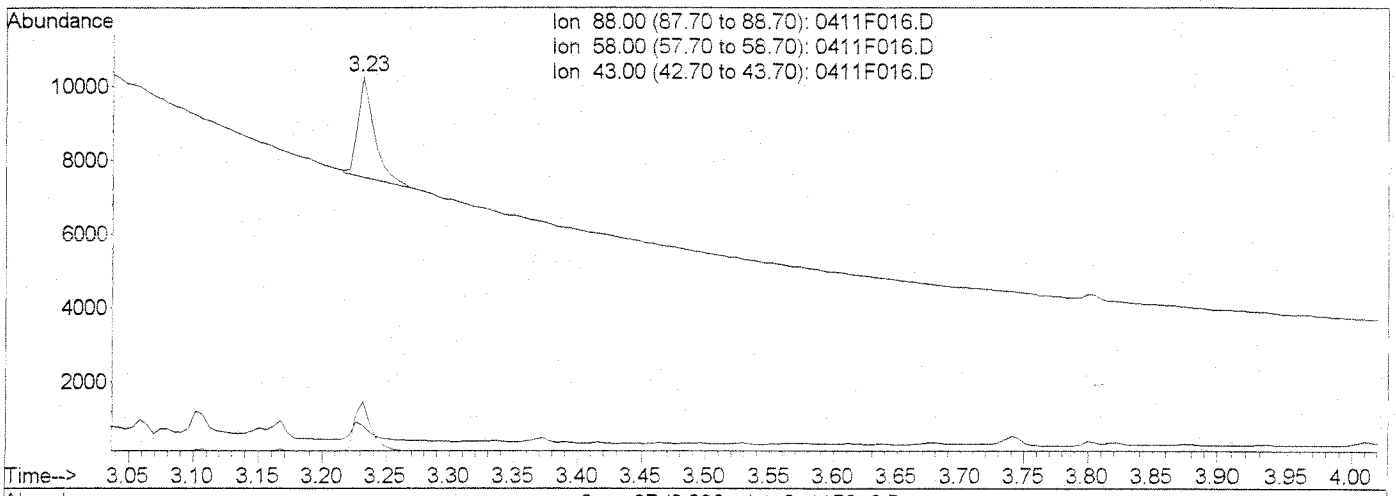
Manual Integration:

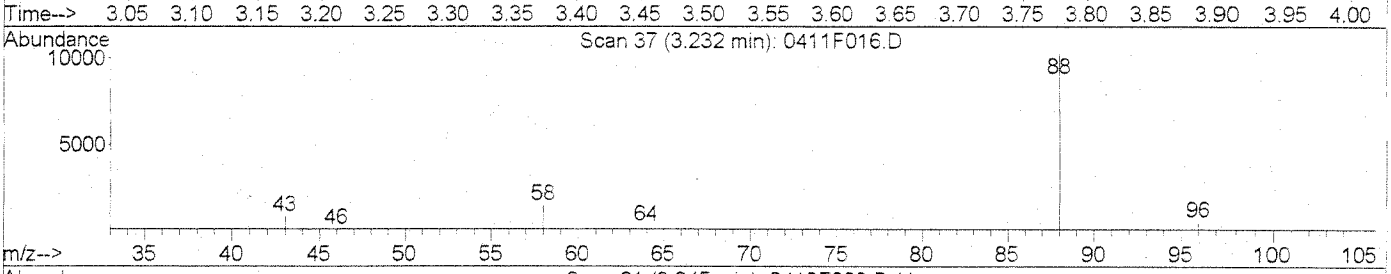
Before

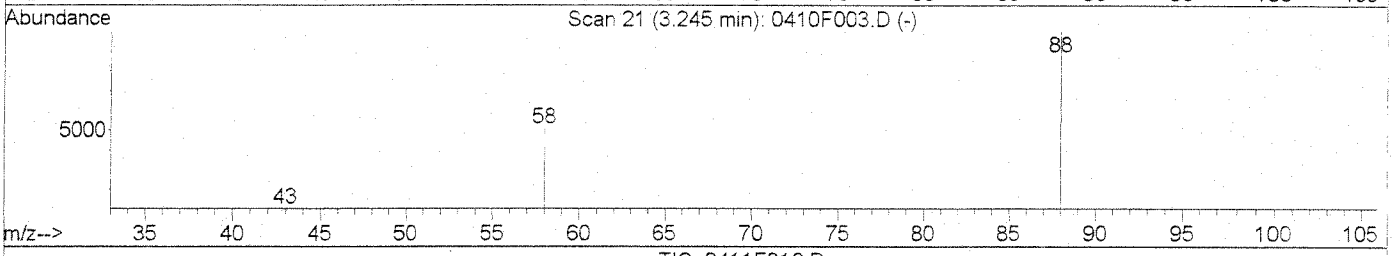
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\041112\0411F016.D Vial: 10
Acq On : 11 Apr 2012 1:32 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 19 19:41 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0411F016.D

(3) 1,4-Dioxane (T)

3.23min 21.33ng/ml m

response 2384

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	14.30
43.00	15.90	8.05
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

04/19/12

APR 23 2012

0411F016.D 041112_DX.M Thu Apr 19 19:41:44 2012

Client: Battelle
Project: JPL GW Mon. 2Q12/100006114

Service Request: P1201630
Date Analyzed: 05/03/2012

Continuing Calibration Verification Summary
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 04/11/2012
Calibration ID: CAL11446
Analysis Lot: KWG1204586
Units: ng/ml

File ID: J:\MS26\DATA\050312\0503F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	20	0.01	0.379	0.376	-1	NA	± 20 %	AverageRF
1,4-Dioxane-d8	20	17	0.01	0.380	0.314	-17	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Exception Report

Data File: J:\MS26\DATA\050312\0503F003.D
Lab ID: KWG1204586-2
RunType: CCV
Matrix: WATER

Date Acquired: 05/03/2012 16:29
Date Quantitated: 05/04/2012 08:45
Batch ID: KWG1204586
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: MAY 04 2012

Secondary Review: 05.23.12

Quantitation Report

Data File:	J:\MS26\DATA\050312\0503F003.D			**Instrument:**	MS26
Acqu Date:	05/03/2012 16:29	**Quant Date:**	05/04/2012 08:45	**Vial:**	3
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1204586-2			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-DIOXA	**Collect Date:**		**Receive Date:**	05/04/2012

Analysis Lot:	KWG1204586	**Prep Lot:**		**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS26\METHODS\SIM\041112_DX.M			**Calibration ID:**	CAL11446
Title:					
Tune Ref:	J:\MS26\DATA\050312\0503F002.D			**Method ID:**	MJ402
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.28	-0.01?	152	14092	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.19			96	1771	16.53		48-118	NA

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.21			88	2122m	19.86			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 04 08:45:24 2012 Quant Results File: 041112_DX.RES

Quant Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

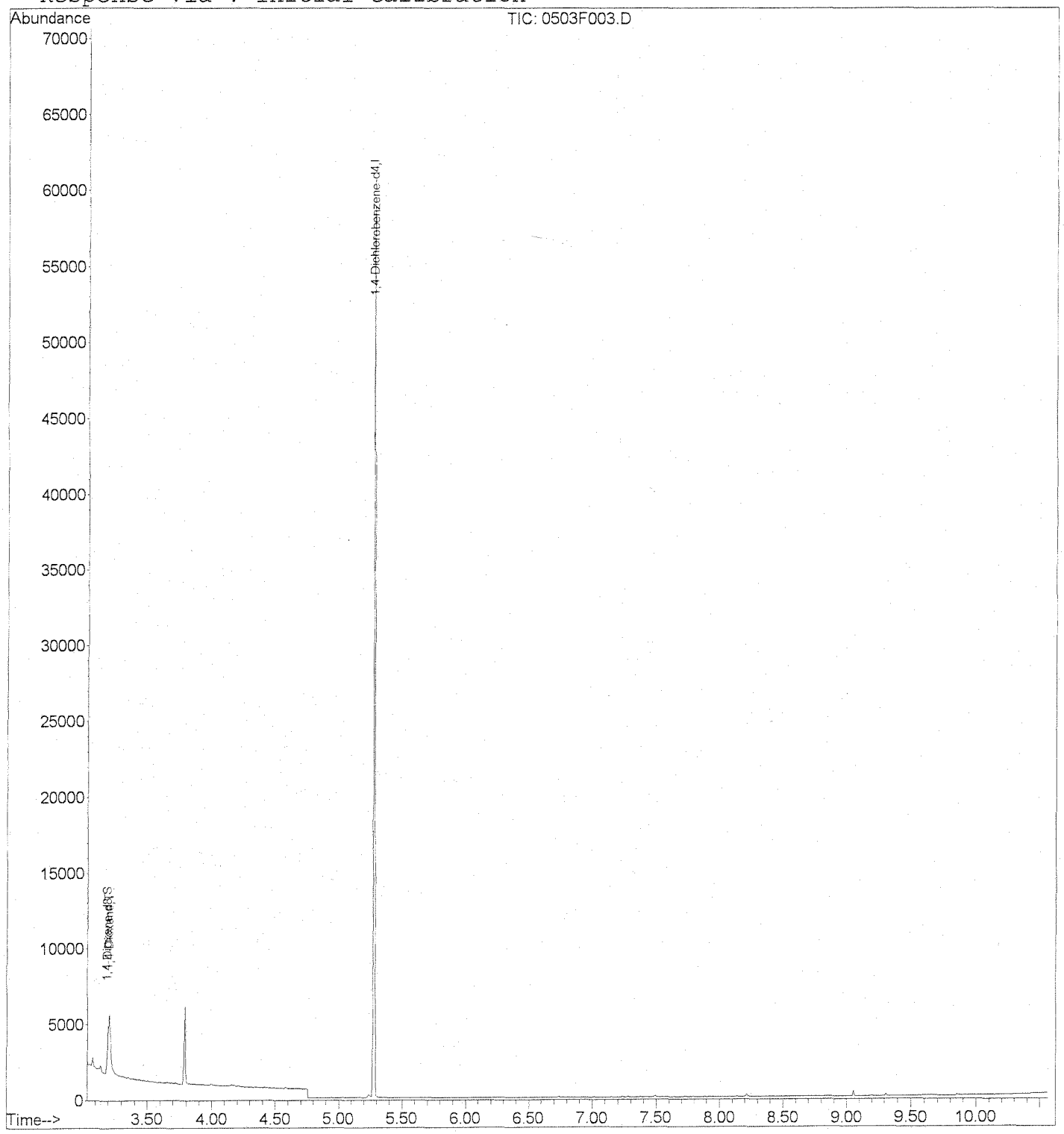
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.28	152	14092	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.19	96	1771	16.53	ng/ml	-0.03
Spiked Amount 50.000			Recovery = 33.06%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.21	88	2122m	19.86	ng/ml	

(#) = qualifier out of range (m) = manual integration
0503F003.D 041112_DX.M Fri May 04 08:45:51 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:45 2012 Quant Results File: 041112_DX.RE

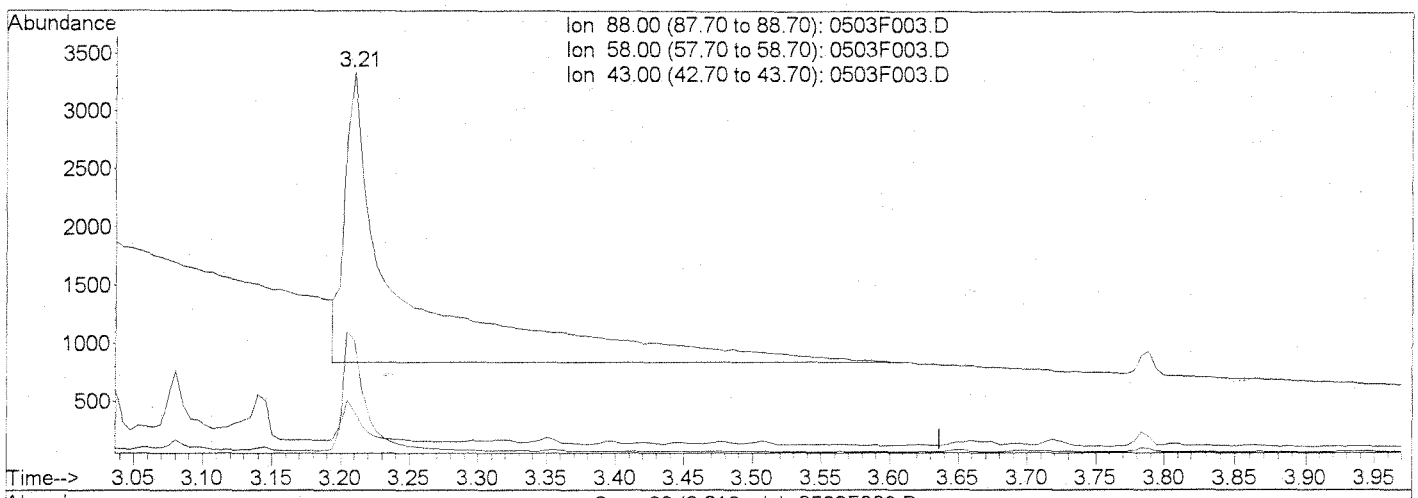
Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration

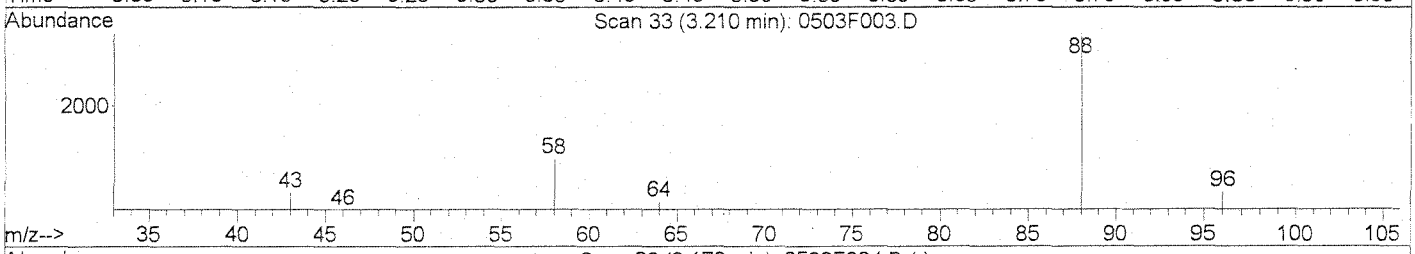


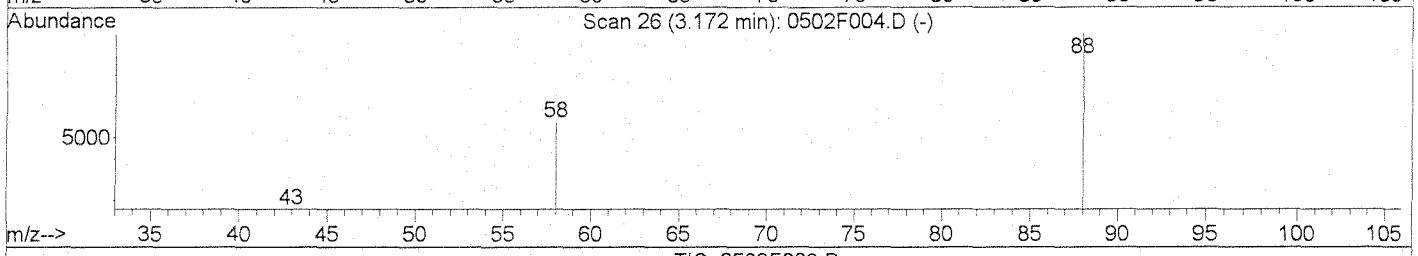
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:45 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0503F003.D

(3) 1,4-Dioxane (T)

3.21min 70.70ng/ml

response 7556

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	38.79#
43.00	15.90	11.57
0.00	0.00	0.00

Manual Integration:

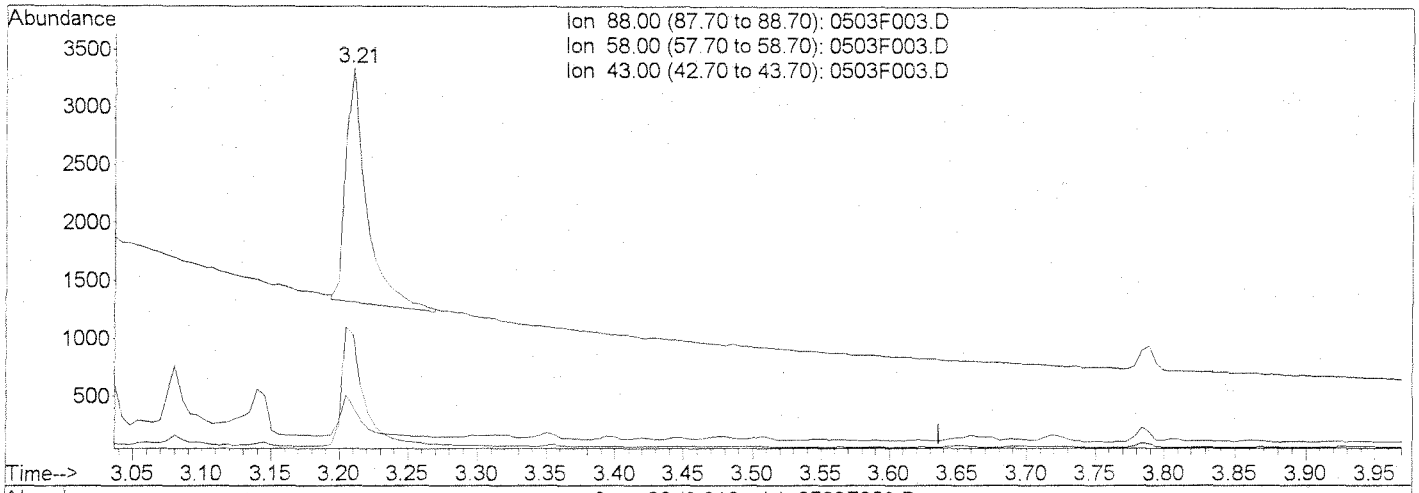
Before

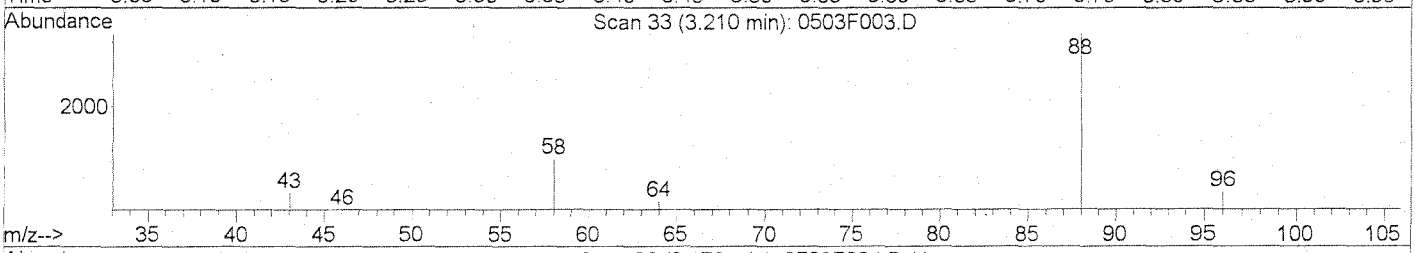
0503F003.D 041112_DX.M Fri May 04 08:45:35 2012

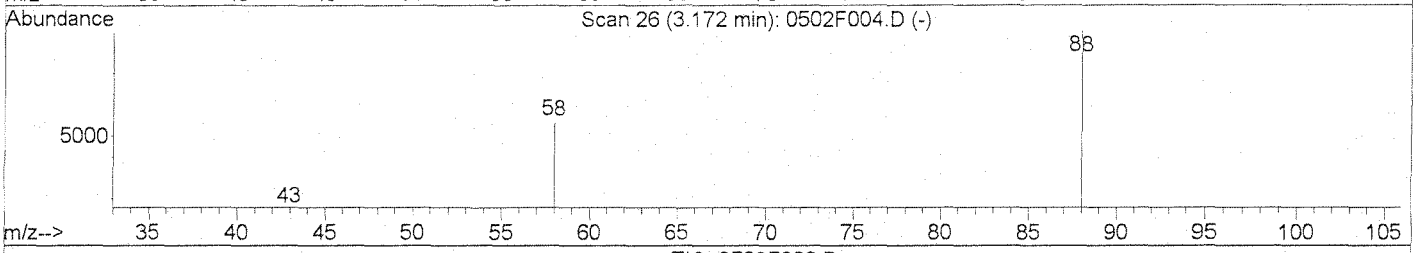
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\050312\0503F003.D Vial: 3
Acq On : 3 May 2012 4:29 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-66B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 4 8:45 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\041112_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0503F003.D

(3) 1,4-Dioxane (T)

3.21min 19.86ng/ml m

response 2122

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	30.80
43.00	15.90	11.97
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/04/12

Ok LB

0503F003.D 041112_DX.M Fri May 04 08:45:44 2012

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Sample Prep and Screen Data

Preparation Information

Group ID:	KWG1204380	**Prep Method:**	EPA 3510C	**Prep Date:**	04/30/12 00:00
Department:	Semivoa GCMS				

Lab Code	Client ID	Product	Matrix	Amt. Ext.	Final Vol.
K1203834-001	MW-1	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-002	MW-2	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-003	MW-3	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-004	EB-2	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203834-005	DUP-04	8270D 1,4-Dioxane	WATER	100ml	50ml
K1203902-001	L571685-01	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-1	Matrix Spike	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-2	Duplicate Matrix Spike	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-3	Lab Control Sample	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-4	Duplicate Lab Control Sampl	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1204380-5	Method Blank	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201573-002	MW-16	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201573-003	DUPE-8-2Q12	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201588-002	MW-13	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201604-005	MW-24-1	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201630-005	MW-4-1	8270D 1,4-Dioxane	WATER	100ml	50ml

Lab Code	Parent Lab Code	Comments
KWG1204380-1	K1203834-003	
KWG1204380-2	K1203834-003	

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
K1203834-001	1121253	SVM38-29C	50uL			HBailey
K1203834-002	1121254	SVM38-29C	50uL			HBailey
K1203834-003	1121255	SVM38-29C	50uL			HBailey
K1203834-004	1121256	SVM38-29C	50uL			HBailey
K1203834-005	1121257	SVM38-29C	50uL			HBailey
K1203902-001	1121252	SVM38-29C	50uL			HBailey
KWG1204380-1	1121263	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-2	1121264	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-3	1121265	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-4	1121266	SVM38-29C	50uL	SVM37-5D	50uL	HBailey
KWG1204380-5	1121267	SVM38-29C	50uL			HBailey
P1201573-002	1121259	SVM38-29C	50uL			HBailey
P1201573-003	1121260	SVM38-29C	50uL			HBailey

Comments:

IS: SVM37-41A

Started By: DHongel Assisted By: Training

Completed By: LBerg Assisted By: Yes No

Reviewed By: HBailey Date: 5/3/12 Storage: SVM LAB / MS2L Yes No

Chain of Custody

Relinquished By: Date: 5.2.12

Received By: LB Date: 5/3/12 Extracts Examined Yes No

Group ID:	KWG1204380	**Prep Method:** EPA 3510C	**Prep Date:** 04/30/12 00:00
Department:	Semivoa GCMS		

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
P1201588-002	1121261	SVM38-29C	50uL			HBailey
P1201604-005	1121262	SVM38-29C	50uL			HBailey
P1201630-005	1121258	SVM38-29C	50uL			HBailey

Comments:

IS: SVM37-L1A

Started By: DHongel Assisted By: ——

Completed By: LBerg Assisted By: ——

Training: Yes / No (No) — Yes / No

Reviewed By: HBailey Date: 5/3/12 Storage: SVM LAB/ HS2L

Chain of Custody

Relinquished By: [signature] Date: 5.2.12

Received By: LB Date: 5/3/12

Extracts Examined: Yes (Yes) / No

Preparation Information

Due: 5/1/12

Group ID:	KWG1204380	**Prep Method:**	EPA 3510C	**Prep Date:**	04/30/12 00:00
Department:	Semivoa GCMS				

#	Lab Code	Client ID	B#	√	Product	Matrix	Amt. Ext. mL	pH	Int. Vol.	Final Vol. ml	Surr. Added	Spike Added
1	K1203834-001	MW-1	.01	✓	8270D 1,4-Dioxane	WATER	100	-	N/A	50	50µL	N/A
2	K1203834-002	MW-2	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		
3	K1203834-003	MW-3 4-30-12 DH EE	.13	✓	8270D 1,4-Dioxane	WATER	100	-		50		
4	K1203834-004	EB-2	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		
5	K1203834-005	DUP-04	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		
6	K1203902-001	L571685-01	.02	✓	8270D 1,4-Dioxane	WATER	100	-		50		↓
7	KWG1204380-1	Matrix Spike 3834-3MS	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		50µL
8	KWG1204380-2	Duplicate Matrix Spike 3834-3DMS	.01	✓	8270D 1,4-Dioxane	WATER	100	-		50		
9	KWG1204380-3	Lab Control Sample			8270D 1,4-Dioxane	WATER	100	-		50		
10	KWG1204380-4	Duplicate Lab Control Sample			8270D 1,4-Dioxane	WATER	100	-		50		↓
11	KWG1204380-5	Method Blank			8270D 1,4-Dioxane	WATER	100	-		50		N/A
12	P1201573-002	MW-16	.04	✓	8270D 1,4-Dioxane	WATER	100	-		50		
13	P1201573-003	DUPE-8-2Q12	.04	✓	8270D 1,4-Dioxane	WATER	100	-		50		
14	P1201588-002	MW-13	.04	✓	8270D 1,4-Dioxane	WATER	100	-		50		
15	P1201604-005	MW-24-1	.04	✓	8270D 1,4-Dioxane	WATER	100	-		50		
16	P1201630-005	MW-4-1	.04	✓	8270D 1,4-Dioxane	WATER	100	-	↓	50	↓	↓

Comments: Prep #156768

Surrogate ID: SVM38-29C, 50µg/mL, Exp: 10/4/12, 50µL (qp)

Spike ID: SVM37-SD 50µg/mL, Exp: 6/21/12, 50µL (qp)

Witness: [signature] 4/30/12

Started By: DHongel Assisted By: LB

Completed By: [signature] Assisted By:

Additional Prep Information For 1,4 Dioxane by EPA 3510

RE D H 4-30-12

Service Request K03834, K03902, ~~K4360~~ **Workgroup** 04380
P01573, P01568, P01609, P01630

Pre-Prep Information:

DCM Lot DFS97

Batch Start (Time/Date/Initial): 18:30/4-30-12/DH

Batch Stop (Time/Date/Initial): 21:10/4-30-12/DH

Sulfate Lot # 113858 Salt Lot # G38343 ~~Glass Wool Lot # 19711999~~ +hl 5/2/10 EE

Extract Storage: As You Wish

Completed (Time/Date/Initial): 2045 5-2-12 dg

Comments/Observations:

Bench Sheet Review Check List	
☐	Hold Times Met (if no, Reason:)
☑	Prep date, dept, method, product code correct in stealth
☑	Spike Information correct
☑	Weights/Volumes and units correct on raw and final bench sheets
☑	Sample IDs have been checked—Bottle numbers appended if required
☑	Names present for: Started by, Completed by, relinquished by, and witnessed by.
☑	Training has been circled
☑	Extract Storage recorded
☑	Additional Prep Sheet completely filled out (NA or line out Blanks)
☑	All clean-ups have been noted on additional prep sheet
☑	Signed service request with Form V, if applicable, has been attached

Injection Log

Directory: J:\MS26\DATA\050312

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0503F001.d	1.	PR		3 May 2012 15:5
2	2	0503F002.d	1.	3.0ug/mL DFTPP | SVM38-66A		3 May 2012 16:1
3	3	0503F003.d	1.	20ng/mL CCV 1,4-Dioxane | SVM38-66B		3 May 2012 16:2
4	4	0503F004.d	1.	KWG1204380-5 | MB		3 May 2012 16:4
5	5	0503F005.d	1.	KWG1204380-3 | LCS		3 May 2012 17:0
6	6	0503F006.d	1.	KWG1204380-4 | DLCS		3 May 2012 17:2
7	7	0503F007.d	1.	KWG1204380-1 | MS K1203834-003MS		3 May 2012 17:4
8	8	0503F008.d	1.	KWG1204380-2 | DMS K1203834-003DMS		3 May 2012 18:0
9	9	0503F009.d	1.	K1203834-003		3 May 2012 18:2
10	10	0503F010.d	1.	K1203834-001		3 May 2012 18:4
11	11	0503F011.d	1.	K1203834-002		3 May 2012 19:0
12	12	0503F012.d	1.	K1203834-004		3 May 2012 19:2
13	13	0503F013.d	1.	K1203834-005		3 May 2012 19:4
14	14	0503F014.d	1.	K1203902-001		3 May 2012 20:0
15	15	0503F015.d	1.	P1201573-002		3 May 2012 20:1
16	16	0503F016.d	1.	P1201573-003		3 May 2012 20:3
17	17	0503F017.d	1.	P1201588-002		3 May 2012 20:5
18	18	0503F018.d	1.	P1201604-005		3 May 2012 21:1
19	19	0503F019.d	1.	P1201630-005		3 May 2012 21:3

Run # 290204

CAL 114AL

LB

MAY 04 2012

LABORATORY REPORT

May 10, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL-GW-2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on April 26, 2012. For your reference, these analyses have been assigned our service request number P1201631.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 2:58 pm, May 10, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL-GW-2Q12 / 100006114
Service Request No: P1201631

CASE NARRATIVE

The samples were received intact under chain of custody on April 26, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL-GW-2Q12 / 100006114
Service Request: P1201631

Date Received: 4/26/2012
Time Received: 14:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-5	P1201631-001	Water	4/26/2012	09:36	X
DUPE-7-2Q12	P1201631-002	Water	4/26/2012	09:36	X
MW-10	P1201631-003	Water	4/26/2012	11:58	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No.: P12-01631

CAS Contact:

Company Name & Address (Reporting Information)
Battelle
505 King Ave
Columbus, OH. 43201

Project Name: JPL-GW-2Q12

Project Number: 100006114

Project Manager: David Conner

P.O. # / Billing Information: 285651/Battelle
505 King Ave
Columbus, OH 43201

Phone: 614 726-7311

Fax: 614 458-6641

Email Address for Result Reporting: connerd@battelle.org

Sampler (Print & Sign): David Loera

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 Hexavalent cr 7196	Remarks
MW-5	1	4/26/12	0936	AQ	1P							X	
DUPE-1-2Q12	2	4/26/12	0936	AQ	1P							X	
MW-10	3	4/26/12	1158	AQ	1P							X	

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge X
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

	Date	Time		Date	Time
Relinquished by: (Signature) David L	4-26-12	1200	Received by: (Signature)	4/26/12	1200
Relinquished by: (Signature)	4/26/12	1342	Received by: (Signature)	4/26/12	1342
Relinquished by: (Signature)	4/26/12	1430	Received by: (Signature)	4/26/12	1430

Wet Ice

Cooler / Blank / Ice / No Ice

Temperature 3° C

5 of 22

Chain of Custody Report

Client: Battelle **Service Request:** P1201631
Project: JPL-GW-2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201631-001.01					
	7196A				
		4/26/12	1504	SMO / MZAMORA	
		4/26/12	1504	P-37 / MZAMORA	
		4/26/12	1736	In Lab / EIBARRA	
		4/26/12	1736	P-37 / EIBARRA	
P1201631-002.01					
	7196A				
		4/26/12	1504	SMO / MZAMORA	
		4/26/12	1504	P-37 / MZAMORA	
		4/26/12	1736	In Lab / EIBARRA	
		4/26/12	1736	P-37 / EIBARRA	
P1201631-003.01					
	7196A				
		4/26/12	1504	SMO / MZAMORA	
		4/26/12	1504	P-37 / MZAMORA	
		4/26/12	1736	In Lab / EIBARRA	
		4/26/12	1736	P-37 / EIBARRA	

Columbia Analytical Services
Now part of the ALS Group
2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Sample Acceptance Check Form

Client: Battelle Work order: P1201631

Project: JPL-GW-2Q12 / 100006114

Sample(s) received on: 4/26/12 Date opened: 4/26/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☒	☐
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201631-001.01	125mL Plastic NP					
P1201631-002.01	125mL Plastic NP					
P1201631-003.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL-GW-2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201631
Date Collected : 04/26/12
Date Received : 04/26/12

Chromium, Hexavalent

Units : mg/L (ppm)
Basis : NA

Analysis Method : 7196A
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-5	P1201631-001	0.010	0.003	1	NA	04/26/12 17:35	ND	
DUPE-7-2Q12	P1201631-002	0.010	0.003	1	NA	04/26/12 17:35	ND	
MW-10	P1201631-003	0.010	0.003	1	NA	04/26/12 17:35	ND	
Method Blank	P1201631-MB	0.010	0.003	1	NA	04/26/12 17:35	ND	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL-GW-2Q12 / 100006114

Service Request: P1201631
Date Analyzed: 04/26/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 5/9/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL-GW-2Q12 / 100006114

Service Request: P1201631
Date Analyzed: 04/26/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0504	101	90-110
CCV1	0.0500	0.0495	99	90-110
CCV2	0.0500	0.0495	99	90-110

Approved By: Karen Rya Date: 5/9/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201631
Project Name :	JPL-GW-2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	04/26/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201631-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0424	106	92-110	

Approved By Karen Rya Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL-GW-2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201631
Date Collected : 04/26/12
Date Received : 04/26/12
Date Extracted : NA
Date Analyzed : 04/26/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : DUPE-7-2Q12
Lab Code : P1201631-002MS P1201631-002DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0451	0.0451	90	90	69-119	<1	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

Columbia Analytical Services

pH Run Log

Service Request #(s): P1201630 ; P1201631

Time: 1350

Sample	VWR lot #	Exp.
pH 2 Buffer	S24 - 052011 01	12/2012
pH 4 Buffer	S24 - 1024 1101	2/28/2013
pH 7 Buffer	S24 - 1021 1101	07/2013
pH 10 Buffer	S24 - 1024 1103	2/28/2013

Slope	Prep.Run #
98.7%	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3	2.003	22.6
pH 4.000		4.003	23.2
pH 7.000		7.003	22.8
pH 10.000		10.002	23.1
Ref#: pH 7.38 Exp 8/13 S24-1024 1102		7.384	23.3
DI		2.051	22.3
pH 2.000		1.999	23.2
TIME		1510	
pH 2.000		2.010	23.8
P1201630-1.01		1.964	11.3
-2.01		2.132	10.7
-3.01		2.134	10.8
-4.01		2.122	11.5
-5.01		2.143	12.5
-6.01		1.980	12.5
P1201631-1.01		2.108	12.8
-2.01		2.059	12.6

Sample	#	pH	Temp. °C
P1201631-3.01	3	1.971	13.6
pH 2.000		2.026	22.8

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 49284 EXP: 11/30/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

_____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 4/23/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: ET Date: 4/26/12

Reviewer: KR Date: 4/27/12

pH

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

50

Service Request#(s): P1201630; P1201631 Run#: 289487

Stock#: 524-02231201 TV=10PPM Exp 8/23/12 Prep Run#:

ICV/CCV#: 524-03271201 TV=100PPM Exp 7/2013 Conc. H_2SO_4 Lot#: EM9 49284 Exp 9/20/14

Coloring Reagent Ref#: 524-04161203

Working Curve:

Prep Dilution	*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L	*0.00*	*0.01*	*0.05*	*0.1*	0.999998173
Absorbance @ 540 nm	0.000	0.011	0.057	0.113	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10mL	-	✓	0.000	0.000	0.000	0.0000356	<0.003
2	ICV 0.05 PPM		-	✓	0.000	0.057	0.057	0.0504	101%
3	MB		-	✓	0.000	0.000	0.000	0.0000356	<0.003
4	LCS 0.04 PPM		-	✓	0.000	0.048	0.048	0.0424	106%
5	P1201630-1.01		-	✓	0.003	0.003	0.000	0.0000356	<0.003
6	-1.01 VS 0.03 PPM		-	✓	0.003	0.036	0.033	0.0292	97%
7	-2.01		-	✓	0.007	0.009	0.002	0.00180	<0.003
8	-3.01		-	✓	0.002	0.005	0.003	0.00269	<0.003
9	-4.01		-	✓	0.005	0.007	0.002	0.00180	<0.003
10	-5.03		-	✓	0.000	0.000	0.000	0.0000356	<0.003
11	-5.03MS 0.05 PPM		-	✓	0.000	0.054	0.054	0.0477	95% RPD
12	-5.03MSD		-	✓	0.000	0.055	0.055	0.0486	97% 2%
13	CCV 1 0.05 PPM		-	✓	0.000	0.056	0.056	0.0495	99%
14	CCB 1		-	✓	0.000	0.000	0.000	0.0000356	<0.003
15	P1201630-6.01		-	✓	0.000	0.000	0.000	0.0000356	<0.003
16	P1201631-1.01		-	✓	0.001	0.003	0.002	0.00180	<0.003
17	-1.01 VS 0.03 PPM		-	✓	0.001	0.034	0.033	0.0292	97%

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.150 ml of 524-03271201 @ 1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-02231201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @ 1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: EI Date/Time: 4/26/12 @ 17:15

Analyzed By: EI Date/Time: 4/26/12 @ 17:35

Reviewed By: KK Date: 4/27/12

Cr6LIQ.xls

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201630 , P1201631

Run#: 289487

Stock#: S24-0223120I TV=10PPM Exp 8/23/12

Prep Run#: /

ICV/CCV#: S24-0327120I TV=100PPM Exp 7/2013

Conc. H_2SO_4 Lot#: EMD 49284 Exp 11/2014

Coloring Reagent Ref#: S24-0416120B

Working Curve:

Prep Dilution	*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L	*0.00*	*0.01*	*0.05*	*0.1*	0.9999981123
Absorbance @ 540 nm	0.000	0.011	0.057	0.113	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	P1201631-2.01	10mL	-	✓	0.000	0.001	0.001	0.000919	<0.003
2	-2.01 MS 0.05 PPM		-	✓	0.000	0.051	0.051	0.0451	90% } RPD
3	-2.01 MSD		-	✓	0.000	0.051	0.051	0.0451	90% } 0
4	-3.01		-	✓	0.000	0.002	0.002	0.00180	<0.003
5	CCV 2 0.05 PPM		-	✓	0.000	0.056	0.056	0.0495	99%
6	CCB 2		-	✓	0.000	0.000	0.000	0.000356	<0.003
7									
8									
9									
10									
11									
12					SPACE NOT USED				
13									
14									
15									
16									
17									

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of S24-0327120I @1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-0223120I ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of _____ ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of ↓ @1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments: _____

Prepared By: EJ Date/Time: 4/26/12 @ 17:15

Analyzed By: EJ Date/Time: 4/26/12 @ 17:35

Reviewed By: KL Date: 4/27/12

Cr6LIQ.xls

5/19/11 JC

S24-05191103 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JT3564-1 exp: 6/15/14) in 100 mL Methanol (B&J AD806 exp: 5/13/10). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49284 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JC

S24-05201101 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT # 110225
EXP: 12/2012

5/20/11 JC

S24-05201103 pH 4.007 BUFFER
Purchased
JT Baker CAT # 3657-01 500mL
LOT # J36503
EXP: 9/30/13

5/20/11 JC

S24-05201103 pH 7.~~3~~ BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT # 1103361
EX: 3/2013

10/17/11 SZ

S24-10171102 1000PPM NH3
0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL
w/ S24-10171101 (0.1M H_2SO_4 EXP. 10/17/12)
EXP: 4/17/12

10/17/11 SZ

S24-10171103 IC Eluent
100 mL of S24-09201103 (10x conc Eluent; EXP: 9/20/12)
↑ 1L w/ DI. DEGASSED.
EXP. 10/31/11

10/21/11 SZ

S24-10211101 pH 7.000 Buffer
Purchased
BDH Cat No: BDH5046-500mL
LOT # 1107491
EXP: 7/2013

10/24/11 SZ

S24-10241101 pH 4.000 Buffer
Purchased
JT Baker Cat No: 5657-01 500ml
LOT # K04505
EXP: 2/28/13

10/24/11 SZ

S24-10241102 pH 7.38 Buffer
Purchased
BDH Cat No BDH5058-500ml
LOT # 1109034
EXP: 8/2013

10/24/11 SR

S24-10241103 pH 10.000 Buffer
Purchased
JT Baker Cat no: 5655-01
LOT # K07507
EXP: 2/28/13

10/25/11 SR

S24-10251101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 951211 475mL
LOT # PN1 P/N 27475-A01
EXP: 10/25/12

10/25/11 SR

S24-10251102 A,B,C,D,E pH Filling Sln
Purchased
Thermo Scientific Orion 810007 5pack 60mL
LOT: PS1
EXP: 10/25/12

11/1/11 SR

S24-11011101 IC02 Eluent
100ml S24-09201103 (10X conc eluent EXP: 9/20/13) T (L w/ DI H2O DEGASSED
EXP: 11/15/11

11/1/11 SR

S24-11011102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JO564) exp: 6/15/15) in 100 mL Methanol (B&J AG932 exp: 10/12/16
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H2SO4 (EMD [illegible] exp: [illegible]). Bring

2/9/12 SR 524-0209/202 Nitrite Soln
0.250g N-1-Naphthylethylenediamine Dihydrochloride (JT Baker; lot # 22487 EXP 10/19/14) → 250mL w/ DI
EXP: 8/9/12

2/9/12 SR 524-0209/203 ICO2 Effluent
100mL 524-0209/103 (ICO2 Conc Effluent, EXP 9/20/12) → 1L w/ DI H2O. Degassed.
2/23/12

2/9/12 SR 524-0209/204 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker lot JT0641 exp: 6/15/15) in 100 mL Methanol (B&J DE532 exp: 10/10/16) Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49184 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 2/14/12

2/10/12 SR 524-0210/201 995 ~~1000~~ ppm Cr6+ 2/10/12
Purchased
INORGANIC VENTURES CCCR(6)1-1
LOT: 62-CR03049
EXP: 3/1/13

2/13/12 SR 524-0213/201
5.6mL Conc H_2SO_4 (EMD 49184, EXP: 11/20/14) → 1L
Add to DI H2O
EXP: 2/13/13

2/14/12 SA — 524-021412O3 — pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 111214G
EXP: 11/2013

2/20/12 SA — 524-0220120I — 500ppm NO2 STOCK
Purchased
RICCA CHEMICAL CO Cat# 5444.5-4 120ml Amber Gl
LOT# 1262290
EXP: 8/12

2/22/12 SA — 524-0222120I — Alkaline DIGESTION Sol
30.0g ~~NaOH~~ NaNO3 (EMD 4632715; EXP: 10/11/12) + 20.0g NaOH (EMD 4702713C; EXP: 10/11/12) ↑ 1L w/ DI
EXP: 3/22/12

2/23/12 SA — 524-0223120I — 10PPM Cr6+ Std
1.0ml 524-021012O1 (1000ppm Cr6+; EXP: 3/1/13)
↑ 100ml w/ DI H2O
EXP: 8/23/12

2/27/12 SA — 524-022712O1 — 0.1N H2SO4
5.6ml Conc H2SO4 (EMD 4928-4; EXP: 11/20/1
↑ 2L w/ DI H2O
EXP: 2/27/13

3/23/12 SA 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 110934
EXP: 8/2013

3/27/12 SA 524-0327/201 100 PPM Cr6+ ION
Purchased
Ricca Chemical Company Cat No 2695-16
500ml Plastic
LOT # 120701
EXP: 7/2013

3/28/12 SA 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # L04514 500ml plastic
EXP: 1/31/14

3/28/12 SA 524-0328/202 Methylene Blue 1% Aq Sol
100ml Purchased
Alfa Aesar Stock # 42771
LOT # H04X026
EXP: 3/28/13

4/16/12 S24-04161201 IC02 Eluent

100mL S24-03141201 (10X Conc eluent, EXP: 10/11/12) ↑ 1L w/ DI H2O. Degassed

EXP: 4/30/12

4/16/12 S24-04161202 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker JC5641 exp: 6/15/15) in 100 mL Methanol (B&J DC932 exp: 2/27/17). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4913847 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 4/21/12

4/16/12 S24-04161203 Cr6+ Coloring Reagent

0.250g 1,5-Diphenylcarbohydrazide Powder (JT Baker JC5641; EXP: 6/15/15) ↑ 50mL w/ Acetone (EMD Lot 47154; EXP 9/24/12)

EXP: 5/16/12

4/16/12 S24-04161204 12.5 N NaOH

100g NaOH (EMD 47022713; EXP 10/1/12 + 100mL DI H2O

EXP: 10/11/12

0430 4/30/12

4/30/12 S24-~~03141~~201 IC02 Eluent

100mL S24-03141201 (10X conc eluent, EXP: 10/11/12) ↑ 1 W/ DI H2O. Degassed.

EXP: 5/14/12

LABORATORY REPORT

May 12, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on April 30, 2012. For your reference, these analyses have been assigned our service request number P1201661.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 11:38 am, May 12, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114
Service Request No: P1201661

CASE NARRATIVE

The samples were received intact under chain of custody on April 30, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q12 / 100006114
Service Request: P1201661

Date Received: 4/30/2012
Time Received: 12:00

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-12-5	P1201661-001	Water	4/30/2012	08:04	X
MW-12-4	P1201661-002	Water	4/30/2012	08:39	X
MW-12-3	P1201661-003	Water	4/30/2012	09:10	X
MW-12-2	P1201661-004	Water	4/30/2012	09:45	X
MW-12-1	P1201661-005	Water	4/30/2012	10:20	X
EB-5-4/30/12	P1201661-006	Water	4/30/2012	10:04	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC
An Employee - Owned Company
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P1201661

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE, C-205
SAN DIEGO, CA 92110

Project Name: JPL GW MON. 2Q12

Project Number: 100006114

Project Manager: DAVID CONNER

P.O. # / Billing Information: #285651 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS, OH 43201

Phone: (619) 726-7311 Fax: (619) 458-6641

Email Address for Result Reporting: Connerd@battelle.org

Sampler (Print & Sign): MARIO MENDOZA

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted) TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 Cr VI (7196A)	0 1,4-Dioxane (8270 SIM)	7 NDMA (521)	Remarks
MW-12-5	1	4/30/12	804	GW	1						X			
MW-12-4	2		839		1						X			
MW-12-3	3		910		1						X			2C IV
MW-12-2	4		945		1						X			
MW-12-1	5		1020		1						X			
EB-5-4/30/12	6	4/30/12	1004	GW	1						X			EQUIP BLANK

Preservative Key
0 None
1 HCL
2 HNO3
3 H2SO4
4 NaOH
5 Zn Acetate
6 Asc Acid
7 Other

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____
MRL required Yes / No
MDL / PQL / J required Yes / No
EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 4/30/12	Time: 1109	Received by: (Signature)	Date: 4/30/12	Time: 1110
Relinquished by: (Signature)	Date: 4/30/12	Time: 1200	Received by: (Signature)	Date: 4/30/12	Time: 1200
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 3.0 °C

Wet Ice

5 of 22

Chain of Custody Report

Client: Battelle **Service Request:** P1201661
Project: JPL GW Mon 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201661-001.01					
	7196A				
		4/30/12	1203	SMO / MZAMORA	
		4/30/12	1203	P-37 / MZAMORA	
		4/30/12	1426	In Lab / EIBARRA	
		4/30/12	1624	P-37 / EIBARRA	
P1201661-002.01					
	7196A				
		4/30/12	1203	SMO / MZAMORA	
		4/30/12	1203	P-37 / MZAMORA	
		4/30/12	1426	In Lab / EIBARRA	
		4/30/12	1624	P-37 / EIBARRA	
P1201661-003.01					
	7196A				
		4/30/12	1203	SMO / MZAMORA	
		4/30/12	1203	P-37 / MZAMORA	
		4/30/12	1426	In Lab / EIBARRA	
		4/30/12	1624	P-37 / EIBARRA	
P1201661-004.01					
	7196A				
		4/30/12	1203	SMO / MZAMORA	
		4/30/12	1203	P-37 / MZAMORA	
		4/30/12	1426	In Lab / EIBARRA	
		4/30/12	1624	P-37 / EIBARRA	
P1201661-005.01					
	7196A				
		4/30/12	1203	SMO / MZAMORA	
		4/30/12	1203	P-37 / MZAMORA	
		4/30/12	1426	In Lab / EIBARRA	
		4/30/12	1624	P-37 / EIBARRA	
P1201661-006.01					
	7196A				
		4/30/12	1203	SMO / MZAMORA	
		4/30/12	1203	P-37 / MZAMORA	
		4/30/12	1426	In Lab / EIBARRA	
		4/30/12	1624	P-37 / EIBARRA	

Columbia Analytical Services
Now part of the ALS Group
2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Sample Acceptance Check Form

Client: Battelle Work order: P1201661

Project: JPL GW Mon 2Q12 / 100006114

Sample(s) received on: 4/30/12 Date opened: 4/30/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201661-001.01	125mL Plastic NP					
P1201661-002.01	125mL Plastic NP					
P1201661-003.01	125mL Plastic NP					
P1201661-004.01	125mL Plastic NP					
P1201661-005.01	125mL Plastic NP					
P1201661-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201661
Date Collected : 04/30/12
Date Received : 04/30/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-12-5	P1201661-001	0.010	0.003	1	NA	04/30/12 16:15	ND	
MW-12-4	P1201661-002	0.010	0.003	1	NA	04/30/12 16:15	ND	
MW-12-3	P1201661-003	0.010	0.003	1	NA	04/30/12 16:15	ND	
MW-12-2	P1201661-004	0.010	0.003	1	NA	04/30/12 16:15	ND	
MW-12-1	P1201661-005	0.010	0.003	1	NA	04/30/12 16:15	0.003	J
EB-5-4/30/12	P1201661-006	0.010	0.003	1	NA	04/30/12 16:15	ND	
Method Blank	P1201661-MB	0.010	0.003	1	NA	04/30/12 16:15	ND	

J Estimated concentration. The result is less than the PQL but greater than the MDL.

Approved By Kelle Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201661
Date Analyzed: 04/30/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Kate Ryan Date: 5/9/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1201661
Project:	JPL GW Mon 2Q12 / 100006114	**Date Analyzed:**	04/30/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0493	99	90-110
CCV1	0.0500	0.0502	100	90-110
CCV2	0.0500	0.0502	100	90-110

Approved By: Karen Rya Date: 5/9/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201661
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	04/30/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201661-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0411	103	92-110	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201661
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	04/30/12
Project Number :	100006114	**Date Received :**	04/30/12
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	04/30/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name :	MW-12-5		Units :	mg/L (ppm)
Lab Code :	P1201661-001MS	P1201661-001DMS	Basis :	NA
Test Notes :				

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0484	0.0484	97	97	69-119	<1	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P120166 1

Time: 1430

Sample	VWR lot #	Exp.
pH 2 Buffer	S24-05201101	12/2012
pH 4 Buffer	S24-10241101	2/28/13
pH 7 Buffer	S24-03231201	01/2014
pH 10 Buffer	S24-10241103	2/28/13

Slope	Prep.Run #
98.9 %	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3	2.010	23.7
pH 4.000		4.003	23.8
pH 7.000		7.003	23.9
pH 10.000		10.002	24.0
Ref#: S24-10241102 pH 7.38 E 8/13		7.398 100%	24.1
DI		2.005	23.6
P1201661-1.01		2.043	21.2
-2.01		2.123	21.6
-3.01		2.173	21.5
-4.01		2.154	21.9
-5.01		2.149	21.7
pH 2000		2.005	23.5
P1201661-6.01		2.029	21.9
pH 2.000		2.012	23.7

Sample	#	pH	Temp. °C
		SCALE NOT USED	

pH Adjustments: ☑ **7196A**: Diluted/Conc H_2SO_4 EMD 49284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

_____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 4/30/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: EJ Date: 4/30/12

Reviewer: [signature] Date: 4/30/12

pH

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201661 Run#: 289550

Stock#: 524-0223101 - TV=10PPM Exp 8/31/12 Prep Run#: —

ICV/CCV#: 524-0327101 TV=1.00PPM Exp 7/2013 Conc. H_2SO_4 Lot#: EMD 44284 Exp 11/20/14

Coloring Reagent Ref#: 524-041612.03

Working Curve:

Prep Dilution		*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L		*0.00*	*0.01*	*0.05*	*0.1*	0.999960043
Absorbance @ 540 nm		0	0.010	0.055	0.11	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10mL	—	✓	0.000	0.000	0.000	0.000401	<0.003
2	ICV 0.05 PPM		—	✓	0.000	0.054	0.054	0.0493	99%
3	MB		—	✓	0.000	0.000	0.000	0.000401	<0.003
4	LCS 0.04		—	✓	0.000	0.045	0.045	0.0411	103%
5	P1201661 - 1.01		—	✓	0.000	0.002	0.002	0.00221	<0.003
6	1.01 MS 0.05 PPM		—	✓	0.000	0.053	0.053	0.0484	97% } RPD
7	1.01 MSD		—	✓	0.000	0.053	0.053	0.0484	97% } 0
8	2.01		—	✓	0.001	0.001	0.000	0.000401	<0.003
9	2.01 US 0.03 PPM		—	✓	0.001	0.034	0.033	0.0303	101%
10	3.01		—	✓	0.000	0.001	0.001	0.00131	<0.003
11	4.01		—	✓	0.000	0.000	0.000	0.000401	<0.003
12	5.01		—	✓	0.000	0.003	0.003	0.00312	
13	CCV1 0.05 PPM		—	✓	0.000	0.055	0.055	0.0502	100%
14	CCB		—	✓	0.000	0.000	0.000	0.000401	<0.003
15	P1201661 - 6.01		—	✓	0.000	0.000	0.000	0.000401	<0.003
16	CCV2		—	✓	0.000	0.055	0.055	0.0502	100%
17	CCB2	↓	—	✓	0.000	0.000	0.000	0.000401	<0.003

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of 524-0327101 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-0223101 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↓ ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of ↓ @ 1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: EI Date/Time: 4/30/12 1600

Analyzed By: ET Date/Time: 4/30/12 1615

Reviewed By: [signature] Date: 4/30/12

Cr6LIQ.xls

5/19/11 JC

S24-0519110 3 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JT5644-1 exp: 6/15/14) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4928-4 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JC

S24-0520110 1 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500 mL
LOT # 110325
EXP: 12/2013

5/20/11 JC

~~S24-0520110 3~~ pH 4.000 BUFFER
Purchased
JT Baker CAT # 3657-01 500mL
LOT # J36503
EXP: 9/30/13

5/20/11 JC

~~S24-0520110 3~~ pH 7.~~0~~ BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT # 1103361
EX: 3/2013

10/17/11 SR

S24-10171102 1000PPM NH3

0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL

w/ S24-10171101 (0.1N H_2SO_4 EXP. 10/17/12)

EXP: 4/17/12

10/17/11 SR

S24-10171103 IC Eluent

100 mL of S24-09201103 (10x conc Eluent; EXP: 9/20/12)

↑ 1L w/ DI. DEGASSED.

EXP. 10/31/11

10/21/11 SR

S24-10211101 pH 7.000 Buffer

Purchased

BDH Cat NO: BDH5046-500mL

LOT # 11074491

EXP: 7/2013

10/24/11 SR

S24-10241101 pH 4.000 Buffer

Purchased

JT Baker Cat No: 5657-01 500ml

LOT # K04505

EXP: 2/28/13

10/24/11 SR

S24-10241102 pH 7.38 Buffer

Purchased

BDH Cat No BDH5058-500ml

LOT # 1109034

EXP: 8/2013

10/24/11 SR

524-10241103 pH 10.000 Buffer
Purchased
JT Baker Cat no: 5655-01
Lot # K07507
Exp: 2/28/13

10/25/11 SR

524-10251101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 951211 475mL
Lot # PN1 P/N 27475-A01
Exp: 10/25/12

10/25/11 SR

524-10251102 A,B,C,D,E pH Filling Sln
Purchased
Thermo Scientific Orion 810007 5 pack 60mL
Lot: PS1
Exp: 10/25/12

11/1/11 SR

524-11011101 IC02 Eluent
100 mL 524-09201103 (10X conc eluent Exp: 9/20/12) T 1L w/ DI H2O DEGASSED
Exp: 11/15/11

11/1/11 SR

524-11011102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JC5641 exp:6/15/19) in 100 mL Methanol (B&J AC322 exp: 10/12/16
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H2SO4 (EMD [illegible] exp: [illegible]). Bring

2/9/12 SR 524-0209/202 Nest Soln
0.2500g N-1-Naphthylethylenediamine Dihydrochloride (JT Baker; Lot IT22587 EXP 10/19/14) T 250mL w/ DI
EXP: 8/9/12

2/9/12 SR 524-0209/203 ICO2 Effluent
100mL 524-0920 1103 (for Cond Effluent, EXP 9/20/12) T 2/9/12 1L w/ DI H2O. Degassed.
2/23/12

2/9/12 SR 524-0209/204 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker JC0644 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 10/16/16) Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49184 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 2/14/12

2/10/12 SR 524-0210/201 ~~1000~~ 995 PPM Cal
Purchased
INORGANIC VENTURES CCCR(C)1-1
LOT: C2-CRC30449
EXP: 3/1/13

2/13/12 SR 524-0213/201
5.6mL Conc H_2SO_4 (EMD 49184, EXP: 11/20/14) T
Add to DI H2O
EXP 2/13/13

2/14/12 SA — 524-02141203 pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 111214G
EXP: 11/2013

2/20/12 SA — 524-0220/201 500ppm NO_2 STOCK
Purchased
RICCA CHEMICAL CO Cat# 5444.5-4 120ml Amber Gl
LOT# 1262292
EXP: 8/12

2/22/12 SA — 524-0222/201 Alkaline DIGESTION SOL
30.0g $NaOH$ (EMD 4633715; EXP: 10/14/12) + 20.0g $NaNO_2$ (EMD 4702713C; EXP: 10/11/12) ↑ 1L w/ DI
EXP: 3/22/12

2/23/12 SA — 524-0223/201 10ppm Cr6+ Std
1.0ml 524-02101201 (1000ppm Cr6+; EXP: 3/1/13)
↑ 100ml w/ DI H_2O
EXP: 8/23/12

2/27/12 SA — 524-0227/201 0.1N H_2SO_4
5.6ml Conc H_2SO_4 (EMD 4928-4; EXP: 11/20/1
↑ 2L w/ DI H_2O
EXP: 2/27/13

3/20/12 SZ4-03201201 1000 PPM SO3 Stock

0.1591 Na2SO3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

EXP. 4/3/12

3/20/12 SZ4-03201202 1,000PPM SO3 ICI/CCV

0.1607 Na2SO3 (Mallinckrodt Lot #H25469; Exp: 8/11/14) up to 100 ml w/ DI Water.

EXP: 4/3/12

3/21/12 SZ4-03211201 ICO3 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J05641 exp: 6/15/15) in 100 mL Methanol (B&J DC433 exp: 2/27/17. Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49284 exp: 11/30/14. Bring up to volume w/ DI H2O; mix and degas.

EXP: 3/26/12

3/21/12 SZ4-03211202 Alkaline Digestion Sol'n

~~20.0g~~ NaOH (EMD 4770227130 ; EXP 10/11/12) + 30.0g Na3BO3 (EMD 46-32175B EXP: 10/11/12) ↑ 1L W/DI H2O.

EXP: 4/21/12

3/23/12 SZ4-03231201 pH 7.000 buffer

Purchased

Thermo Scientific Orion 910107 475ml/plastic

LOT Code: QZ1 P/N: 72483-ACZ

EXP: 11/2014

3/23/12 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 11C9034
EXP: 8/2013

3/27/12 524-0327/201 100 PPM Cr^{6+} ICV
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
LOT # 120701
EXP: 7/2013

3/28/12 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # 104514 500ml plastic
EXP: 1/31/14

3/28/12 524-0328/202 Methylene Blue 1% AA Sol.
100ml Purchased
Alfa Aesar stock # 42771
LOT # H04X026
EXP: 3/25/13

4/16/12 S24-04161201 ICO2 Eluent

100mL S24-03141201 (10x Conc eluent, EXP: 10/11/12) ↑ 1L w/ DI H2O. Degassed

EXP: 4/30/12

4/16/12 S24-04161202 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker JC5641 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 2/27/17). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4623854 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 4/21/12

4/16/12 S24-04161203 Cr6+ Coloring Reagent

0.2500g 1,5-Diphenylcarbohydrazide Powder (JT Baker JC5641; EXP: 6/15/15) ↑ 50mL w/ Acetone (EMD lot 47154; EXP 9/24/12)

EXP: 5/16/12

4/16/12 S24-04161204 12.5 N NaOH

100g NaOH (EMD 47022713; EXP 10/11/12 + 100mL DI H2O.

EXP: 10/11/12

0430 4/30/12

4/30/12 S24-03141201 ICO2 Eluent

100mL S24-03141201 (10x conc eluent, EXP: 10/11/12) ↑ 1 w/ DI H2O. Degassed.

EXP: 5/14/12

LABORATORY REPORT

May 12, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 1, 2012. For your reference, these analyses have been assigned our service request number P1201695.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 11:45 am, May 12, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114
Service Request No: P1201695

CASE NARRATIVE

The samples were received intact under chain of custody on May 1, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q12 / 100006114
Service Request: P1201695

Date Received: 5/1/2012
Time Received: 16:07

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-23-5	P1201695-001	Water	5/1/2012	08:58	X
MW-23-3	P1201695-003	Water	5/1/2012	10:17	X
MW-23-2	P1201695-004	Water	5/1/2012	10:46	X
MW-23-1	P1201695-005	Water	5/1/2012	11:22	X
DUPE-3-2Q12	P1201695-006	Water	5/1/2012	00:00	X
EB-6-5/1/12	P1201695-007	Water	5/1/2012	11:04	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No.: P1201695

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE, C-205
SAN DIEGO, CA 92110

Project Name: JPL GW MON. 2Q12

Project Number: 100006114

Project Manager: DAVID CONNER

P.O. # / Billing Information: #285651 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS, OH 43201

Phone: (619) 726-7311 Fax: (619) 458-6641

Email Address for Result Reporting: Connerd@battelle.org

Sampler (Print & Sign)

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted) TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	Cr VI (7196A) [0]	1,4-DIOXANE (8270SIM) [0]	NDMA (521) [7]	Remarks
MW-23-5		5/1/12	858	GW	1						X			
MW-23-4		"	928	"	2						X			MS/MSD
MW-23-3		"	1017	"	1						X			QC IV
MW-23-2		"	1046	"	1						X			
MW-23-1		5/1/12	1122	GW	1						X			
DUPE-3-2Q12		5/1/12	—	GW	1						X			DUPLICATE
EB-6-5/1/12		5/1/12	1104	GW	1						X			EQUIP BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)		Date: 5/1/12	Time: 1237	Received by: (Signature)		Date: 5/1/12	Time: 1237
Relinquished by: (Signature)		Date: 5/1/12	Time: 1607	Received by: (Signature)		Date: 5/1/12	Time: 1607
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Date:	Time:

Cooler / Blank / Ice / No Ice

Temperature 3 °C

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Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Service Request: P1201695

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201695-001.01					
	7196A				
		5/1/12	1626	SMO / MZAMORA	
		5/1/12	1627	P-37 / MZAMORA	
		5/1/12	1639	In Lab / EIBARRA	
		5/1/12	1803	P-37 / EIBARRA	
P1201695-002.01					
	7196A				
		5/1/12	1626	SMO / MZAMORA	
		5/1/12	1627	P-37 / MZAMORA	
		5/1/12	1639	In Lab / EIBARRA	
		5/1/12	1803	P-37 / EIBARRA	
P1201695-002.02					
		5/1/12	1626	SMO / MZAMORA	
		5/1/12	1627	P-37 / MZAMORA	
P1201695-003.01					
	7196A				
		5/1/12	1626	SMO / MZAMORA	
		5/1/12	1627	P-37 / MZAMORA	
P1201695-004.01					
	7196A				
		5/1/12	1626	SMO / MZAMORA	
		5/1/12	1627	P-37 / MZAMORA	
		5/1/12	1639	In Lab / EIBARRA	
		5/1/12	1803	P-37 / EIBARRA	
P1201695-005.01					
	7196A				
		5/1/12	1626	SMO / MZAMORA	
		5/1/12	1627	P-37 / MZAMORA	
		5/1/12	1639	In Lab / EIBARRA	
		5/1/12	1803	P-37 / EIBARRA	
P1201695-006.01					
	7196A				
		5/1/12	1626	SMO / MZAMORA	
		5/1/12	1627	P-37 / MZAMORA	
		5/1/12	1639	In Lab / EIBARRA	
		5/1/12	1803	P-37 / EIBARRA	
P1201695-007.01					
	7196A				
		5/1/12	1626	SMO / MZAMORA	
		5/1/12	1627	P-37 / MZAMORA	
		5/1/12	1639	In Lab / EIBARRA	
		5/1/12	1803	P-37 / EIBARRA	

Chain of Custody Report

Client: Battelle **Service Request:** P1201695

Project: JPL GW Mon 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On

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Sample Acceptance Check Form

Client: Battelle Work order: P1201695

Project: JPL GW Mon 2Q12 / 100006114

Sample(s) received on: 5/1/12 Date opened: 5/1/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201695-001.01	125mL Plastic NP					
P1201695-002.01	125mL Plastic NP					
P1201695-002.02	125mL Plastic NP					
P1201695-003.01	125mL Plastic NP					
P1201695-004.01	125mL Plastic NP					
P1201695-005.01	125mL Plastic NP					
P1201695-006.01	125mL Plastic NP					
P1201695-007.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201695
Date Collected : 05/01/12
Date Received : 05/01/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-23-5	P1201695-001	0.010	0.003	1	NA	05/01/12 17:25	ND	
MW-23-4	P1201695-002	0.010	0.003	1	NA	05/01/12 17:25	ND	
MW-23-3	P1201695-003	0.010	0.003	1	NA	05/01/12 17:25	ND	
MW-23-2	P1201695-004	0.010	0.003	1	NA	05/01/12 17:25	ND	
MW-23-1	P1201695-005	0.010	0.003	1	NA	05/01/12 17:25	ND	
DUPE-3-2Q12	P1201695-006	0.010	0.003	1	NA	05/01/12 17:25	ND	
EB-6-5/1/12	P1201695-007	0.010	0.003	1	NA	05/01/12 17:25	ND	
Method Blank	P1201695-MB	0.010	0.003	1	NA	05/01/12 17:25	ND	

Approved By Karen Rya Date : 5/9/12

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201695
Date Analyzed: 05/01/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 5/9/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201695
Date Analyzed: 05/01/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0500	100	90-110
CCV1	0.0500	0.0500	100	90-110
CCV2	0.0500	0.0508	102	90-110

Approved By: Karen Ryan Date: 5/9/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201695
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/01/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201695-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0390	98	92-110	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201695
Date Collected : 05/01/12
Date Received : 05/01/12
Date Extracted : NA
Date Analyzed : 05/01/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-23-4
Lab Code : P1201695-002MS P1201695-002DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0485	0.0492	97	98	69-119	1	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P120 1695

Time: 1400

Sample	VWR lot #	Exp.
pH 2 Buffer	S24-0520 1101	12/2012
pH 4 Buffer	S24-1024 1101	2/28/13
pH 7 Buffer	S24-03231201	01/2014
pH 10 Buffer	S24-10241103	2/28/13

Slope	Prep.Run #
98.8%	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C	Sample	#	pH	Temp. °C
pH 2.000	3	2.007	23.1				
pH 4.000		4.005	23.5				
pH 7.000		7.007	23.9				
pH 10.000		10.008	23.7				
Ref#: S24-10241102 pH 7.38 Exp 8/13		7.403 100%	23.9				
DI H_2O		2.012	22.6				
pH 2.000		2.014	23.2			SPACE NOT	USED
TIME		1640					
pH 2.000		2.008	24.1				
P1201695-1.01		2.209	11.4				
-2.01		2.104	11.7				
-3.01		2.073	11.6				
-4.01		2.226	12.2				
-5.01		2.067	12.6				
-6.01		2.104	13.0				
-7.01		2.017	13.8				
pH 2.000		2.028	23.4				

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2S0_4 EMD 49284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 4/30/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: EI Date: 5/01/12

Reviewer: [signature] Date: 5/2/12

pH

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201695

Run#: 289783

Stock#: S24-0223120 1 TV=10 ppm Exp 8/23/13

Prep Run#:

ICV/CCV#: S24-0327120 1 TV=100 Exp 7/2013

Conc. H_2SO_4 Lot#: EMD 49284

Coloring Reagent Ref#: S24-0416 1203 Exp: 5/16/12

Working Curve:

Prep Dilution	*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L	*0.00*	*0.01*	*0.05*	*0.1*	0.999923915
Absorbance @ 540 nm	0	0.012	0.062	0.127	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10mL	-	✓	0.000	0.000	0.000	0.000463	<0.003
2	ICV 0.05 PPM		-	✓	0.000	0.063	0.063	0.0500	100%
3	MB		-	✓	0.000	0.000	0.000	0.000463	<0.003
4	LCS 0.04 PPM		-	✓	0.000	0.049	0.049	0.0390	98%
5	P1201695 -1.01				0.001	0.001	0.000	0.000463	<0.003
6	-1.01 VS 0.03 PPM				0.001	0.035	0.034	0.0272	91%
7	-2.01				0.002	0.003	0.001	0.00125	<0.003
8	-2.01 MS 0.05 PPM				0.002	0.063	0.061	0.0485	97% } RPD
9	-2.01 MSD				0.002	0.064	0.062	0.0492	98% } 1%
10	-3.01				0.003	0.004	0.001	0.00125	<0.003
11	-4.01				0.001	0.002	0.001	0.00125	<0.003
12	-5.01				0.005	0.005	0.000	0.000463	<0.003
13	CCV 1 0.05 PPM				0.000	0.063	0.063	0.0500	100%
14	CCB 1				0.000	0.000	0.000	0.000463	<0.003
15	P1201695 -6.01				0.004	0.005	0.001	0.00125	<0.003
16	P1201695 -7.01				0.000	0.001	0.001	0.00125	<0.003
17	CCV 2				0.000	0.064	0.064	0.0508	102%
	CCB 2				0.000	0.000	0.000	0.000463	<0.003

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of S24-0327120 1 @ 1:10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-0223120 1 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↓ ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of ↓ @ 1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: EI Date/Time: 5/1/12 @ 17:05

Analyzed By: EI Date/Time: 5/1/12 @ 17:25

Reviewed By: [signature] Date: 5/2/12

Cr6LIQ.xls

5/19/11 JC

S24-05191103 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER 3005641 exp: 6/15/14) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49184 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JC

S24-05201101 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT # 110225
EXP: 12/2012

5/20/11 JC

~~S24-05201103~~ pH 4.000 BUFFER
Purchased
JT Baker CAT # 5657-01 500mL
LOT # J36503
EXP: 9/30/12

5/20/11 JC

~~S24-05201103~~ pH 7.~~00~~ BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT # 1103361
EX: 3/2013

10/17/11 SR

S24-10171102 1000PPM NH3
0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL
10 | S24-10171101 (0.1N H_2SO_4 EXP. 10/17/12)
EXP: 4/17/12

10/17/11 SR

S24-10171103 IC2 Eluent
100 mL of S24-09201103 (10x conc Eluent; EXP: 9/20/12
↑ 1L w/ DI. DEGASSED.
EXP. 10/31/11

10/21/11 SR

S24-10211101 pH 7.000 Buffer
Purchased
BDH Cat No: BDH5046-500mL
LOT # 1107491
EXP: 7/2013

10/24/11 SR

S24-10241101 pH 4.000 Buffer
Purchased
JT Baker Cat No: 5657-01 500mL
LOT # K04505
EXP: 2/28/13

10/24/11 SR

S24-10241102 pH 7.38 Buffer
Purchased
BDH Cat No BDH5058-500mL
LOT # 1109034
EXP: 8/2013

10/24/11 SR

524-10241103 pH 10.000 Buffer
Purchased
JT Baker Cat no.: 5655-01
Lot # K07507
Exp: 2/28/13

10/25/11 SR

524-10251101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 951211 475mL
Lot # PN1 P/N 20747-A01
Exp: 10/25/12

10/25/11 SR

524-10251102 A,B,C,D,E pH Filling Sol'n
Purchased
Thermo Scientific Orion 810007 5 pack bottles
Lot: PS1
Exp: 10/25/12

11/1/11 SR

524-11011101 IC02 Eluent
100 mL 524-09201103 (10x concentrate eluent exp: 9/20/12) TO 1 L W/ DI H2O DEGASSED
Exp: 11/15/11

11/1/11 SR

524-11011102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J0564) exp: 6/15/15 in 100 mL Methanol (B&J AG932 exp: 10/12/16
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H2SO4 (EMD H6784 exp: [illegible]). Bring

2/9/12 SR 524-0209/202 Nitrite Soln
0.250g N-1-Naphthylethylene diamine Dihydrochloride
(JT Baker; lot it22587 EXP 10/19/14) T 250mL w/ DI
EXP: 8/9/12

2/9/12 SR 524-0209/203 IC02 Eluent
1000mL 524-0920 1103 (IonCon Eluent, EXP
9/20/12) T 8/9/12 1 L w/ DI H2O. Degassed.
2/23/12

2/9/12 SR 524-0209/204 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker JC0644
exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 10/10/16)
Add to 1 L volumetric flask containing 500 mL DI water +
5.6 mL conc. H2SO4 (EMD 49184 exp: 11/20/14). Bring
up to volume w/ DI H2O; mix and degas.

EXP: 3/14/12

2/10/12 SR 524-0210/201 995 ~~1000~~ PPM Calt
Purchased SR 2/10/12
INORGANIC VENTURES CCCR(C)1-1
LOT: 02-CRC3045
EXP: 3/1/13

2/13/12 SR 524-0213/201
5.6mL Conc H_2SO_4 (EMD 49184; EXP: 11/20/14) T
d.b.d. DI H_2O
EXP 2/13/13

2/14/12 SA — 524-02141203 pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 111214G
EXP: 11/2013

2/20/12 SA — 524-0220/201 50ppm NO_2 STOCK
Purchased
RICCA CHEMICAL CO Cat# 5444.5-4 120ml Amber Gl
LOT# 1262292
EXP: 8/12

2/22/12 SA — 524-0222/201 Alkaline DIGESTION Sol
~~30.0g~~ ~~NaOH~~ (EMD 4632715; EXP: 10/11/12) + ~~30~~.0g Na_2O_2 (EMD 4402713C; EXP: 10/11/12) ↑ 1L w/ DI
EXP: 3/22/12

2/23/12 SA — 524-0223/201 10ppm Cr-6+ Std
1.0ml 524-02101201 (1000ppm Cr-6+; EXP: 3/1/13)
↑ 100ml w/ DI H_2O
EXP: 8/23/12

2/27/10 SA — 524-0227/201 0.1N H_2SO_4
5.6ml Conc H_2SO_4 (EMD 4928-4; EXP: 11/20/1
↑ 2L w/ DI H_2O
EXP: 2/27/13

3/20/12 S24-0320/201 1000 PPM SO_3 Stock

0.1591 Na_2SO_3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

EXP. 4/3/12

3/20/12 S24-0320/202 1,000PPM SO_3 ICV/CCV

0.1607 Na_2SO_3 (Mallinekrodt Lot #H25469; Exp: 8/11/14) up to 100 ml w/ DI Water.

EXP: 4/3/12

3/21/12 S24-0321/201 ICO3 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J05641 exp: 6/15/15) in 100 mL Methanol (B&J DE732 exp: 2/27/17. Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H_2SO_4 (EMD 4g384 exp: 11/30/14. Bring up to volume w/ DI H_2O; mix and degas.

EXP: 3/30/12

3/21/12 S24-0321/202 Alkaline Digestion Soln

30.0g NaOH (EMD 4702273C; EXP 10/11/12) + 30.0g Na_2CO_3 (EMD 4-321715 EXP: 10/11/12) ↑ 1L W/ DI H_2O.

EXP: 4/21/12

3/23/12 S24-0323/201 pH 7.000 buffer

Purchased

Thermo Scientific Orion 910107 475ml/plastic

LOT Code: QZ1 P/N: 72483-ACZ

EXP: 11/2014

3/23/12 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 11091134
EXP: 8/2013

3/27/12 524-0327/201 100 PPM Cr^{6+} ION
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
LOT # 120170I
EXP: 7/2013

3/28/12 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # 104514 500ml plastic
EXP: 1/31/14

3/28/12 524-0328/202 Methylene Blue 1% AQ Sol.
100ml Purchased
Alfa Aesar stock # 42771
LOT # H04X026
EXP: 3/28/13

4/16/12 S24-0416/201 IC02 Eluent
100mL S24-0314/201 (10x conc eluent, EXP: 10/11/12) ↑ 1L w/ DI H2O. Degassed
EXP: 4/30/12

4/16/12 S24-0416/202 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker JT5641 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 2/27/17). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 469284 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 4/21/12

4/16/12 S24-0416/203 Cr6+ Coloring Reagent
0.250g 1,5-Diphenylcarbohydrazide Powder (JT Baker JT5641; EXP: 6/15/15) ↑ 50mL w/ Acetone (EMD LOT 47154; EXP 9/24/12)
EXP: 5/16/12

4/16/12 S24-0416/204 12.5 N NaOH
100g NaOH (EMD 47022713; EXP 10/1/12 + 100mL DI H2O
EXP: 10/11/12

4/30 4/30/12
4/30/12 S24-~~0314~~/201 IC02 Eluent
100mL S24-0314/201 (10x conc eluent, EXP: 10/11/12) ↑ 1 L w/ DI H2O. Degassed.
EXP: 5/14/12

LABORATORY REPORT

May 16, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 2, 2012. For your reference, these analyses have been assigned our service request number P1201713.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 2:05 pm, May 16, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114
Service Request No: P1201713

CASE NARRATIVE

The samples were received intact under chain of custody on May 2, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q12 / 100006114
Service Request: P1201713

Date Received: 5/2/2012
Time Received: 13:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-11-5	P1201713-001	Water	5/2/2012	09:03	X
MW-11-4	P1201713-002	Water	5/2/2012	09:56	X
MW-11-3	P1201713-003	Water	5/2/2012	10:34	X
MW-11-2	P1201713-004	Water	5/2/2012	11:34	X
MW-11-1	P1201713-005	Water	5/2/2012	12:11	X
EB-7-5/2/12	P1201713-006	Water	5/2/2012	11:53	X

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P1201713

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE., C-205
SAN DIEGO, CA 92110

Project Name: JPL GW MON. 2012

Project Number: 100006114

Project Manager: DAVID CONNER

P.O. # / Billing Information: #285651 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS, OH 43201

Phone: (619) 726-7311 Fax: (619) 458-6641

Email Address for Result Reporting: Connerd@battelle.org

Sampler (Print & Sign)

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 Cr VI (7196A)	0 1,4-Dioxane (8270 SIM)	7 NDMA (521)	Remarks
MW-11-5	~~903~~ (1)	5/2/12	903	GW	1							X			
MW-11-4	~~956~~ (2)		956		1							X			
MW-11-3	~~1034~~ (3)		1034		2							X			MS/MSD
MW-11-2	~~1134~~ (4)		1134		1							X			
MW-11-1	(5)		1211		1							X			
EB-7-5/2/12	(6)	5/2/12	1153	GW	1							X			EQUIP. BLANK

Preservative Key
0 None
1 HCL
2 HNO3
3 H2SO4
4 NaOH
5 Zn Acetate
6 Asc Acid
7 Other

5 of 22

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____
MRL required Yes / No
MDL / PQL / J required Yes / No
EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 5/2/12	Time: 1245	Received by: (Signature)	Date: 5/2/12	Time: 1245
Relinquished by: (Signature)	Date: 5/2/12	Time: 1330	Received by: (Signature)	Date: 5/2/12	Time: 1330
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 3 °C

Columbia Analytical Services, Inc.
Now part of the ALS Group
2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Chain of Custody Report

Client: Battelle **Service Request:** P1201713
Project: JPL GW Mon 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201713-001.01					
	7196A				
		5/2/12	1355	SMO / MZAMORA	
		5/2/12	1356	P-37 / MZAMORA	
		5/2/12	1416	In Lab / SANDERSON	
		5/2/12	1703	P-37 / SANDERSON	
P1201713-002.01					
	7196A				
		5/2/12	1355	SMO / MZAMORA	
		5/2/12	1356	P-37 / MZAMORA	
		5/2/12	1416	In Lab / SANDERSON	
		5/2/12	1703	P-37 / SANDERSON	
P1201713-003.01					
	7196A				
		5/2/12	1355	SMO / MZAMORA	
		5/2/12	1356	P-37 / MZAMORA	
		5/2/12	1416	In Lab / SANDERSON	
		5/2/12	1703	P-37 / SANDERSON	
P1201713-003.02					
		5/2/12	1355	SMO / MZAMORA	
		5/2/12	1356	P-37 / MZAMORA	
		5/2/12	1416	In Lab / SANDERSON	
		5/2/12	1703	P-37 / SANDERSON	
P1201713-004.01					
	7196A				
		5/2/12	1355	SMO / MZAMORA	
		5/2/12	1356	P-37 / MZAMORA	
		5/2/12	1416	In Lab / SANDERSON	
		5/2/12	1703	P-37 / SANDERSON	
P1201713-005.01					
	7196A				
		5/2/12	1355	SMO / MZAMORA	
		5/2/12	1356	P-37 / MZAMORA	
		5/2/12	1416	In Lab / SANDERSON	
		5/2/12	1703	P-37 / SANDERSON	
P1201713-006.01					
	7196A				
		5/2/12	1355	SMO / MZAMORA	
		5/2/12	1356	P-37 / MZAMORA	
		5/2/12	1416	In Lab / SANDERSON	
		5/2/12	1703	P-37 / SANDERSON	

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Sample Acceptance Check Form

Client: Battelle Work order: P1201713

Project: JPL GW Mon 2Q12 / 100006114

Sample(s) received on: 5/2/12 Date opened: 5/2/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201713-001.01	125mL Plastic NP					
P1201713-002.01	125mL Plastic NP					
P1201713-003.01	125mL Plastic NP					
P1201713-003.02	125mL Plastic NP					
P1201713-004.01	125mL Plastic NP					
P1201713-005.01	125mL Plastic NP					
P1201713-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201713
Date Collected : 05/02/12
Date Received : 05/02/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-11-5	P1201713-001	0.010	0.003	1	NA	05/02/12 14:15	ND	
MW-11-4	P1201713-002	0.010	0.003	1	NA	05/02/12 14:15	ND	
MW-11-3	P1201713-003	0.010	0.003	1	NA	05/02/12 14:15	ND	
MW-11-2	P1201713-004	0.010	0.003	1	NA	05/02/12 14:15	ND	
MW-11-1	P1201713-005	0.010	0.003	1	NA	05/02/12 14:15	ND	
EB-7-5/2/12	P1201713-006	0.010	0.003	1	NA	05/02/12 14:15	ND	
Method Blank	P1201713-MB	0.010	0.003	1	NA	05/02/12 14:15	ND	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201713
Date Analyzed: 05/02/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 5/9/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201713
Date Analyzed: 05/02/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0484	97	90-110
CCV1	0.0500	0.0484	97	90-110
CCV2	0.0500	0.0484	97	90-110

Approved By: Karen Ryan Date: 5/9/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201713
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/02/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201713-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0387	97	92-110	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201713
Date Collected : 05/02/12
Date Received : 05/02/12
Date Extracted : NA
Date Analyzed : 05/02/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-11-3
Lab Code : P1201713-003MS P1201713-003DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0440	0.0440	88	88	69-119	<1	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P1201311, 1713, 1532, K1203518, MDL+4

Time: 1122

Sample	VWR lot #	Exp.
pH 2 Buffer	524-0520/101	12/2012
pH 4 Buffer	524-1024/101	2/28/13
pH 7 Buffer	524-0323/201	1/2014
pH 10 Buffer	524-1024/103	2/28/13

Slope	Prep.Run #
98.8%	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3,4	2.007	22.7°
pH 4.000	↓	4.010	22.6°
pH 7.000	↓	7.010	22.6°
pH 10.000	↓	9.994	22.7°
Ref#: 524-1024/102 T.V=7.38 EXP: 8/2013	↓	7.397 102%	22.8°
DI H_2O	3	2.023	22.1°
DI H_2O	4	9.476	25.3°
pH 10.000	3,4	9.996	23.0°
TIME: 1348			
pH 10.000	3,4	9.991	23.4°
P1201311-1.01	4	9.442	22.6°
-1.01 DUP	4	9.455	22.6°
-1.01	3	2.060	23.0°
-1.01 DUP	3	2.055	23.0°
P1201713-1.01	3	2.051	13.7°
-2.01	3	2.024	13.0°
-3.01	3	2.071	13.7°

Sample	#	pH	Temp. °C
P1201713-4.01	3	2.026	14.1°
-5.01	3	1.904	14.5°
-6.01	3	1.923	14.5°
pH 2.000	3,4	2.013	22.8°
MB 5/1/12 solid prep	4	9.470	23.7°
LCS	4	9.440	23.6°
DLCS	4	9.453	23.7°
MB	3	2.030	24.6°
LCS	3	1.984	24.4°
DLCS	3	2.018	24.3°
P1201532-1.01	3	2.048	24.0°
-1.01 DUP	3	2.068	24.4°
K1203518-1.08	4	9.426	24.1°
-1.08 DUP	4	9.138	23.9°
pH 10.000	3,4	9.997	24.4°
K1203518-1.08MS	4	9.487	23.7°
-1.08MSD	4	9.291	23.7°
P1201532-1.01	4	9.214	23.6°
-1.01 DUP	4	9.253	24.0°

			Temp
MDL	4	9.263	24.0°
	2	9.416	23.6°
	3	9.354	23.8°
	4	9.270	23.8°
pH 10.000	↓	10.004	24.4°

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 49284 EXP: 11/20/14

☒ **7199A**: Diluted NaOH 524-0416/204 EXP: 10/11/12

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 4/30/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: SN Date: 5/2/12

Reviewer: KR Date: 5/3/12

pH

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201713, P1201311 Run#: 2899710

Stock#: 524-0223/201 T.V=10PPM EXP: 5/23/12 Prep Run#: —

ICV/CCV#: 524-0327/201 T.V=100PPM EXP: 7/2013 Conc. H_2SO_4 Lot#: EMD 49284 EXP: 11/30/14

Coloring Reagent Ref#: 524-0416/203 EXP: 5/16/12

Working Curve:

Prep Dilution	NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L	0.00	0.01	0.05	0.1	0.9999785
Absorbance @ 540 nm	0.000	0.012	0.057	0.113	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10ml	—	✓	0.000	0.000	0.000	-0.000358	<0.003
	ICV 0.05 PPM			✓	0.000	0.055	0.055	0.0484	97%
2	MB		—	✓	0.000	0.000	0.000	-0.000358	<0.003
3	LCS 0.04PPM		—	✓	0.000	0.044	0.044	0.0387	97%
4	P1201713-1.01		—	✓	0.006	0.006	0.000	-0.000358	<0.003
5	-1.01 VS 0.03PPM		—	✓	0.006	0.040	0.034	0.0298	99%
6	-2.01		—	✓	0.000	0.000	0.000	-0.000358	<0.003
7	-3.01		—	✓	0.003	0.003	0.000	↓	↓
8	-3.01 MS		—	✓	0.003	0.053	0.050	0.0440	88%
9	-3.01 MSD		—	✓	0.003	0.053	0.050	0.0440	88% RPD
10	-4.01		—	✓	0.001	0.002	0.001	0.000529	<0.003
11	-5.01		—	✓	0.000	0.001	0.001	↓	↓
12	CCV1 0.05PPM		—	✓	0.000	0.055	0.055	0.0484	97%
	CCB1		—	✓	0.000	0.000	0.000	-0.000358	<0.003
13	P1201713-6.01		—	✓	0.000	0.000	0.000	-0.000358	<0.003
14	P1201311-1.01		—	✓	0.000	0.206	0.206	over range	
15	-1.01		2.5/10	✓	0.000	0.051	0.051	0.044878	0.180
16	-1.01 DUP		2.5/10	✓	0.000	0.051	0.051	0.044878	0.180
17	CCV2 0.05PPM		—	✓	0.000	0.055	0.055	0.0484	97%
	CCB2		—	✓	0.000	0.000	0.000	-0.000358	<0.003

pH Requirement: Method 7196A (2 ± 0.5) *Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.25 ml of 524-0327/201 @10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-0223/201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of — ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: [signature] Date/Time: 5/2/12 @ 1400

Analyzed By: [signature] Date/Time: 5/2/12 @ 1415

Reviewed By: KR Date: 5/3/12

5/19/11 JC

S24-0519 1103 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JT5641 exp: 6/15/16) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 441844 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JC

S24-0520 1101 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500 mL
LOT # 110225
EXP: 12/2013

5/20/11 JC

S24-0520 1103 pH 4.000 BUFFER
Purchased
JT Baker CAT # 6657-01 500mL
LOT # J36503
EXP: 9/30/13

5/20/11 JC

S24-0520 1103 pH 7.00 BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT # 110336
EXP: 3/2013

10/17/11 SZ

S24-10171102 1000PPM NH3

0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100ml

W/ S24-10171101 (0.1M H_2SO_4 EXP: 10/17/12)

EXP: 4/17/12

10/17/11 SZ

S24-10171103 TOC Eluent

100 ml of S24-09201103 (10x conc Eluent; EXP: 9/20/12)

↑ 1L w/ DI. DEGASSED.

EXP: 10/31/11

10/21/11 SZ

S24-10211101 pH 7.000 Buffer

Purchased

BDH Cat NO: BDH5046-500mL

LOT # 1107491

EXP: 7/2013

10/24/11 SZ

S24-10241101 pH 4.000 Buffer

Purchased

JT Baker Cat No: 5657-01 500ml

LOT # K04505

EXP: 2/28/13

10/24/11 SZ

S24-10241102 pH 7.38 Buffer

Purchased

BDH Cat No BDH5058-500ml

LOT # 1109034

EXP: 8/2013

10/24/11 SH

524-10241103 pH 10.000 Buffer
Purchased
JT Baker Cat no: 5655-01
LOT # K07507
EXP: 2/28/13

10/25/11 SH

524-10251101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 951211 475mL
LOT # PN1 P/N 207475-A01
EXP: 10/25/12

10/25/11 SH

524-10251102 A,B,C,D,E pH Filling Sln
Purchased
Thermo Scientific Orion 810007 5 pack each
LOT: PS1
EXP: 10/25/12

11/1/11 SH

524-11011101 IC02 Eluent
100ml 524-09201103 (10x conc eluent. EXP: 9/20/12) 1 L W/ DI H2O DEGASSED
EXP: 11/15/11

11/1/11 SH

524-11011102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ ST BAKER J0564 exp: 6/15/13) in 100 mL Methanol (B&J AE932 exp: 10/12/16
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H2SO4 (EMD [illegible] exp: [illegible]). Bring

2/9/12 524-0209/202 Nitrite Std
Sa 0.250g N-1-Naphthylethylene diamine Dihydrochloride
(JT Baker; lot IT22487 EXP 10/19/14) to 250mL w/ DI
EXP: 8/9/12

2/9/12 524-0209/203 ICV Effluent
Sa 100mL 524-0920 1103 (for Cont Effluent, EXP
9/20/12) to 8/9/12 1L w/ DI H2O. Degassed.
2/23/12

2/9/12 524-0209/204 ICV PCR
Sa

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ J.T. BAKER JT0564-1
exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 10/10/16)
Add to 1 L volumetric flask containing 500 mL DI water +
5.6 mL conc. H2SO4 (EMD 49184 exp: 11/20/14). Bring
up to volume w/ DI H2O; mix and degas.

EXP: 2/14/12

2/10/12 524-02/0120 1000 ppm 995 ppm CrVI
Sa 2/10/12
Purchased
INORGANIC VENTURES CGCR(6)1-1
LOT: 62-CR03049
EXP: 3/1/13

2/13/12 524-0213/201
Sa 5.6 mL Conc H_2SO_4 (EMD 49184, EXP: 11/20/14) to 1L
with DI H_2O
EXP: 2/13/13

2/14/12 SA 524-02141203 pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 111214G
EXP: 11/2013

2/20/12 SA 524-02201201 500ppm NO2 STOCK
Purchased
RICCA CHEMICAL Co Cat# 5444.5-4 120ml Amber Gl
LOT# 126292
EXP: 8/12

2/22/12 SA 524-02221201 Alkaline DIGESTION Sol
30.0g ~~NaOH~~ Na2O2 (EMD 4632715; EXP: 10/11/12) + 20.0g Na
(EMD 4702271 3C; EXP: 10/11/12) ↑ 1L DI
EXP: 3/22/12

2/23/12 SA 524-02231201 10PPM Cr6+ Std
1.0ml 524-02161201 (1000ppm Cr6+; EXP: 3/1/13)
↑ 100ml w/ DI H2O
EXP: 8/23/12

2/27/12 SA 524-02271201 0.1N H2SO4
5.6ml Conc H2SO4 (EMD 4928 4; EXP: 11/20/
↑ 2L W/ DI H2O
EXP: 2/27/13

3/20/12 S24-0320201 1000 ppm SO_3 Stock

0.1591 Na_2SO_3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

EXP. 4/3/12

3/20/12 S24-0320202 100 ppm SO_3 ICV/CCV

0.1607 Na_2SO_3 (Mallinckrodt Lot #H25469; Exp: 8/11/14) up to 100 ml w/ DI Water.

EXP: 4/3/12

3/21/12 S24-0321201 ICOA PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J05641 exp: 6/15/15) in 100 mL Methanol (B&J DE933 exp: 2/27/17. Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H_2SO_4 (EMD 49384 exp: 11/30/14. Bring up to volume w/ DI H_2O; mix and degas.

EXP: 3/26/12

3/21/12 S24-0321202 Alkaline Digestion Sol'n

30.0g NaOH (EMD 4702273C; EXP 10/11/12) + 30.0g Na_2CO_3 (EMD 46-32175B EXP: 10/11/12) ↑ 1L w/ DI H_2O.

EXP: 4/21/12

3/23/12 S24-0323201 pH 7.000 buffer

Purchased

Thermo Scientific Orion 910107 475mL/plastic

LOT Code: QZ1 P/N: 72483-ACC

EXP: 11/2014

3/23/12 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
Lot #: 110934
EXP: 8/2013

3/27/12 524-0327/201 100 PPM Cr^{6+} ICV
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
Lot # 120701
EXP: 7/2013

3/28/12 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
Lot # 104514 500ml plastic
EXP: 11/31/14

3/28/12 524-0328/202 Methylene Blue 1% AA Sol.
100ml Purchased
Alfa Aesar stock # 42771
Lot # H04X026
EXP: 3/28/13

4/16/12 S24-04161201 IC02 Eluent

100mL S24-03141201 (10x Conc eluent, EXP: 10/11) ↑ 1L w/ DI H2O. Degassed

EXP: 4/30/12

4/16/12 S24-04161202 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker JT5641 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 2/27/17). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4913841 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 4/21/12

4/16/12 S24-04161203 Cr6+ Coloring Reagent

0.2500g 1,5-Diphenylcarbohydrazide Powder (JT Baker JT5641; EXP: 6/15/15) ↑ 50mL w/ Acetone (EMD lot 47154; EXP 9/24/12)

EXP: 5/16/12

4/16/12 S24-04161204 12.5 N NaOH

100g NaOH (EMD 47022713; EXP 10/1/12 + 100mL DI H2O.

EXP: 10/11/12

0430 4/30/12

4/30/12 S24-04161201 IC02 Eluent

100mL S24-03141201 (10x conc eluent, EXP: 10/11/12) ↑ w/ DI H2O. Degassed.

EXP: 5/14/12

LABORATORY REPORT

May 17, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 3, 2012. For your reference, these analyses have been assigned our service request number P1201733.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 2:51 pm, May 17, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114
Service Request No: P1201733

CASE NARRATIVE

The samples were received intact under chain of custody on May 3, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q12 / 100006114
Service Request: P1201733

Date Received: 5/3/2012
Time Received: 12:23

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-20-5	P1201733-001	Water	5/3/2012	08:04	X
MW-20-4	P1201733-002	Water	5/3/2012	08:43	X
MW-20-3	P1201733-003	Water	5/3/2012	09:23	X
MW-20-2	P1201733-004	Water	5/3/2012	09:53	X
MW-20-1	P1201733-005	Water	5/3/2012	10:55	X
EB-8-5/3/12	P1201733-006	Water	5/3/2012	10:38	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

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An Employee - Owned Company

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Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P1201733

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3960 OLD TOWN AVE., C-205
SAN DIEGO, CA 92110

Project Name: JPL GW MON. 2012

Project Number: 100006114

Project Manager: DAVID CONNER

P.O. # / Billing Information: #285651/BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE COLUMBUS, OH 43201

Phone: (619) 726-7311 Fax: (619) 458-6641

Email Address for Result Reporting: Connerd@battelle.org

Sampler (Print & Sign)

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	Cr VI (7196A)	1,4-DIOXANE (8270 SIM)	NDMA (521)	Remarks
												0	0	7	
MW-20-5	1	5/3/12	804	GW	1							X			
MW-20-4	2		843		1							X			
MW-20-3	3		923		1							X			
MW-20-2	4		953		2							X			MS/MSD
MW-20-1	5		1055		1							X			
EB-8-5/3/12	6	5/3/12	1038	GW	1							X			EQUIP BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)		Date: 5/3/12	Time: 1443	Received by: (Signature)		Date: 5/3/12	Time: 1443
Relinquished by: (Signature)		Date: 5/3/12	Time: 1723	Received by: (Signature)		Date: 5/3/12	Time: 1723
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Date:	Time:

Cooler (Blank) Ice / No Ice
Temperature 3 °C

Wet Ice

5 of 22

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Chain of Custody Report

Client: Battelle **Service Request:** P1201733
Project: JPL GW Mon 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201733-001.01					
	7196A				
		5/3/12	1239	SMO / MZAMORA	
		5/3/12	1240	P-37 / MZAMORA	
		5/3/12	1253	In Lab / EIBARRA	
		5/3/12	1456	P-37 / EIBARRA	
P1201733-002.01					
	7196A				
		5/3/12	1239	SMO / MZAMORA	
		5/3/12	1240	P-37 / MZAMORA	
		5/3/12	1253	In Lab / EIBARRA	
		5/3/12	1456	P-37 / EIBARRA	
P1201733-003.01					
	7196A				
		5/3/12	1239	SMO / MZAMORA	
		5/3/12	1240	P-37 / MZAMORA	
		5/3/12	1254	In Lab / EIBARRA	
		5/3/12	1456	P-37 / EIBARRA	
P1201733-004.01					
	7196A				
		5/3/12	1239	SMO / MZAMORA	
		5/3/12	1240	P-37 / MZAMORA	
		5/3/12	1253	In Lab / EIBARRA	
		5/3/12	1456	P-37 / EIBARRA	
P1201733-004.02					
		5/3/12	1240	SMO / MZAMORA	
		5/3/12	1240	P-37 / MZAMORA	
		5/3/12	1253	In Lab / EIBARRA	
		5/3/12	1456	P-37 / EIBARRA	
P1201733-005.01					
	7196A				
		5/3/12	1239	SMO / MZAMORA	
		5/3/12	1240	P-37 / MZAMORA	
		5/3/12	1253	In Lab / EIBARRA	
		5/3/12	1456	P-37 / EIBARRA	
P1201733-006.01					
	7196A				
		5/3/12	1239	SMO / MZAMORA	
		5/3/12	1240	P-37 / MZAMORA	
		5/3/12	1254	In Lab / EIBARRA	
		5/3/12	1456	P-37 / EIBARRA	

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Sample Acceptance Check Form

Client: Battelle Work order: P1201733

Project: JPL GW Mon 2Q12 / 100006114

Sample(s) received on: 5/3/12 Date opened: 5/3/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201733-001.01	125mL Plastic NP					
P1201733-002.01	125mL Plastic NP					
P1201733-003.01	125mL Plastic NP					
P1201733-004.01	125mL Plastic NP					
P1201733-004.02	125mL Plastic NP					
P1201733-005.01	125mL Plastic NP					
P1201733-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201733
Date Collected : 05/03/12
Date Received : 05/03/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-20-5	P1201733-001	0.010	0.003	1	NA	05/03/12 14:35	ND	
MW-20-4	P1201733-002	0.010	0.003	1	NA	05/03/12 14:35	ND	
MW-20-3	P1201733-003	0.010	0.003	1	NA	05/03/12 14:35	ND	
MW-20-2	P1201733-004	0.010	0.003	1	NA	05/03/12 14:35	ND	
MW-20-1	P1201733-005	0.010	0.003	1	NA	05/03/12 14:35	ND	
EB-8-5/3/12	P1201733-006	0.010	0.003	1	NA	05/03/12 14:35	ND	
Method Blank	P1201733-MB	0.010	0.003	1	NA	05/03/12 14:35	ND	

Approved By Kathe Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1201733
Project:	JPL GW Mon 2Q12 / 100006114	**Date Analyzed:**	05/03/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Kathleen Ryan Date: 5/9/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201733
Date Analyzed: 05/03/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0532	106	90-110
CCV1	0.0500	0.0541	108	90-110
CCV2	0.0500	0.0532	106	90-110

Approved By: Kam Ryan Date: 5/9/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201733
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/03/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201733-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0411	103	92-110	

Approved By Kam Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201733
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	05/03/12
Project Number :	100006114	**Date Received :**	05/03/12
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/03/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name :	MW-20-2		Units :	mg/L (ppm)
Lab Code :	P1201733-004MS	P1201733-004DMS	Basis :	NA
Test Notes :				

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0498	0.0472	100	94	69-119	5	

Approved By Kara Ryan Date : 5/9/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P1201733

Time: 1300

Sample	VWR lot #	Exp.
pH 2 Buffer	S24 - 05201101	12/2012
pH 4 Buffer	S24-10241101	2/28/13
pH 7 Buffer	S24-03231201	01/2014
pH 10 Buffer	S24 - 1024 1103	2/28/13

Slope	Prep.Run #
98.3	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3	2.002	23.2
pH 4.000		4.005	23.4
pH 7.000		7.005	23.5
pH 10.000		10.002	23.7
Ref#: S24-10241102 pH 7.38 Exp 8/13		7.410 100%	23.6
DI		1.897	23.1
P1201733-1.01		1.962	14.5
-2.01		1.966	13.8
-3.01		2.065	14.6
-4.01		2.090	14.9
-5.01		2.136	15.5
pH 2.000		2.019	23.1
P1201733-6.01		2.104	17.0
pH 2.000		2.025	23.0

Sample	#	pH	Temp. °C
		SPACE NOT USED	

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EM9 49284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 4/30/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: EI Date: 5/3/12

Reviewer: [signature] Date: 5/3/12

pH

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201733

Run#: 290099

Stock#: S24-02231201 TV=10PPM Exp 8/13/12

Prep Run#: —

ICV/CCV#: S24-03271201 TV=100PPM Exp 7/2013

Conc. H_2SO_4 Lot#: EMD 49284 Exp 11/20/14

Coloring Reagent Ref#: S24-05031201 Exp 6/3/12

Working Curve:

Prep Dilution	*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L	*0.00*	*0.01*	*0.05*	*0.1* ET 5/3/12	0.999985779
Absorbance @ 540 nm	0	0.011	0.057	0.115	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10mL	—	✓	0.000	0.000	0.000	0.000273	<0.003
2	ICV 0.05 PPM		—	✓	0.000	0.061	0.061	0.0532	106%
3	MB		—	✓	0.000	0.000	0.000	0.000273	<0.003
4	LCS 0.04 PPM		—	✓	0.000	0.047	0.047	0.0411	103%
5	P1201733 - 1.01		—	✓	0.000	0.001	0.001	0.00114	<0.003
6	-1.01 VS 0.03 PPM		—	✓	0.000	0.036	0.036	0.0315	105%
7	-2.01		—	✓	0.000	0.001	0.001	0.00114	<0.003
8	-3.01		—	✓	0.003	0.005	0.002	0.00201	<0.003
9	-4.01		—	✓	0.000	0.001	0.001	0.00114	<0.003
10	-4.01 MS 0.05 PPM		—	✓	0.000	0.057	0.057	0.0498	100% RPD
11	-4.01 MSD		—	✓	0.000	0.054	0.054	0.0472	94% 5%
12	-5.01		—	✓	0.000	0.002	0.002	0.00201	<0.003
13	CCV 1 0.05 PPM		—	✓	0.000	0.062	0.062	0.0541	108%
14	CCB		—	✓	0.000	0.000	0.000	0.000273	<0.003
15	P1201733 - 6.01		—	✓	0.000	0.000	0.000	0.000273	<0.003
16	CCV 2 0.05 PPM		—	✓	0.000	~~0.000~~ 0.061 ET 5/3/12	0.061	0.0532	106%
17	CCB 2		—	✓	0.000	0.000	0.000	0.000273	<0.003

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.250 ml of S24-03271201 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-02231201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↓ ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of ↓ @1:10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: ET Date/Time: 14:15 5/3/12

Analyzed By: ET Date/Time: 14 35 5/3/12

Reviewed By: Date: 5/3/12

Cr6LIQ.xls

5/19/11 JC

S24-05191103 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JT5644 exp: 6/15/14) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4928 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JC

S24-05201101 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT # 110225
EXP: 12/2013

5/20/11 JC

~~S24-05201103~~ pH 4.000 BUFFER
Purchased
JT Baker CAT # 6657-01 500mL
LOT # J36503
EXP: 9/30/13

5/20/11 JC

~~S24-05201103~~ pH 7.~~00~~ BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT # 110336I
EX: 3/2013

10/17/11 SJV S24-10171102 1000PPM NH3
0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100ml
10/ S24-10171101 (0.1N H_2SO_4 EXP: 10/17/12)
EXP: 4/17/12

10/17/11 SJV S24-10171103 IC Eluent
100 ml of S24-09201103 (10x conc Eluent; EXP: 9/20/12)
↑ 1L w/ DI. DEGASSED.
EXP: 10/31/11

10/31/11 SJV S24-10311101 pH 7.000 Buffer
Purchased
BDH Cat NO: BDH5046-500mL
LOT # 1107491
EXP: 7/2013

10/24/11 SJV S24-10241101 pH 4.000 Buffer
Purchased
JT Baker Cat No: 5657-01 500ml
LOT # K04505
EXP: 2/28/13

10/24/11 SJV S24-10241102 pH 7.38 Buffer
Purchased
BDH Cat No BDH5058-500ml
LOT # 1109034
EXP: 8/2013

10/24/11 SR

524-1024l103 pH 10.000 Buffer
Purchased
JT Baker Cat no: 5655-01
LOT # K07507
EXP: 2/28/13

10/25/11 SR

524-1025l101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 95/2/1 475mL
LOT # PN1 P/N 207475-A01
EXP: 10/25/12

10/25/11 SR

524-1025l102 A,B,C,D,E pH Filling Sln
Purchased
Thermo Scientific Orion 8/0007 5pack/bottl
LOT: PS1
EXP: 10/25/12

11/1/11 SR

524-1101l101 IC02 Eluent
100ml 524-0920l103 (10X conc eluent. EXP. 9/20/12) 1 L 1M DI H_2O DEGASSED
EXP: 11/15/11

11/1/11 SR

524-1101l102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JO564) exp: 6/15/15 in 100 mL Methanol (B&J AG932 exp: 10/12/16
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H_2SO_4 (EMD [illegible] exp: [illegible]). Bring [illegible]

2/9/12 524-0209/202 Nitrate Soln
Sa c. 250 mg N-1-Naphthylethylene diamine Dihydrochloride
(JT Baker; lot IT22587 Exp 10/19/14) ↑ 250 mL w/ DI
Exp: 8/9/12

2/9/12 524-0209/203 ICB Eluent
Sa 100 mL 524-0920/103 (Inorganic Eluent, Exp
9/20/12) ↑ 8/9/12 1 L w/ DI H2O. Degassed.
2/23/12

2/9/12 524-0209/204 ICB PCR
Sa

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker lot JT0564-1
exp: 6/15/15) in 100 mL Methanol (B&J DE 6327 exp: 10/10/16)
Add to 1 L volumetric flask containing 500 mL DI water +
5.6 mL conc. H2SO4 (EMD 491284 exp: 11/20/14). Bring
up to volume w/ DI H2O; mix and degas.

Exp: 2/14/12

2/10/12 524-0210/201 ~~1000~~ 995 ppm Cr6+
Sa 2/10/12
Purchased
INORGANIC VENTURES CCCR(6)1-1
LOT: 62-CR03049
Exp: 3/1/13

2/13/12 524-0213/201
Sa 5.6 mL Conc H_2SO_4 (EMD 491284; Exp: 11/20/14) ↑
to 1 L DI H_2O
Exp: 2/13/13

2/14/12 SA 524-02141203 pH Buffer 2.000
Purchased
BDH Cat NO: BDH5010-500ml
LOT# 11D146
EXP: 11/2013

2/20/12 SA 524-0220/201 500ppm NO2 STOCK
Purchased
RICCA CHEMICAL Co Cat# 5444.5-4 120ml Amber Gl
LOT# 1262292
EXP: 8/12

2/22/12 SA 524-0222/201 Alkaline DIGESTION Sol
30.0g ~~NaOH~~ (EMD 4632715; EXP: 10/11/12) + 20.0g Na
$N_2H_2O_3$ (EMD 4702713C; EXP: 10/4/12) ↑ 1L W/ D
EXP: 3/22/12

2/23/12 SA 524-0223/201 10ppm Cr6+ Std
1.0ml 524-02101201 (1000ppm Cr6+; EXP: 3/1/13)
↑ 100ml W/ DI H2O
EXP: 8/23/12

2/27/12 SA 524-0227/201 0.1N H_2SO_4
5.6ml Conc H_2SO_4 (EMD 4928-4; EXP: 11/201
↑ 2L W/ DI H2O
EXP: 2/27/13

3/20/12 S24-0320201 1000 ppm SO3 Stock

0.1591 Na2SO3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

EXP. 4/3/12

3/20/12 S24-0320202 1000ppm SO3 IC/ICR

0.1607 Na2SO3 (Mallinckrodt Lot #H25469; Exp: 8/11/14) up to 100 ml w/ DI Water.

EXP: 4/3/12

3/21/12 S24-0321201 ICO3 ICR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J05641 exp: 6/15/15) in 100 mL Methanol (B&J DE933 exp: 2/27/17. Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49284 exp: 11/30/14. Bring up to volume w/ DI H2O; mix and degas.

EXP: 3/26/12

3/21/12 S24-0321202 Alkaline Digestion Sol'n

20.0g NaOH (EMD 47022730 ; EXP 10/11/12) + 30.0g Na2CO3 (EMD 46-32175B EXP: 10/11/12) ↑ 1L W/DI H2O.

EXP: 4/21/12

3/23/12 S24-0323201 pH 7.000 buffer

Purchased

Thermo Scientific Orion 910107 475ml/plastic

LOT Code: QZ1 P/N: 702483-A02

EXP: 11/2014

3/23/12 SA 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 11C9134
EXP: 8/2013

3/27/12 SA 524-0327/201 100 PPM Cr^{6+} ICV
Purchased
RICCA Chemical Company Cat No 2695-1
500ml Plastic
LOT # 1201701
EXP: 7/2013

3/28/12 SA 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # 1045H4 500ml plastic
EXP: 1/31/14

3/28/12 SA 524-0328/202 Methylene Blue 1% Aq Sol
100ml Purchased
Alfa Aesar stock # 42771
LOT # H04X026
EXP: 3/25/13

5/3/12 S24-0503/201 Cr^{+6} Coloring Reagent

0.250g 1,5-Diphenylcarbohydrazide (EMD 5056410 6/15/18) ↑ 50ml 10/Acetone (EMD 47654; EXP: EXP: 6/3/12

5/4/12 S24-0504/201 ICV2 ICV/CCV 2.5

0.25mL of S24-0327/201 (100PPM Cr^{+6}; EXP: 7/2013) mult 0.1/10 ↑ 100mL w/ pH ADJUSTED (pH 9.455) DI EXP: 5/18/12

LABORATORY REPORT

May 17, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 7, 2012. For your reference, these analyses have been assigned our service request number P1201776.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 2:55 pm, May 17, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114
Service Request No: P1201776

CASE NARRATIVE

The samples were received intact under chain of custody on May 7, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q12 / 100006114
Service Request: P1201776

Date Received: 5/7/2012
Time Received: 12:50

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-21-5	P1201776-001	Water	5/7/2012	07:55	X
MW-21-4	P1201776-002	Water	5/7/2012	08:35	X
MW-21-3	P1201776-003	Water	5/7/2012	09:38	X
MW-21-2	P1201776-004	Water	5/7/2012	10:17	X
MW-21-1	P1201776-005	Water	5/7/2012	10:50	X
EB-9-5/7-12	P1201776-006	Water	5/7/2012	10:38	X
SB-1-5/7/12	P1201776-007	Water	5/7/2012	09:10	X

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P1201776

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE., C-205
SAN DIEGO, CA 92110

Project Name: JPL GW MON. 2Q12

Project Number: 100006114

Project Manager: DAVID CONNER

P.O. # / Billing Information: #285651/BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS, OH 43201

Phone: (619) 726-7311

Fax: (619) 458-6641

Email Address for Result Reporting: Connerd@battelle.org

Sampler (Print & Sign)

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted) TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	Cr VI (7196A) [0]	1,4-DIOXANE (8270SIM) [0]	NDMA (521) [7]	Remarks
MW-21-5	1	5/7/12	755	GW	1						X			
MW-21-4	2	"	835	"	2						X			MS/MSD
MW-21-3	3	"	938	"	1						X			
MW-21-2	4	"	1017	"	1						X			
MW-21-1	5	"	1050	"	1						X			
EB-9-5/7/12	6	5/7/12	1038	GW	1						X			EQUIP BLANK
SB-1-5/7/12	7	"	910	W	1						X			SOURCE BLANK

Preservative Key
0 None
1 HCL
2 HNO3
3 H2SO4
4 NaOH
5 Zn Acetate
6 Asc Acid
7 Other

5 of 23

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____
MRL required Yes / No
MDL / PQL / J required Yes / No
EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)		Date: 5/7/12	Time: 1208	Received by: (Signature)		Date: 5/7/12	Time: 1208
Relinquished by: (Signature)		Date: 5/7/12	Time: 1850	Received by: (Signature)		Date: 5/7/12	Time: 1250
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 3 °C

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Chain of Custody Report

Client: Battelle **Service Request:** P1201776
Project: JPL GW Mon 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201776-001.01					
	7196A				
		5/7/12	1311	SMO / MZAMORA	
		5/7/12	1312	P-37 / MZAMORA	
		5/7/12	1327	In Lab / SANDERSON	
		5/7/12	1458	P-37 / SANDERSON	
P1201776-002.01					
	7196A				
		5/7/12	1311	SMO / MZAMORA	
		5/7/12	1312	P-37 / MZAMORA	
		5/7/12	1327	In Lab / SANDERSON	
		5/7/12	1458	P-37 / SANDERSON	
P1201776-002.02					
		5/7/12	1311	SMO / MZAMORA	
		5/7/12	1312	P-37 / MZAMORA	
		5/7/12	1327	In Lab / SANDERSON	
		5/7/12	1458	P-37 / SANDERSON	
P1201776-003.01					
	7196A				
		5/7/12	1311	SMO / MZAMORA	
		5/7/12	1312	P-37 / MZAMORA	
		5/7/12	1327	In Lab / SANDERSON	
		5/7/12	1458	P-37 / SANDERSON	
P1201776-004.01					
	7196A				
		5/7/12	1311	SMO / MZAMORA	
		5/7/12	1312	P-37 / MZAMORA	
		5/7/12	1327	In Lab / SANDERSON	
		5/7/12	1458	P-37 / SANDERSON	
P1201776-005.01					
	7196A				
		5/7/12	1311	SMO / MZAMORA	
		5/7/12	1312	P-37 / MZAMORA	
		5/7/12	1327	In Lab / SANDERSON	
		5/7/12	1458	P-37 / SANDERSON	
P1201776-006.01					
	7196A				
		5/7/12	1311	SMO / MZAMORA	
		5/7/12	1312	P-37 / MZAMORA	
		5/7/12	1327	In Lab / SANDERSON	
		5/7/12	1458	P-37 / SANDERSON	
P1201776-007.01					
	7196A				

Chain of Custody Report

Client: Battelle **Service Request:** P1201776

Project: JPL GW Mon 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
		5/7/12	1311	SMO / MZAMORA	
		5/7/12	1312	P-37 / MZAMORA	
		5/7/12	1327	In Lab / SANDERSON	
		5/7/12	1458	P-37 / SANDERSON	

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Sample Acceptance Check Form

Client: Battelle Work order: P1201776

Project: JPL GW Mon 2Q12 / 100006114

Sample(s) received on: 5/7/12 Date opened: 5/7/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201776-001.01	125mL Plastic NP					
P1201776-002.01	125mL Plastic NP					
P1201776-002.02	125mL Plastic NP					
P1201776-003.01	125mL Plastic NP					
P1201776-004.01	125mL Plastic NP					
P1201776-005.01	125mL Plastic NP					
P1201776-006.01	125mL Plastic NP					
P1201776-007.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201776
Date Collected : 05/07/12
Date Received : 05/07/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-21-5	P1201776-001	0.010	0.003	1	NA	05/07/12 14:30	ND	
MW-21-4	P1201776-002	0.010	0.003	1	NA	05/07/12 14:30	ND	
MW-21-3	P1201776-003	0.010	0.003	1	NA	05/07/12 14:30	ND	
MW-21-2	P1201776-004	0.010	0.003	1	NA	05/07/12 14:30	ND	
MW-21-1	P1201776-005	0.010	0.003	1	NA	05/07/12 14:30	ND	
EB-9-5/7-12	P1201776-006	0.010	0.003	1	NA	05/07/12 14:30	ND	
SB-1-5/7/12	P1201776-007	0.010	0.003	1	NA	05/07/12 14:30	ND	
Method Blank	P1201776-MB	0.010	0.003	1	NA	05/07/12 14:30	ND	

Approved By Karen Rya Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1201776
Project:	JPL GW Mon 2Q12 / 100006114	**Date Analyzed:**	05/07/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 5/9/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1201776
Project:	JPL GW Mon 2Q12 / 100006114	**Date Analyzed:**	05/07/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0510	102	90-110
CCV1	0.0500	0.0510	102	90-110
CCV2	0.0500	0.0510	102	90-110

Approved By: Karen Ryan Date: 5/9/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201776
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/07/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201776-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0396	99	92-110	

Approved By Karen Ryan Date : 5/9/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201776
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	05/07/12
Project Number :	100006114	**Date Received :**	05/07/12
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/07/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-21-4 Units : mg/L (ppm)
Lab Code : P1201776-002MS P1201776-002DMS Basis : NA
Test Notes :

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0466	0.0466	93	93	69-119	<1	

Approved By Kara Ryan Date : 5/9/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P1201776

Time: 1107

Sample	VWR lot #	Exp.
pH 2 Buffer	524-05201101	1/2012
pH 4 Buffer	524-10241101	2/28/13
pH 7 Buffer	524-0323/201	1/2014
pH 10 Buffer	524-10241103	2/28/13

Slope	Prep.Run #
98.9%	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3	2.003	22.7°
pH 4.000	|	4.002	22.9°
pH 7.000	|	7.000	23.1
pH 10.000	|	10.010	23.0°
Ref#: 524-10241102 T.V=7.38 EXP:8/2013	|	7.466 100%	23.0°
DI H2O	|	1.986	22.9°
pH 2.000	↓	1.996	22.9°
TIME: 1350			
pH 2.000	3	2.012	23.4°
P1201776-1.01	|	2.061	13.0°
-2.01	|	2.042	13.4°
-3.01	|	1.991	14.4°
-4.01	|	2.015	14.6°
-5.01	|	2.104	15.2°
-6.01	|	2.098	15.7°
-7.01	|	2.042	16.4°
pH 2.000	↓	2.017	23.4°

Sample	#	pH	Temp. °C

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 49284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 5/7/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: _____ Date: 5/7/12

Reviewer: ET Date: 5/7/12

pH

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201776 Run#: 290551

Stock#: 524-0223201 T.V=10ppm EXP: 8/23/12 Prep Run#:

ICV/CCV#: 524-0327201 T.V=100ppm EXP: 7/2013 Conc. H_2SO_4 Lot#: EMD 44284 EXP: 11/20/14

Coloring Reagent Ref#: 524-0503201 EXP: 6/3/12

Working Curve:

Prep Dilution	NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L	0.00	0.01	0.05	0.1	0.9992534
Absorbance @ 540 nm	0.000	0.012	0.056	0.114	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10ml	—	✓	0.000	0.000	0.000	-0.0000710	<0.003
2	ICV 0.05PPM		—	✓	0.000	0.058	0.058	0.0510	102%
3	MB		—	✓	0.000	0.000	0.000	-0.0000710	<0.003
4	LCS 0.04PPM		—	✓	0.000	0.045	0.045	0.0396	99%
5	P1201776-1.01		—	✓	0.000	0.000	0.000	-0.0000710	<0.003
6	-1.01 VS 0.03PPM		—	✓	0.000	0.037	0.037	0.0325	108%
7	-2.01		—	✓	0.002	0.002	0.000	-0.0000710	<0.003
8	-2.01 MS 0.05PPM		—	✓	0.002	0.055	0.053	0.0466	93% } 11%
9	-2.01 MSD ↓		—	✓	0.002	0.055	0.053	0.0466	93% } RPD
10	-3.01		—	✓	0.001	0.001	0.000	-0.0000710	<0.003
11	-4.01		—	✓	0.001	0.003	0.002	0.00169	
12	-5.01		—	✓	0.005	0.005	0.000	-0.0000710	
	CCV1 0.05PPM		—	✓	0.000	0.058	0.058	0.0510	102%
13	CCB1		—	✓	0.000	0.000	0.000	~~0.000~~ -0.0000710	<0.003
14	P1201776-6.01		—	✓	0.000	0.000	0.000	-0.0000710	<0.003
15	↓ -7.01		—	✓	0.002	0.003	0.001	0.000810	<0.003
16	CCV2 0.05PPM		—	✓	0.000	0.058	0.058	0.0510	102%
17	CCB2	↓	—	✓	0.000	0.000	0.000	-0.0000710	<0.003

pH Requirement: Method 7196A (2 ± 0.5) *Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.25 ml of 524-0327201 @1/10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-0223201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of ↓ @1/10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

5/7/12

Comments:

Prepared By: Date/Time: 5/7/12 @ 1415

Analyzed By: Date/Time: 5/7/12 @ 1430

Reviewed By: EJ Date: 5/7/12

5/19/11 JR

S24-0519110S ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER 3805 Lot#1 exp: 6/15/16) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4928 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JR

S24-0520110I pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT# 110325
EXP: 12/2013

5/20/11 JR

S24-0520110S pH 4.000 BUFFER
Purchased
JT Baker CAT# 5657-01 500mL
LOT# J36503
EXP: 9/30/13

5/20/11 JR

S24-0520110S pH 7.00 BUFFER
Purchased
BDH CAT# BDH5058-500mL
LOT# 1103361
EX: 3/2013

10/17/11 SZ — S24-10171102 — 1000 PPM NH3

0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL

10 | S24-10171101 (0.1N H_2SO_4 EXP. 10/17/12)

EXP: 4/17/12

10/17/11 SZ — S24-10171103 — IC2 Eluent

100 mL of S24-09201103 (10x conc Eluent; EXP: 9/20/1

↑ 1L w/ DI. DEGASSED.

EXP. 10/31/11

10/21/11 SZ — S24-10211101 — pH 7.000 Buffer

Purchased

BDH Cat No: BDH5046-500mL

LOT # 1107491

EXP: 7/2013

10/24/11 SZ — S24-10241101 — pH 4.000 Buffer

Purchased

JT Baker Cat No: 5657-01 500mL

LOT # K04505

EXP: 2/28/13

10/24/11 SZ — S24-10241102 — pH 7.38 Buffer

Purchased

BDH Cat No BDH5058-500mL

LOT # 1109034

EXP: 8/2013

10/24/11 SH

524-1024/103 pH 10.000 Buffer
Purchased
JT Baker Cat no: 5655-01
Lot # K07507
Exp: 2/28/13

10/25/11 SH

524-1025/101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 95/2/1 475mL
Lot # PN1 P/N 27475-A01
Exp: 10/25/12

10/25/11 SH

524-1025/102 A,B,C,D,E pH Filling Sol'n
Purchased
Thermo Scientific Orion 8/0007 5pack/box
Lot: PS1
Exp: 10/25/12

11/1/11 SH

524-1101/101 IC02 Eluent
100ml 524-0920/103 (10x conc eluent Exp: 9/20/12) 1 L w/ DI H2O DEGASSED
Exp: 11/15/11

11/1/11 SH

524-1101/102 IC02 PCR

Dissolve 0.5g 1.5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J0564)
exp: 6/15/15 in 100 mL Methanol (B&J AC732 exp: 10/12/16)
Add to 1 L volumetric flask containing 500 mL DI water +
[illegible] exp: [illegible]). Bring

2/9/12 SR 524-0209/202 Nitrite Soln
0.2500g N-1-Naphthylethylene diamine Dihydrochloride
(JT Baker; lot IT22487 EXP 10/19/14) ↑ 250mL w/ DI
EXP: 8/9/12

2/9/12 SR 524-0209/203 ICO2 Eluent
1000mL 524-0920 1103 (for Cond Eluent, EXP
9/20/12) ↑ SR 2/9/12 1 L w/ DI H2O. Degassed.
2/23/12

2/9/12 SR 524-0209/204 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker JC5641 exp: 6/15/15) in 100 mL Methanol (B&J DE937 exp: 10/10/16) Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49284 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 2/14/12

2/10/12 SR 524-02/0120/1 995 ~~1000~~ SR 2/10/12 ppm Cr6+
Purchased
INORGANIC VENTURES CCCR(6)1-1
LOT: 62-CR03049
EXP: 5/1/13

2/13/12 SR 524-0213/201
5.6mL conc H2SO4 (EMD 49184, EXP: 11/20/14) ↑
DI H2O
EXP: 2/13/13

2/14/12 SH — 524-02/4/203 pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 111214G
EXP: 11/2013

2/20/12 SH — 524-0220/201 500PPM NO2 STOCK
Purchased
RICCA CHEMICAL CO Cat# 5444.5-4 120ml Amber G
LOT# 1262292
EXP: 8/12

2/22/12 SH — 524-0222/201 Alkaline DIGESTION SO
30.0g ~~NaOH~~ NaOH (EMD 4632715; EXP: 10/14/12) + 20.0g NO
(EMD 4702273C; EXP: 10/4/12) ↑ 1L DI
EXP: 3/22/12

2/23/12 SH — 524-0223/201 10PPM C-C+ STD
1.0ml 524-02/0/201 (1000PPM C-C+; EXP: 3/1/13)
↑ 100ml w/ DI H2O
EXP: 8/23/12

2/27/10 SH — 524-0227/201 0.1N H2SO4
5.6ml Conc H2SO4 (EMD 4928; EXP: 11/20
↑ 2L W/ DI H2O
EXP: 2/27/13

3/20/12 S24-0320120I 1000 PPM SO3 Std/c

0.1591 Na2SO3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

EXP. 4/3/12

3/20/12 S24-0320120Z 1000PPM SO3 ICV/CCV

0.1607 Na2SO3 (Mallinckrodt Lot #H25469; Exp: 8/11/14) up to 100 ml w/ DI Water.

EXP: 4/3/12

3/21/12 S24-0321120I ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J05641 exp: 6/15/15) in 100 mL Methanol (B&J DE433 exp: 2/27/17. Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49284 exp: 11/30/14. Bring up to volume w/ DI H2O; mix and degas.

EXP: 3/26/12

3/21/12 S24-0321120Z Alkaline Digestion Soln

30.0g NaOH (EMD 4702273C; EXP 10/11/12) + 30.0g Na_2CO_3 (EMD 46-32175B EXP: 10/11/12) ↑ 1L W/ DI H_2O.

EXP: 4/21/12

3/23/12 S24-0323120I pH 7.000 buffer

Purchased

Thermo Scientific Orion 910107 475ml/plastic

LOT Code: QZI P/N: 702483-AC2

EXP: 11/2014

3/23/12 SA 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 11C9034
EXP: 8/2013

3/27/12 SA 524-0327/201 100 PPM Cr^{6+} ION
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
LOT # 120701
EXP: 7/2013

3/28/12 SA 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # 104514 500ml plastic
EXP: 11/31/14

3/28/12 SA 524-0328/202 Methylene Blue 1% HC
100ml Purchased
Alfa Aesar Stock # 42771
LOT # H04X026
EXP: 3/28/13

5/3/12 524-0503/201 Cr^{6+} Coloring Reagent

0.250g 1,5-Diphenylcarbohydrazide (EMD 5056410 6/15/15) ↑ 50ml 10/Acetone (EMD 47154; Exp: Exp: 6/3/12

5/4/12 524-0504/201 ICCD ICV/CCV 2.5

0.25mL of 524-0527/201 (1000MG/L, EXP: 7/2013) prep 0.1/10 ↑ 100mL w/ pH ADJUSTED (pH 9.455) DI Exp: 5/18/12

LABORATORY REPORT

May 17, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 8, 2012. For your reference, these analyses have been assigned our service request number P1201802.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 3:00 pm, May 17, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114
Service Request No: P1201802

CASE NARRATIVE

The samples were received intact under chain of custody on May 8, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q12 / 100006114
Service Request: P1201802

Date Received: 5/8/2012
Time Received: 14:45

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-3-5	P1201802-001	Water	5/8/2012	08:08	X
MW-3-4	P1201802-002	Water	5/8/2012	08:41	X
MW-3-3	P1201802-003	Water	5/8/2012	09:12	X
MW-3-2	P1201802-004	Water	5/8/2012	09:45	X
MW-3-1	P1201802-005	Water	5/8/2012	11:51	X
EB-10-5/8/12	P1201802-006	Water	5/8/2012	11:40	X
DUPE-10-2Q12	P1201802-007	Water	5/8/2012	00:00	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P1201802

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE., C-205
SAN DIEGO, CA 92110

Project Name: SFL GW MON. 2012

Project Number: 100006114

Project Manager: DAVID CONNER

P.O. # / Billing Information: #285651 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS, OH 43201

Phone: (619) 726-7311 Fax: (619) 458-6641

Email Address for Result Reporting: Connerd@battelle.org

Sampler (Print & Sign)

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 Cr VI (7196)	0 1,4-Dioxane (8270 SIM)	7 NDMA (521)	Remarks
MW-3-5	1	5/8/12	0806	GW	1							X	X	X	QC IV
MW-3-4	2		0841		1							X	X	X	
MW-3-3	3		0912		1							X	X	X	
MW-3-2	4		0945		1							X	X	X	
MW-3-1	5		1151		1							X	X	X	
EB-10-5/8/12	6		1140		1							X	X	X	EQUIP. BLANK
DUPE-10-2012	7	5/8/12	—	GW	1							X	X	X	DUPLICATE

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

	Date	Time		Date	Time
Relinquished by: (Signature)	5/8/12	1403	Received by: (Signature)	5/8/12	1403
Relinquished by: (Signature)	5/8/12	1745	Received by: (Signature)	5/8/12	1745
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 3 °C

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Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Service Request: P1201802

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201802-001.01					
	7196A				
		5/8/12	1453	SMO / MZAMORA	
		5/8/12	1455	P-37 / MZAMORA	
		5/8/12	1520	In Lab / SANDERSON	
		5/8/12	1634	P-37 / SANDERSON	
P1201802-002.01					
	7196A				
		5/8/12	1453	SMO / MZAMORA	
		5/8/12	1455	P-37 / MZAMORA	
		5/8/12	1521	In Lab / SANDERSON	
		5/8/12	1634	P-37 / SANDERSON	
P1201802-003.01					
	7196A				
		5/8/12	1453	SMO / MZAMORA	
		5/8/12	1455	P-37 / MZAMORA	
		5/8/12	1520	In Lab / SANDERSON	
		5/8/12	1634	P-37 / SANDERSON	
P1201802-004.01					
	7196A				
		5/8/12	1453	SMO / MZAMORA	
		5/8/12	1455	P-37 / MZAMORA	
		5/8/12	1520	In Lab / SANDERSON	
		5/8/12	1634	P-37 / SANDERSON	
P1201802-005.01					
	7196A				
		5/8/12	1453	SMO / MZAMORA	
		5/8/12	1455	P-37 / MZAMORA	
		5/8/12	1520	In Lab / SANDERSON	
		5/8/12	1634	P-37 / SANDERSON	
P1201802-006.01					
	7196A				
		5/8/12	1453	SMO / MZAMORA	
		5/8/12	1455	P-37 / MZAMORA	
		5/8/12	1521	In Lab / SANDERSON	
		5/8/12	1634	P-37 / SANDERSON	
P1201802-007.01					
	7196A				
		5/8/12	1453	SMO / MZAMORA	
		5/8/12	1455	P-37 / MZAMORA	
		5/8/12	1521	In Lab / SANDERSON	
		5/8/12	1634	P-37 / SANDERSON	

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Sample Acceptance Check Form

Client: Battelle Work order: P1201802

Project: JPL GW Mon 2Q12 / 100006114

Sample(s) received on: 5/8/12 Date opened: 5/8/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201802-001.01	125mL Plastic NP					
P1201802-002.01	125mL Plastic NP					
P1201802-003.01	125mL Plastic NP					
P1201802-004.01	125mL Plastic NP					
P1201802-005.01	125mL Plastic NP					
P1201802-006.01	125mL Plastic NP					
P1201802-007.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers):

Per client the sample ID for -007 should read DUPE-4-2Q12.

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201802
Date Collected : 05/08/12
Date Received : 05/08/12

Chromium, Hexavalent

Units : mg/L (ppm)
Basis : NA

Analysis Method : 7196A
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-3-5	P1201802-001	0.010	0.003	1	NA	05/08/12 16:15	ND	
MW-3-4	P1201802-002	0.010	0.003	1	NA	05/08/12 16:15	ND	
MW-3-3	P1201802-003	0.010	0.003	1	NA	05/08/12 16:15	ND	
MW-3-2	P1201802-004	0.010	0.003	1	NA	05/08/12 16:15	ND	
MW-3-1	P1201802-005	0.010	0.003	1	NA	05/08/12 16:15	ND	
EB-10-5/8/12	P1201802-006	0.010	0.003	1	NA	05/08/12 16:15	ND	
DUPE-4-2Q12	P1201802-007	0.010	0.003	1	NA	05/08/12 16:15	ND	
Method Blank	P1201802-MB	0.010	0.003	1	NA	05/08/12 16:15	ND	

Approved By Karen Ryan Date : 5/15/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201802
Date Analyzed: 05/08/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: _____ Date: 5/15/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201802
Date Analyzed: 05/08/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0505	101	90-110
CCV1	0.0500	0.0513	103	90-110
CCV2	0.0500	0.0513	103	90-110

Approved By: Kim Rojo Date: 5/15/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201802
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/08/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201802-LCS	Basis :	NA

Test Notes :

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0383	96	92-110	

Approved By _____ Date : 5/15/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201802
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	05/08/12
Project Number :	100006114	**Date Received :**	05/08/12
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/08/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-3-5 Units : mg/L (ppm)
Lab Code : P1201802-001MS P1201802-001DMS Basis : NA
Test Notes :

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0470	0.0470	94	94	69-119	<1	

Approved By _____ Date : 5/15/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P1201802

Time: 1530

Sample	VWR lot #	Exp.
pH 2 Buffer	524-0520110	2/2012
pH 4 Buffer	524-1024110	2/28/13
pH 7 Buffer	524-0323120	1/2014
pH 10 Buffer	524-1024110	2/28/13

Slope	Prep.Run #
98.4%	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3	2.007	24.4°
pH 4.000		4.016	24.4°
pH 7.000		7.019	24.8°
pH 10.000		10.019	24.8°
Ref#: Lot = 7138 Exp: 8/2013 524-1024110		7.412 100%	25.0°
DI		2.039	24.8°
P1201802-1.01		1.947	16.9°
-2.01		2.038	15.8°
-3.01		2.190	16.9°
-4.01		2.101	17.1°
-5.01		2.009	16.7°
pH 2.000		2.009	24.2°
P1201802-6.01		1.922	17.0°
-7.01		2.102	17.5°
pH 2.000	↓	1.993	24.1°

Sample	#	pH	Temp. °C

Appears not used

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 49284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 5/7/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: _____ Date: 5/8/12

Reviewer: _____ Date: 5/8/12

pH

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201802 Run#: 290739

Stock#: 524-0223201 T.V=10PPM EXP 8/13/12 Prep Run#: —

ICV/CCV#: 524-03271201 T.V=10PPM EXP: 7/30/13 Conc. H_2SO_4 Lot#: EMD 49284 EXP: 11/20/12

Coloring Reagent Ref#: 524-0503201 EXP: 6/3/12

Working Curve:

Prep Dilution	NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L	0.00	0.01	0.05	0.1	0.999973
Absorbance @ 540 nm	0.000	0.012	0.057	0.115	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10ml	—	✓	0.000	0.000	0.000	-0.000113	<0.003
2	ICV 0.05PPM		—	✓	0.000	0.058	0.058	0.0505	101%
3	MB		—	✓	0.000	0.000	0.000	-0.000113	<0.003
4	LCS 0.04PPM		—	✓	0.000	0.044	0.044	0.0383	96%
5	P1201802-1.01		—	✓	0.002	0.004	0.002	0.00163	<0.003
6	-1.01 MS 0.05PPM		—	✓	0.002	0.056	0.054	0.0470	94% LL
7	-1.01 MSD ↓		—	✓	0.002	0.056	0.054	0.0470	94% SRL
8	-2.01		—	✓	0.003	0.005	0.002	0.00163	<0.003
9	-2.01 VS 0.03PPM		—	✓	0.003	0.036	0.033	0.0287	96%
10	-3.01		—	✓	0.001	0.003	0.002	0.00163	<0.003
11	-4.01		—	✓	0.002	0.002	0.000	-0.000113	<0.003
12	-5.01		—	✓	0.004	0.006	0.002	0.00163	<0.003
13	CCV1 0.05PPM / CCB1		—	✓	0.000 / 0.006	0.059 / 0.000	0.059 / 0.000	0.0513 / -0.000113	103% / <0.003
14	P1201802-6.01		—	✓	0.000	0.000	0.000	↓	↓
15	↓ -7.01		—	✓	0.004	0.004	0.000	↓	↓
16	CCV2 0.05 PPM		—	✓	0.006	0.059	0.059	0.0513	103%
17	CCB2	↓	—	✓	0.000	0.000	0.000	-0.000113	<0.003

pH Requirement: Method 7196A (2 ± 0.5) @ * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.25 ml of 524-03271201 @ 1/10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-0223201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of — ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of ↓ @ 1/10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments: —

Prepared By: [signature] Date/Time: 5/8/12 @1600

Analyzed By: [signature] Date/Time: 5/8/12 @1615

Reviewed By: EI Date: 5/8/12

5/19/11 JC

524-05191103 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JT056441 exp: 6/15/16) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49184 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JC

524-05201101 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT # 110225
EXP: 12/2013

5/30/11 JC

524-05201103 pH 4.000 BUFFER
Purchased
JT Baker CAT # 5657-01 500mL
LOT # J36503
EXP: 9/30/13

5/20/11 JC

524-05201103 pH 7.00 BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT # 110336I
EX: 3/2013

10/17/11 SR

S24-10171102 1000PPM NH3

0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL

W/ S24-10171101 (0.1N H_2SO_4 EXP. 10/17/12)

EXP: 4/17/12

10/17/11 SR

S24-10171103 IC Eluent

100 mL OF S24-09201103 (10x conc Eluent; EXP. 9/20/12)

↑ 1L W/ DI. DEGASSED.

EXP. 10/31/11

10/21/11 SR

S24-10211101 pH 7.000 Buffer

Purchased

BDH Cat NO: BDH5046-500mL

LOT # 11074491

EXP: 7/2013

10/24/11 SR

S24-10241101 pH 4.000 Buffer

Purchased

JT Baker Cat No: 5057-01 500ml

LOT # K04505

EXP: 2/28/13

10/24/11 SR

S24-10241102 pH 7.38 Buffer

Purchased

BDH Cat No BDH5058-500ml

LOT # 11090354

EXP: 8/2013

10/24/11 SR

524-10241103 pH 10.000 Buffer
Purchased
JT Baker Cat no: 5655-01
LOT # K07507
EXP: 2/28/13

10/25/11 SR

524-10251101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 951211 475mL
LOT # PN1 P/N 270475-A01
EXP: 10/25/12

10/25/11 SR

524-10251102 A,B,C,D,E pH Filling Sln
Purchased
Thermo Scientific Orion 810007 .5gal bottle
LOT: PS1
EXP: 10/25/12

11/1/11 SR

524-11011101 IC02 Eluent
100 mL 524-09201103 (10x conc eluent EXP: 9/20/12) T/L W/ DI H2O DEGASSED
EXP: 11/15/11

11/1/11 SR

524-11011102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J0564 exp: 6/15/15) in 100 mL Methanol (B&J AE932 exp: 10/12/16
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H2SO4 (EMD 1.00784 exp: [illegible]). Bring [illegible]

2/9/13 524-0209/202 Nitrite Soln
Sa 0.250g N-1-Naphthylethylenediamine Dihydrochloride (JT Baker; lot IT22487 EXP 10/19/14) T 250mL w/ DI
EXP: 8/9/13

2/9/13 524-0209/203 IC02 Effluent
Sa 100mL 524-0920/103 (Ion Con Eluent, EXP 9/20/13) T Sa 2/9/13 1L w/ DI H2O. Degassed.
2/23/13

2/9/13 524-0209/204 IC02 PCR
Sa

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT Baker JC0644 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 10/10/16) Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49184 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 2/14/13

2/10/13 524-02/0130/ 995 ~~1000~~ PPM Cr6+
Sa 2/10/13 Purchased
INORGANIC VENTURES CGCR(6)1-1
LOT: E2-CRC30459
EXP: 3/1/13

2/13/13 524-0213/201
Sa 5.6mL Conc H2SO4 (EMD 49184, EXP: 11/20/14) T
to 1L w/ DI H2O
EXP: 2/13/13

2/14/12 SA 524-02141203 pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 111214G
EXP. 11/2013

2/20/12 SA 524-02201201 500ppm NO2 STOCK
Purchased
RICCA CHEMICAL Co Cat# 5444.5-4 125ml Amber Gl
LOT# 1262292
EXP: 8/12

2/22/12 SA 524-02221201 Alkaline DIGESTION Sol
30.0g ~~NaOH~~ NaHO2 (EMD 4632715; EXP: 10/4/12) + 20.0g NaO
(EMD 4702713C; EXP: 10/4/12) ↑ 1L DI
EXP: 3/22/12

2/23/12 SA 524-02231201 10ppm Cr6+ STD
1.0ml 524-02101201 (1000ppm Cr6+; EXP: 3/1/13)
↑ 100ml Cal DI H2O
EXP: 8/23/12

2/27/12 SA 524-02271201 0.1N H2SO4
5.6ml Conc H2SO4 (EMD 4928C; EXP: 11/20/1
↑ 2L W/ DI H2O
EXP: 2/27/13

3/20/12 S24-0320120I 1000 ppm SO_3 Stock

0.1591 Na_2SO_3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

EXP: 4/3/12

3/20/12 S24-0320130I2 1000ppm SO_3 ICV/CCV

0.1607 Na_2SO_3 (Mallinckrodt Lot #H25469; Exp: 8/11/14) up to 100 ml w/ DI Water.

EXP: 4/3/12

3/21/12 S24-0321120I ICB PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J05641 exp: 6/15/15) in 100 mL Methanol (B&J DE933 exp: 2/27/17. Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H_2SO_4 (EMD 4A384 exp: 11/30/14. Bring up to volume w/ DI H_2O; mix and degas.

EXP: 3/26/12

3/21/12 S24-0321130I Alkaline Digestion Soln

30.0g NaOH (EMD 4A022730; EXP 10/11/12) + 30.0g Na_2CO_3 (EMD 46-321715B EXP: 10/11/12) ↑ 1L W/DI H_2O.

EXP: 4/21/12

3/23/12 S24-0323120I pH 7.000 buffer

Purchased

Thermo Scientific Orion 910107 475ml/plastic

Lot Code: GZI P/N: 72483-A0Z

EXP: 11/2014

3/23/12 SA 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 110910 34
EXP: 8/2013

3/27/12 SA 524-0327/201 100 PPM Cr^{6+} ICV
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
LOT # 120170I
EXP: 7/2013

3/28/12 SA 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # L04514 500ml plastic
EXP: 1/31/14

3/28/12 SA 524-0328/202 Methylene Blue 1% AC Sol
100ml Purchased
Alfa Aesar stock # 42771
LOT # H04X026
EXP: 3/25/13

5/3/12 524-0503/201 Lit Coloring Reagent

0.250g 1,5-Diphenylcarbohydrazide (EMD 3056411E 6/15/18) ↑ 50 ml 10/Acetone (EMD 47154; Exp: Exp: 6/3/12

5/4/12 524-0504/201 ICO2 ICV/CCV 2.5

0.25mL of 524-0527/201 (wallMGot; Exp: 7/2013) mgf 0.1/10 ↑ 100mL w/ pH ADJUSTED (pH 9.455) DI Exp: 5/18/12

LABORATORY REPORT

May 21, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q12 / 100006114

Dear David:

Your CAS report number P1201823 has been amended for the samples submitted to our laboratory on May 9, 2012. The LCS Summary page has been corrected accordingly. The revised data has been indicated by the "Revised Page" footer located at the bottom right of the page.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.
Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 11:39 am, May 21, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114
Service Request No: P1201823

CASE NARRATIVE

The samples were received intact under chain of custody on May 9, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q12 / 100006114
Service Request: P1201823

Date Received: 5/9/2012
Time Received: 14:43

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-19-5	P1201823-001	Water	5/9/2012	08:27	X
MW-19-4	P1201823-002	Water	5/9/2012	08:55	X
MW-19-3	P1201823-003	Water	5/9/2012	09:20	X
MW-19-2	P1201823-004	Water	5/9/2012	09:54	X
MW-19-1	P1201823-005	Water	5/9/2012	12:20	X
DUPE-5-2Q12	P1201823-006	Water	5/9/2012	00:00	X
EB-11-5/9/12	P1201823-007	Water	5/9/2012	12:07	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P1201823

CAS Contact:

Company Name & Address (Reporting Information)	Project Name	Project Manager	Phone	Fax
BATTELLE 3990 OLD TOWN AVE., C-205 SAN DIEGO, CA 92110	JPL GW MON. 2012 Project Number 100006114	DAVID CONNER	(619) 726-7311	(619) 458-6641

P.O. # / Billing Information: #285651 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE, COLUMBUS, OH 43201

Email Address for Result Reporting: Connerd@battelle.org

Sampler (Print & Sign): CHASE BROGDON

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 Cr III (7196A)	0 1,4-DIOXANE (8270SIM)	7 NDMA (521)	Remarks
MW-19-5	1	5/9/12	0827	GW	1							X			2 CrIII
MW-19-4	2	|	0855	|	1							X			
MW-19-3	3	|	0920	|	1							X			
MW-19-2	4	|	0954	|	1							X			
MW-19-1	5	5/9/12	1220	GW	1							X			
DUP-5-2212	6	5/9/12	—	GW	1							X			DUPLICATE
EB-11-5/9/12	7	5/9/12	1207	GW	1							X			EQUIP BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 5/9/12	Time: 1403	Received by: (Signature)		Date: 5/9/12	Time: 1403
Relinquished by: (Signature)	Date: 5/9/12	Time: 1443	Received by: (Signature)		Date: 5/9/12	Time: 1443
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)		Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 3.0 °C

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Columbia Analytical Services, Inc.
Now part of the ALS Group
2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Service Request: P1201823

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201823-001.01					
	7196A				
		5/9/12	1448	SMO / MZAMORA	
		5/9/12	1449	P-37 / MZAMORA	
		5/9/12	1509	In Lab / SANDERSON	
		5/9/12	1616	P-37 / SANDERSON	
P1201823-002.01					
	7196A				
		5/9/12	1448	SMO / MZAMORA	
		5/9/12	1449	P-37 / MZAMORA	
		5/9/12	1509	In Lab / SANDERSON	
		5/9/12	1616	P-37 / SANDERSON	
P1201823-003.01					
	7196A				
		5/9/12	1448	SMO / MZAMORA	
		5/9/12	1449	P-37 / MZAMORA	
		5/9/12	1509	In Lab / SANDERSON	
		5/9/12	1616	P-37 / SANDERSON	
P1201823-004.01					
	7196A				
		5/9/12	1448	SMO / MZAMORA	
		5/9/12	1449	P-37 / MZAMORA	
		5/9/12	1509	In Lab / SANDERSON	
		5/9/12	1616	P-37 / SANDERSON	
P1201823-005.01					
	7196A				
		5/9/12	1448	SMO / MZAMORA	
		5/9/12	1449	P-37 / MZAMORA	
		5/9/12	1509	In Lab / SANDERSON	
		5/9/12	1616	P-37 / SANDERSON	
P1201823-006.01					
	7196A				
		5/9/12	1448	SMO / MZAMORA	
		5/9/12	1449	P-37 / MZAMORA	
		5/9/12	1509	In Lab / SANDERSON	
		5/9/12	1616	P-37 / SANDERSON	
P1201823-007.01					
	7196A				
		5/9/12	1448	SMO / MZAMORA	
		5/9/12	1449	P-37 / MZAMORA	
		5/9/12	1509	In Lab / SANDERSON	
		5/9/12	1616	P-37 / SANDERSON	

Columbia Analytical Services
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2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Sample Acceptance Check Form

Client: Battelle Work order: P1201823

Project: JPL GW Mon 2Q12 / 100006114

Sample(s) received on: 5/9/12 Date opened: 5/9/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201823-001.01	125mL Plastic NP					
P1201823-002.01	125mL Plastic NP					
P1201823-003.01	125mL Plastic NP					
P1201823-004.01	125mL Plastic NP					
P1201823-005.01	125mL Plastic NP					
P1201823-006.01	125mL Plastic NP					
P1201823-007.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201823
Date Collected : 05/09/12
Date Received : 05/09/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-19-5	P1201823-001	0.010	0.003	1	NA	05/09/12 16:00	ND	
MW-19-4	P1201823-002	0.010	0.003	1	NA	05/09/12 16:00	ND	
MW-19-3	P1201823-003	0.010	0.003	1	NA	05/09/12 16:00	ND	
MW-19-2	P1201823-004	0.010	0.003	1	NA	05/09/12 16:00	ND	
MW-19-1	P1201823-005	0.010	0.003	1	NA	05/09/12 16:00	ND	
DUPE-5-2Q12	P1201823-006	0.010	0.003	1	NA	05/09/12 16:00	ND	
EB-11-5/9/12	P1201823-007	0.010	0.003	1	NA	05/09/12 16:00	ND	
Method Blank	P1201823-MB	0.010	0.003	1	NA	05/09/12 16:00	ND	

Approved By Karen Ryan Date : 5/10/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201823
Date Analyzed: 05/09/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Kara Ryan Date: 5/10/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201823
Date Analyzed: 05/09/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0488	98	90-110
CCV1	0.0500	0.0496	99	90-110
CCV2	0.0500	0.0496	99	90-110

Approved By: Karen Rya Date: 5/10/12

CCV1A/120594

QA/QC Report

Client :	Battelle	**Service Request :**	P1201823
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/09/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201823-LCS	Basis :	NA

Test Notes :

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0411	103	92-110	

Approved By Karen Ryan Date : 5/21/12

Revised Page

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201823
Date Collected : 05/09/12
Date Received : 05/09/12
Date Extracted : NA
Date Analyzed : 05/09/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-19-5
Lab Code : P1201823-001MS P1201823-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0505	0.0496	101	99	69-119	2	

Approved By Kara Ryan Date : 5/10/12

Report By:SAnderson

Columbia Analytical Services

pH Run Log

Service Request #(s): P1201823

Time: 0728

Sample	VWR lot #	Exp.
pH 2 Buffer	524-0520110 1	12/2012
pH 4 Buffer	524-1024110 1	2/28/13
pH 7 Buffer	524-0323120 1	1/2014
pH 10 Buffer	524-1024110 3	2/28/13

Slope	Prep.Run #
98.1%	—
	Run#
	—

pH in liquid: (1) 9040B pH in solid: (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # in column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3	1.997	22.5°
pH 4.000		4.009	22.8°
pH 7.000		6.997	23.0°
pH 10.000		9.996	23.1°
Ref#: T.V=7.38 EXP: 5/2012 524-1024110 2		7.399	23.1°
DI H2O		1.959	21.3°
pH 2.000	↓	2.004	22.5°
Time: 1530			
pH 2.000	3	1.998	20.8°
P1201823-1.01		2.150	12.4°
-2.01		2.142	12.7°
-3.01		2.039	13.0°
-4.01		2.008	13.1°
-5.01		1.966	14.2°
-6.01		2.046	13.4°
-7.01		2.010	13.4°
pH 2.000	↓	1.990	20.5°

Sample	#	pH	Temp. °C
Space not used			

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 GMD49284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH __________ EXP: __________

Comments: ______________________________

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 5/7/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: [signature] Date: 5/9/12

Reviewer: EI Date: 5/9/12

pH

Hexavalent Chromium (Liquids)

Columbia Analytical Services™

Method EPA 7196A

Service Request#(s): P1201823 | Run#: 290916

Stock#: 524-0223120 T.V.= 10PPM EXP: 8/23/12 | Prep Run#: —

ICV/CCV#: 524-0327120 T.V.=100PPM EXP: 7/2013 | Conc. H_2SO_4 Lot#: EMD 49284 EXP: 11/20/14

Coloring Reagent Ref#: 524-0503/201 EXP: 6/3/12

Working Curve:

Prep Dilution	NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L	0.00	0.01	0.05	0.1	0.99998235
Absorbance @ 540 nm	0.000	0.012	0.058	0.117	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10ml	—	✓	0.000	0.001	0.001	0.000822	<0.003
2	ICV 0.05PPM		—	✓	0.000	0.057	0.057	0.0488	98%
3	MB		—	✓	0.000	0.001	0.001	0.000822	<0.003
4	LCS 0.04PPM		—	✓	0.000	0.048	0.048	0.0411	103%
5	P1201823-1.01		—	✓	0.000	0.003	0.003	0.00253	<0.003
6	-1.01MS 0.05PPM		—	✓	0.000	0.059	0.059	0.0505	101% 2%
7	-1.01MSD		—	✓	0.000	0.058	0.058	0.0496	99% 5%
8	-2.01		—	✓	0.001	0.003	0.002	0.00168	<0.003
9	-2.01MS 0.03PPM		—	✓	0.001	0.036	0.035	0.0299	100%
10	-3.01		—	✓	0.001	0.004	0.003	0.00253	<0.003
11	-4.01		—	✓	0.005	0.008	0.003	0.00253	
12	-5.01		—	✓	0.002	0.004	0.002	0.00168	0%
13	CCV1 0.05PPM		—	✓	0.000	0.058	0.058	0.0496	99%
	CCB1		—	✓	0.000	0.001	0.001	0.000822	<0.003
14	P1201823-6.01		—	✓	0.004	0.005	0.001	0.000822	<0.003
15	-7.01		—	✓	0.000	0.000	0.000	-0.0000345	<0.003
16	CCV2 0.05PPM		—	✓	0.000	0.058	0.058	0.0496	99%
17	CCB2		—	✓	0.000	0.001	0.001	0.000822	<0.003

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.25 ml of 524-0327120 @ 10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-0223120 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↓ ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.2 ml of ↓ @ 10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: [signature] Date/Time: 5/9/12 @ 1545

Analyzed By: [signature] Date/Time: 5/9/12 @ 1600

Reviewed By: _____ Date: _____

Cr6LIQ.xls

5/19/11 JR

S24-0519 1103 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J3056-01 exp: 6/15/16) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 4928 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JR

S24-0520 1101 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT # 1101225
EXP: 12/2013

5/20/11 JR

S24-0520 1103 pH 4.000 BUFFER
Purchased
JT Baker CAT # 5657-01 500mL
LOT # J36503
EXP: 9/30/13

5/20/11 JR

S24-0520 1103 pH 7.00 BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT # 1103361
EX: 3/2013

10/17/11 SR — S24-10171102 — 1000PPM NH3
0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL
W/ S24-10171101 (0.1N HNO_3 EXP: 10/17/12)
EXP: 4/17/12

10/17/11 SR — S24-10171103 — IC2 Eluent
100 mL of S24-09201103 (10x conc Eluent; EXP: 9/20/12)
↑ 1L W/ DI. DEGASSED.
EXP: 10/31/11

10/21/11 SR — S24-10311101 — pH 7.000 Buffer
Purchased
BDH Cat No: BDH5046-500mL
LOT # 1107491
EXP: 7/2013

10/24/11 SR — S24-10241101 — pH 4.000 Buffer
Purchased
JT Baker Cat No: 5057-01 500ml
LOT # K04505
EXP: 2/28/13

10/24/11 SR — S24-10241102 — pH 7.38 Buffer
Purchased
BDH Cat No BDH5058-500ml
LOT # 1109034
EXP: 8/2013

524-1024/103 pH 10.000 Buffer

10/24/11 Purchased
JT Baker Cat no.: 5655-01
LOT # K07507
EXP: 2/28/13

10/25/11 524-1025/101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 951211 475mL
LOT # PN1 P/N 207475-A01
EXP: 10/25/12

10/25/11 524-1025/102 A,B,C,D,E pH Filling Sln
Purchased
Thermo Scientific Orion 810007 .5pack/bot
LOT: PS1
EXP: 10/25/12

11/1/11 524-1101/101 IC02 Eluent
100 mL 524-0920/103 (10x conc eluent. EXP. 9/20/13) T (L W/ DI H2O DEGASSED
EXP: 11/15/11

11/1/11 524-1101/102 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JO564 1
exp: 6/15/15 in 100 mL Methanol (B&J AE732 exp: 10/12/16
Add to 1 L volumetric flask containing 500 mL DI water +
[illegible] H2SO4 (EMD [illegible] exp: [illegible]). Bring

2/9/12 524-0209/202 Nitrite Soln
Sa 0.250g N-1-Naphthylethylene diamine Dihydrochloride
(JT Baker; lot IK22587 EXP 10/19/14) to 250mL w/ DI
EXP: 8/9/12

2/9/12 524-0209/203 ICO2 Effluent
Sa 100mL 524-0920/103 (for Cond Effluent, EXP
9/20/12) to 1L 2/9/12 w/ DI H2O. Degassed.
2/23/12

2/9/12 524-0209/204 ICO2 PCR
Sa

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JC9644 exp: 6/15/15) in 100 mL Methanol (B&J DC932 exp: 10/10/14) Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49282 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 2/14/12

2/10/12 524-02/0120/ 995 ~~1000~~ ppm Cal
Sa 2/10/12
Purchased
INORGANIC VENTURES CGCR(6)1-1
LOT: 62-CR03049
EXP: 3/1/13

2/13/12 524-0213/201
Sa 5.6mL conc H_2SO_4 (EMD 49184, EXP: 11/20/14) to
1L w/ DI H_2O
EXP 2/13/13

2/14/12 SA — 524-02141203 pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 111214G
EXP. 11/2013

2/20/12 SA — 524-02201201 500ppm NO_2 STOCK
Purchased
RICCA CHEMICAL CO Cat# 5444.5-4 120ml
LOT# 1262292
EXP: 8/12

2/22/12 SA — 524-02221201 Alkaline DIGESTION Sol
30.0g ~~NaOH~~ $K_2S_2O_8$ (EMD 4632715; EXP: 10/11/12) + 20.0g NaOH
(EMD 4702713C; EXP: 10/11/12) ↑ 1L w/ DI

EXP: 3/22/12

2/23/12 SA — 524-02231201 10ppm C-C+ STD
1.0ml 524-02101201 (1000ppm C-C+; EXP: 3/1/13)
↑ 100ml w/ DI H_2O.
EXP: 8/23/12

2/27/12 SA — 524-02271201 0.1N H_2SO_4
5.6ml Conc H_2SO_4 (EMD 4928-4; EXP: 11/201
↑ 2L w/ DI H_2O
EXP: 2/27/13

3/20/12 S24-0320201 1000 ppm SO_3 Stock

0.1591 Na_2SO_3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

EXP. 4/3/12

3/20/12 S24-0320202 1000ppm SO_3 ICal/CCV

0.1607 Na_2SO_3 (Mallinckrodt Lot #H25469; Exp: 8/11/14) up to 100 ml w/ DI Water.

EXP: 4/3/12

3/21/12 S24-0321201 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J0564) exp: 6/15/15) in 100 mL Methanol (B&J D6932 exp: 2/27/17. Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H_2SO_4 (EMD 4g384 exp: 11/30/12. Bring up to volume w/ DI H_2O; mix and degas.

EXP: 3/26/12

3/21/12 S24-0321202 Alkaline Digestion Soln

30.0g NaOH (EMD 4702273C; EXP 10/11/12) + 30.0g Na_2CO_3 (EMD 46-3217/5B EXP: 10/11/12) ↑ 1L w/ DI H_2O.

EXP: 4/21/12

3/23/12 S24-0323201 pH 7.000 buffer

Purchased

Thermo Scientific Orion 910107 475mL plastic

LOT Code: QZ1 P/N: 72483-AC2

EXP: 11/2014

3/23/12 SA 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
Lot#: 110934
Exp: 8/2013

3/27/12 SA 524-0327/201 100 PPM Cr6+ ICV
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
Lot # 120701
Exp: 7/2013

3/28/12 SA 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
Lot # 104514 500ml plastic
Exp: 1/31/14

3/28/12 SA 524-0328/202 Methylene Blue 1% Aq Sol
100ml Purchased
Alfa Aesar Stock # 42771
Lot # H04X026
Exp: 3/28/13

5/3/12 S24-0503/201 Ltr Coloring Reagent

0.250g 1,5-Diphenylcarbohydrazide (EMD 3056410 6/15/18) ↑ 50 mL 10/Acetone (EMD 47154; Exp: Exp: 6/3/12

5/4/12 S24-0504/201 ICO2 ICV/CCV 2.5

0.25mL of S24-0527/201 (10ppm Cr6+; Exp: 7/2013) ppm 0.1/10 ↑ 100mL w/ pH ADJUSTED (pH 9.455) DI Exp: 5/18/12

LABORATORY REPORT

May 18, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 10, 2012. For your reference, these analyses have been assigned our service request number P1201841.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 5:04 pm, May 18, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114
Service Request No: P1201841

CASE NARRATIVE

The samples were received intact under chain of custody on May 10, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q12 / 100006114
Service Request: P1201841

Date Received: 5/10/2012
Time Received: 14:40

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-18-5	P1201841-001	Water	5/10/2012	08:52	X
MW-18-4	P1201841-002	Water	5/10/2012	09:33	X
MW-18-3	P1201841-003	Water	5/10/2012	12:05	X
MW-18-2	P1201841-004	Water	5/10/2012	12:34	X
MW-18-1	P1201841-005	Water	5/10/2012	13:09	X
DUPE-6-2Q12	P1201841-006	Water	5/10/2012	00:00	X
EB-12-5/10/12	P1201841-007	Water	5/10/2012	12:52	X

Columbia Analytical Services, Inc.

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No.: P120 1841

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE, C-205
SAN DIEGO, CA 92110

Project Name: JPL GW MON. 2012

Project Number: 100006114

Project Manager: DAVID CONNER

P.O. # / Billing Information: #285651/BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS, OH 43201

Phone: (619) 726-7311 Fax: (619) 458-6641

Email Address for Result Reporting: Connerd@battelle.org

Sampler (Print & Sign): CHASE BRADDON

Analysis Method and/Or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	D: Cr VI (7196A)	O: 1,4-Dioxane (8270 SIM)	7: NDMA (521)	Remarks
MW-18-5	1	5/10/12	0852	GW	1							X			
MW-18-4	2	"	0933	"	1							X			
MW-18-3	3	"	1205	"	1							X			
MW-18-2	4	"	1234	"	1							X			
MW-18-1	5	5/10/12	1309	GW	2							X			MS/MSD
DUPE-6-2012	6	5/10/12	—	GW	1							X			DUPLICATE
EB-12-5/10/12	7	5/10/12	1252	GW	1							X			EQUIP. BLANK

Preservative Key
0 None
1 HCL
2 HNO3
3 H2SO4
4 NaOH
5 Zn Acetate
6 Asc Acid
7 Other

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____
MRL required Yes / No
MDL / PQL / J required Yes / No
EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	5/10/12	1700		5/11/12	1405
Relinquished by: (Signature)	5/11/12	1140	Received by: (Signature)	Date:	Time:
	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 3 °C

5 of 22

Columbia Analytical Services, Inc.
Now part of the ALS Group
2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Chain of Custody Report

Client: Battelle **Service Request:** P1201841
Project: JPL GW Mon 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201841-001.01					
	7196A				
		5/10/12	1512	SMO / MZAMORA	
		5/10/12	1526	In Lab / SANDERSON	
		5/10/12	1616	P-37 / SANDERSON	
P1201841-002.01					
	7196A				
		5/10/12	1512	SMO / MZAMORA	
		5/10/12	1526	In Lab / SANDERSON	
		5/10/12	1616	P-37 / SANDERSON	
P1201841-003.01					
	7196A				
		5/10/12	1512	SMO / MZAMORA	
		5/10/12	1526	In Lab / SANDERSON	
		5/10/12	1616	P-37 / SANDERSON	
P1201841-004.01					
	7196A				
		5/10/12	1512	SMO / MZAMORA	
		5/10/12	1526	In Lab / SANDERSON	
		5/10/12	1616	P-37 / SANDERSON	
P1201841-005.01					
	7196A				
		5/10/12	1512	SMO / MZAMORA	
		5/10/12	1525	In Lab / SANDERSON	
		5/10/12	1616	P-37 / SANDERSON	
P1201841-005.02					
		5/10/12	1512	SMO / MZAMORA	
		5/10/12	1526	In Lab / SANDERSON	
		5/10/12	1616	P-37 / SANDERSON	
P1201841-006.01					
	7196A				
		5/10/12	1512	SMO / MZAMORA	
		5/10/12	1526	In Lab / SANDERSON	
		5/10/12	1616	P-37 / SANDERSON	
P1201841-007.01					
	7196A				
		5/10/12	1512	SMO / MZAMORA	
		5/10/12	1526	In Lab / SANDERSON	
		5/10/12	1616	P-37 / SANDERSON	

Please note that all of the samples were put back in P-37 5/10/12 @ 1735. SMA

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Sample Acceptance Check Form

Client: Battelle Work order: P1201841

Project: JPL GW Mon 2Q12 / 100006114

Sample(s) received on: 5/10/12 Date opened: 5/10/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201841-001.01	125mL Plastic NP					
P1201841-002.01	125mL Plastic NP					
P1201841-003.01	125mL Plastic NP					
P1201841-004.01	125mL Plastic NP					
P1201841-005.01	125mL Plastic NP					
P1201841-005.02	125mL Plastic NP					
P1201841-006.01	125mL Plastic NP					
P1201841-007.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201841
Date Collected : 05/10/12
Date Received : 05/10/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-18-5	P1201841-001	0.010	0.003	1	NA	05/10/12 16:15	ND	
MW-18-4	P1201841-002	0.010	0.003	1	NA	05/10/12 16:15	ND	
MW-18-3	P1201841-003	0.010	0.003	1	NA	05/10/12 16:15	ND	
MW-18-2	P1201841-004	0.010	0.003	1	NA	05/10/12 16:15	ND	
MW-18-1	P1201841-005	0.010	0.003	1	NA	05/10/12 16:15	ND	
DUPE-6-2Q12	P1201841-006	0.010	0.003	1	NA	05/10/12 16:15	ND	
EB-12-5/10/12	P1201841-007	0.010	0.003	1	NA	05/10/12 16:15	ND	
Method Blank	P1201841-MB	0.010	0.003	1	NA	05/10/12 16:15	ND	

Approved By Karen Ryan Date : 5/14/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1201841
Project:	JPL GW Mon 2Q12 / 100006114	**Date Analyzed:**	05/10/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: _____ Date: 5/14/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201841
Date Analyzed: 05/10/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0515	103	90-110
CCV1	0.0500	0.0515	103	90-110
CCV2	0.0500	0.0515	103	90-110

Approved By: Karen Ryan Date: 5/14/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201841
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/10/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201841-LCS	Basis :	NA

Test Notes :

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0411	103	92-110	

Approved By Karen Ryan Date : 5/14/12

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201841
Date Collected : 05/10/12
Date Received : 05/10/12
Date Extracted : NA
Date Analyzed : 05/10/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-18-1
Lab Code : P1201841-005MS P1201841-005DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0446	0.0446	89	89	69-119	<1	

Approved By Karen Ryan Date : 5/14/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P120184/

Time: 1530

Sample	VWR lot #	Exp.
pH 2 Buffer	S24-05201101	12/2012
pH 4 Buffer	S24-0241101	2/28/13
pH 7 Buffer	S24-0323101	/2014
pH 10 Buffer	S24-1024110/	2/28/13

Slope	Prep.Run #
97.6%	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3	2.009	20.8°
pH 4.000	|	4.012	21.6°
pH 7.000	|	7.000	21.6°
pH 10.000	|	9.997	21.8°
Ref#: TIC= 7.38 EXP: 5/2013 S24-1024110/02	|	7.415	21.9°
DI	|	2.088	21.2°
P120184/-1.01	|	2.051	11.4°
-2.01	|	2.111	11.7°
-3.01	|	2.069	11.6°
-4.01	|	2.010	12.2°
-5.01	|	2.032	12.2°
pH 2.000	|	2.018	20.3°
P120184/-6.01	|	1.934	13.6°
-7.01	|	1.911	13.7°
pH 2.000	↓	2.020	20.2°

Sample	#	pH	Temp. °C

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 4928 4 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 5/7/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: _____ Date: 5/10/12

Reviewer: EI Date: 5/11/12

pH

Hexavalent Chromium (Liquids)

Columbia Analytical Services™

Method EPA 7196A

Service Request#(s): P120841 Run#: 291134

Stock#: S24-0323/201 T.V=1000M EXP: 8/23/12 Prep Run#:

ICV/CCV#: S24-0327/201 T.V=100PPM EXP: 7/2013 Conc. H_2SO_4 Lot#: EMD 49284 EXP: 11/20/14

Coloring Reagent Ref#: S24-0503/201 EXP: 6/3/12

Working Curve:

Prep Dilution	*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L	*0.00*	*0.01*	*0.05*	*0.1*	0.999985778
Absorbance @ 540 nm	0.010	0.011	0.057	0.115	

	Sample #	Sample Vol.(mL)	Dilution (pH ✓)	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10ml	—	✓0.000	0.000	0.000	0.000273	<0.003
2	ICV 0.05 PPM		—	✓0.000	0.059	0.059	0.0515	103%
3	MB		—	✓0.000	0.000	0.000	0.000273	<0.003
4	LCS 0.04 PPM		—	✓0.000	0.047	0.047	0.0411	103%
5	P120841-1.01		—	✓0.003	0.006	0.003	0.00288	<0.003
6	-1.01 VS 0.03PPM		—	✓0.003	0.034	0.031	0.0272	91%
7	-2.01		—	✓0.001	0.001	0.000	0.000273	<0.003
8	-3.01		—	✓0.002	0.003	0.001	0.00114	<0.003
9	-4.01		—	✓0.000	0.000	0.000	0.000273	<0.003
10	-5.01		—	✓0.004	0.004	0.000	0.000273	<0.003
11	-5.01MS 0.05PPM		—	✓0.004	0.055	0.051	0.0446	89% 21%
12	-5.01MSD ↓		—	✓0.004	0.055	0.051	0.0446	89% RPD
13	CCV1 0.05PPM CCB1		—	✓0.000	0.059	0.059	0.0515	103%
			—	✓0.000	0.000	0.000	0.000273	<0.003
14	P120841-6.01		—	✓0.001	0.001	0.000		
15	↓ -7.01		—	✓0.000	0.000	0.000	↓	↓
16	CCV2 0.05PPM		—	✓0.000	0.059	0.059	0.0515	103%
17	CCB2	↓	—	✓0.000	0.000	0.000	0.000273	<0.003

pH Requirement: Method 7196A *(2 ± 0.5)* * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.25 ml of S24-0327/201 @ 1/10 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-0323/201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ____ ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of ↓ @ 1/10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: [signature] Date/Time: 5/10/12 @ 1600

Analyzed By: [signature] Date/Time: 5/10/12 @ 1615

Reviewed By: ET Date: 5/11/12

5/19/11 JR

S24-0519 1103 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J3056 64) exp: 6/15/16) in 100 mL Methanol (B&J AD806 exp: 5/13/16). Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49184 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 5/24/11

5/20/11 JR

S24-0520 1101 pH 2.000 BUFFER
Purchased
BDH CAT. No. BDH 5010-500mL
LOT # 110225
EXP: 12/2012

5/20/11 JR

S24-0520 1103 pH 4.000 BUFFER
Purchased
JT Baker CAT # 5657-01 500mL
LOT # J36503
EXP: 9/30/12

5/20/11 JR

S24-0520 1103 pH 7.00 BUFFER
Purchased
BDH CAT # BDH5058-500mL
LOT # 110336 I
EX: 3/2013

10/17/11 SR

S24-10171102 1000 PPM NH3

0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL

10 | S24-10171101 (0.1N H_2SO_4 EXP: 10/17/12)

EXP: 4/17/12

10/17/11 SR

S24-10171103 IC Eluent

100 mL of S24-09201103 (10x conc Eluent; EXP: 9/20/1

↑ 1L w/ DI. DEGASSED.

EXP: 10/31/11

10/21/11 SR

S24-10211101 pH 7.000 Buffer

Purchased

BDH Cat NO: BDH5046-500mL

LOT# 1107491

EXP: 7/2013

10/24/11 SR

S24-10241101 pH 4.000 Buffer

Purchased

JT Baker Cat No: 5057-01 500 mL

LOT# K04505

EXP: 2/28/13

10/24/11 SR

S24-10241102 pH 7.38 Buffer

Purchased

BDH Cat No BDH5058-500 mL

LOT# 1109034

EXP: 8/2013

524-1024/103 pH 10.000 Buffer

10/24/11 Purchased
JT Baker Cat no.: 5655-01
Lot # K07507
Exp: 2/28/13

10/25/11 524-1025/101 pH ADJUSTING ISA
Purchased
Thermo Scientific Orion 951211 475mL
Lot # PN1 P/N 27475-A01
Exp: 10/25/12

10/25/11 524-1025/102 A,B,C,D,E pH Filling Sol'n
Purchased
Thermo Scientific Orion 810007 5 pack 60mL
Lot: PS1
Exp: 10/25/12

11/1/11 524-1101/101 IC02 Eluent
100mL 524-0920/103 (10x conc eluent. Exp. 9/20/12) 1 L w/ DI H_2O DEGASSED
Exp: 11/15/11

11/1/11 524-1101/102 IC02 PCR
Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JO564) exp: 6/15/15 in 100 mL Methanol (B&J DE932 exp: 10/12/16
Add to 1 L volumetric flask containing 500 mL DI water + [illegible] H_2SO_4 (EMD H7854 exp: 11/2011). Bring

2/9/13 524-0209/202 Nitrite Soln
SR 0.250g N-1-Naphthylethylene diamine Dihydrochloride
(JT Baker; lot IT22587 EXP 10/19/14) T 250mL w/ DI
EXP: 8/9/13

2/9/13 524-0209/203 IC02 Eluent
SR 100mL 524-0920 1103 (for Con Eluent, EXP
9/20/13) T ~~SR 2/9/13~~ 1 L w/ DI H2O. Degassed.
2/23/13

2/9/13 524-0209/204 IC02 POR
SR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ J.T. BAKER JC0644
exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 10/10/16)
Add to 1 L volumetric flask containing 500 mL DI water +
5.6 mL conc. H2SO4 (EMD 4928U exp: 11/20/14). Bring
up to volume w/ DI H2O; mix and degas.

EXP: 2/14/13

2/10/13 524-02/0120/ 995 ~~1000~~ ppm Cr6+
SR ~~SR 2/10/13~~
Purchased
INORGANIC VENTURES CCCR(6)1-1
LOT: 62-CR03045
EXP: 3/1/13

2/13/13 524-0213/201
SR 5.6mL Conc H_2SO_4 (EMD 49184, EXP: 11/20/14) T
1L w/ DI H_2O
EXP: 2/13/13

2/14/12 SH 524-02141203 pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 111214G
EXP. 11/2013

2/20/12 SH 524-02201201 500PPM NO3 STOCK
Purchased
FISHER CHEMICAL Co Cat# 5444.5-4 120ml Amber Gl
LOT# 126292
EXP: 8/12

2/22/12 SH 524-02221201 Alkaline DIGESTION Sol
30.0g ~~NaOH~~ NaOH (EMD 4632715; EXP: 10/14/12) + 20.0g Na2S2O3 (EMD 4702713C; EXP: 10/11/12) ↑ 1L W/ DI
EXP: 3/22/12

2/23/12 SH 524-02231201 10PPM Cr6+ STD
1.0ml 524-02101201 (1000PPM Cr6+; EXP: 3/1/13)
↑ 100ml W/ DI H2O
EXP: 8/23/12

2/27/12 SH 524-02271201 0.1N H2SO4
5.6ml Conc H2SO4 (EMD 4928; EXP: 11/20/1
↑ 2L W/ DI H2O
EXP: 2/27/13

3/20/12 S24-0320/201 1000 PPM SO_3 Std/C
SR

0.1591 Na2SO3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

EXP. 4/3/12

3/20/12 S24-0320/202 1,000PPM SO_3 ICal/CCV
SR

0.1607 Na2SO3 (Mallinckrodt Lot #H25469; Exp: 8/11/14) up to 100 ml w/ DI Water.

~~EXP: 4/3/12~~

3/21/12 S24-0321/201 ICO2 PCR
SR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J0564) exp: 6/15/15) in 100 mL Methanol (B&J DE933 exp: 2/27/17. Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49284 exp: 11/30/14. Bring up to volume w/ DI H2O; mix and degas.

~~EXP: 3/26/12~~

3/21/12 S24-0321/202 Alkaline Digestion Sol'n
SR

30.0g NaOH (EMD 4902273C; EXP 10/11/12) + 30.0g Na_2CO_3 (EMD 46-3217/5B EXP: 10/11/12) ↑ 1L W/DI H_2O.

EXP: 4/21/12

3/23/12 S24-0323/201 pH 7.000 buffer
SR

Purchased

Thermo Scientific Orion 910107 475mL/plastic

LOT Code: QZ1 P/N: 702483-A02

EXP: 11/2014

3/23/12 SZ 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 11C9034
EXP: 8/2013

3/27/12 SZ 524-0327/201 100 PPM Cr^{6+} ION
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
LOT # 120701
EXP: 7/2013

3/28/12 SZ 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # 104514 500ml plastic
EXP: 1/31/14

3/28/12 SZ 524-0328/202 Methylene Blue 1% AQ Sol
100ml Purchased
Alfa Aesar Stock # 42771
LOT # H04X026
EXP: 3/28/13

5/3/12 S24-0503/201 Ph Coloring Reagent

0.250g 1,5-diphenylcarbohydrazide (EMD 5056416 6/15/15) ↑ 50 ml 1:1 Acetone (EMD 47154; Exp: Exp: 6/3/12

5/4/12 S24-0504/201 ICO2 ICV/CCV 2.5

0.25mL of S24-0327/201 (100ppm Cr+6; Exp: 7/2013) mqH2O 0.1/10 ↑ 100mL w/ pH ADJUSTED (pH 9.455) DI Exp: 5/18/12

LABORATORY REPORT

May 18, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 14, 2012. For your reference, these analyses have been assigned our service request number P1201888.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 5:19 pm, May 18, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request No: P1201888

CASE NARRATIVE

The samples were received intact under chain of custody on May 14, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q12 / 100006114
Service Request: P1201888

Date Received: 5/14/2012
Time Received: 14:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-25-5	P1201888-001	Water	5/14/2012	09:42	X
MW-25-4	P1201888-002	Water	5/14/2012	10:15	X
MW-25-3	P1201888-003	Water	5/14/2012	10:48	X
MW-25-2	P1201888-004	Water	5/14/2012	11:20	X
MW-25-1	P1201888-005	Water	5/14/2012	11:58	X
EB-13-5/14/12	P1201888-006	Water	5/14/2012	11:43	X

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P120188S8

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE, C-205
SAN DIEGO, CA 92110

Project Name: JPL GW MON. 2Q12

Project Number: 100006114

Project Manager: DAVID CONNER

P.O. # / Billing Information: #285651/BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE COLUMBUS, OH 43201

Phone: (619) 726-7311 Fax: (619) 458-6641

Email Address for Result Reporting: Connerd@battelle.org

Sampler (Print & Sign): CHASE BROGDON

Analysis Method and/or Analytes

Preservative Code

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 Cr VI (7196A)	0 1,4-DIOXANE (8270 SIM)	7 NDMA (521)	Remarks
MW-25-5	1	5/14/12	0942	GW	1							X			
MW-25-4	2		1015		1							X			
MW-25-3	3		1048		1							X			
MW-25-2	4		1120		1							X			
MW-25-1	5		1158	GW	1							X			
EB-13-5/14/12	6	5/14/12	1143	GW	1							X			EQUIP BLANK

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ✓
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP)

	Date	Time		Date	Time
Relinquished by: (Signature)	5/14/12	1330	Received by: (Signature)	5/14/12	1340
Relinquished by: (Signature)	5/14/12	1730	Received by: (Signature)	5/14/12	1730
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 3.0 °C

Chain of Custody Report

Client: Battelle **Service Request:** P1201888
Project: JPL GW Mon 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201888-001.01					
	7196A				
		5/14/12	1448	SMO / MZAMORA	
		5/14/12	1448	P-37 / MZAMORA	
		5/14/12	1508	In Lab / SANDERSON	
		5/14/12	1620	P-37 / SANDERSON	
P1201888-002.01					
	7196A				
		5/14/12	1448	SMO / MZAMORA	
		5/14/12	1448	P-37 / MZAMORA	
		5/14/12	1508	In Lab / SANDERSON	
		5/14/12	1620	P-37 / SANDERSON	
P1201888-003.01					
	7196A				
		5/14/12	1448	SMO / MZAMORA	
		5/14/12	1448	P-37 / MZAMORA	
		5/14/12	1508	In Lab / SANDERSON	
		5/14/12	1620	P-37 / SANDERSON	
P1201888-004.01					
	7196A				
		5/14/12	1448	SMO / MZAMORA	
		5/14/12	1448	P-37 / MZAMORA	
		5/14/12	1508	In Lab / SANDERSON	
		5/14/12	1620	P-37 / SANDERSON	
P1201888-005.01					
	7196A				
		5/14/12	1448	SMO / MZAMORA	
		5/14/12	1448	P-37 / MZAMORA	
		5/14/12	1508	In Lab / SANDERSON	
		5/14/12	1620	P-37 / SANDERSON	
P1201888-006.01					
	7196A				
		5/14/12	1448	SMO / MZAMORA	
		5/14/12	1448	P-37 / MZAMORA	
		5/14/12	1508	In Lab / SANDERSON	
		5/14/12	1620	P-37 / SANDERSON	

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Sample Acceptance Check Form

Client: Battelle Work order: P1201888

Project: JPL GW Mon 2Q12 / 100006114

Sample(s) received on: 5/14/12 Date opened: 5/14/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201888-001.01	125mL Plastic NP					
P1201888-002.01	125mL Plastic NP					
P1201888-003.01	125mL Plastic NP					
P1201888-004.01	125mL Plastic NP					
P1201888-005.01	125mL Plastic NP					
P1201888-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201888
Date Collected : 05/14/12
Date Received : 05/14/12

Chromium, Hexavalent

Units : mg/L (ppm)
Basis : NA

Analysis Method : 7196A
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-25-5	P1201888-001	0.010	0.003	1	NA	05/14/12 16:00	ND	
MW-25-4	P1201888-002	0.010	0.003	1	NA	05/14/12 16:00	ND	
MW-25-3	P1201888-003	0.010	0.003	1	NA	05/14/12 16:00	ND	
MW-25-2	P1201888-004	0.010	0.003	1	NA	05/14/12 16:00	ND	
MW-25-1	P1201888-005	0.010	0.003	1	NA	05/14/12 16:00	ND	
EB-13-5/14/12	P1201888-006	0.010	0.003	1	NA	05/14/12 16:00	ND	
Method Blank	P1201888-MB	0.010	0.003	1	NA	05/14/12 16:00	ND	

Approved By _____ Date : 5/15/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201888
Date Analyzed: 05/14/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 5/15/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201888
Date Analyzed: 05/14/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0503	101	90-110
CCV1	0.0500	0.0494	99	90-110
CCV2	0.0500	0.0494	99	90-110

Approved By: Karen Ryan Date: 5/15/12

CCV1A/120594

QA/QC Report

Client :	Battelle	**Service Request :**	P1201888
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/14/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201888-LCS	Basis :	NA

Test Notes :

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0398	100	92-110	

Approved By Karen Ryan Date : 5/15/12

Report By:SAnderson

QA/QC Report

Client :	Battelle	**Service Request :**	P1201888
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	05/14/12
Project Number :	100006114	**Date Received :**	05/14/12
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/14/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-25-5 Units : mg/L (ppm)
Lab Code : P1201888-001MS P1201888-001DMS Basis : NA
Test Notes :

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0424	0.0424	85	85	69-119	<1	

Approved By Karen Ryan Date : 5/15/12

Report By:SAnderson

Columbia Analytical Services™

pH Run Log

Service Request #(s): P1201888

Time: 1022 SAG 5/14/12

Sample	VWR lot #	Exp.
pH 2 Buffer	524-02141203	~~5/14/12~~ 11/20/14
pH 4 Buffer	524-10241101	2/28/13
pH 7 Buffer	524-0323/201	1/20/14
pH 10 Buffer	524-0328/201	11/31/12

Slope	Prep.Run #
99.0%	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3	2.002	22.1°
pH 4.000		3.993	22.3°
pH 7.000		6.995	22.5°
pH 10.000		10.000	22.6°
Tv=7.38 EXP: 8/2013 **Ref#:** 524-10241102		7.401 100%	22.4°
DI		1.994	23.8°
pH 2.000	↓	1.998	22.1°
TIME: 1530 SG			
pH 2.000	3	2.013	22.1°
P1201888-1.01	3	2.058	12.6°
-2.01		1.979	12.5°
-3.01		2.040	12.8°
-4.01		2.087	13.1°
-5.01		1.948	13.4°
-6.01		2.058	13.1°
pH 2.000	↓	1.999	22.4°

Sample	#	pH	Temp. °C

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 45284 EXP: 11/20/14

☐ **7199A**: Diluted NaOH _____ EXP: _____

Comments: _____

_____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 5/14/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: _____ Date: 5/14/12

Reviewer: EE Date: 5/14/12

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201888 Run#: 291544

Stock#: S24-0223/201 T.V=10ppm EXP: 8/3/12 Prep Run#:

ICV/CCV#: S24-0327/201 T.V=100ppm EXP: 7/2013 Conc. H_2SO_4 Lot#: EMD 459284 EXP: 11/20/14

Coloring Reagent Ref#: S24-0503/201 EXP: 6/3/12

Working Curve:

Prep Dilution	NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L	0.00	0.01	0.05	0.1	0.9995584
Absorbance @ 540 nm	0.000	0.011	0.056	0.114	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10ml	—	✓	0.000	0.000	0.000	0.000318	<0.003
2	ICV 0.05ppm		—	✓	0.000	0.057	0.057	0.0503	101%
3	MB		—	✓	0.000	0.000	0.000	0.000318	<0.003
4	LCS 0.04ppm		—	✓	0.000	0.045	0.045	0.0398	100%
5	P1201888-1.01		—	✓	0.001	0.001	0.000	0.000318	<0.00
6	-1.01MS 0.05ppm		—	✓	0.001	0.049	0.048	0.0424	85% 7
7	-1.01MSD J		—	✓	0.001	0.049	0.048	0.0424	85% R
8	-2.01		—	✓	0.003	0.005	0.002	0.00207	<0.003
9	-2.01VS 0.03ppm		—	✓	0.003	0.032	0.029	0.0257	86%
10	-3.01		—	✓	0.002	0.005	0.003	0.00295	<0.00
11	-4.01		—	✓	0.002	0.005	0.003	0.00295	
12	-5.01		—	✓	0.007	0.008	0.001	0.00120	
13	CCV1 0.05ppm		—	✓	0.000	0.056	~~0.056~~ 0.056 CSR 5/14/12	0.0494	99%
14	CCB1		—	✓	0.000	0.000	0.000	0.000318	<0.003
15	P1201888-6.01		—	✓	0.000	0.000	0.000	0.000318	J
16	CCV2 0.05ppm		—	✓	0.000	0.056	0.056	0.0494	99%
17	CCB2	↓	—	✓	0.000	0.000	0.000	0.000318	<0.00

pH Requirement: Method 7196A (2 ± 0.5) @ rt Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.25 ml of S24-0327/201 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-0223/201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of ↓ @ rt ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: Date/Time: 5/14/12 @ 1545

Analyzed By: Date/Time: 5/14/12 @ 1600

Reviewed By: ET Date: 5/14/12

10/17/11 SL

S24-10171102 1000PPM NH3

0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL

10/ S24-10171101 (0.1N HCl by EXP. 10/17/12)

EXP: 4/17/12

10/17/11 SL

S24-10171103 TISAB Eluent

100 mL of S24-09201103 (10x conc Eluent; EXP: 9/20/12

↑ 1L w/ DI. DEGASSED.

EXP. 10/31/11

10/21/11 SL

S24-10311101 pH 7.000 Buffer

Purchased

BDH Cat No: BDH5046-500mL

LOT # 11074491

EXP: 7/2013

10/24/11 SL

S24-10241101 pH 4.000 Buffer

Purchased

JT Baker Cat No: 5657-01 500ml

LOT # K04505

EXP: 2/28/13

10/24/11 SL

S24-10241102 pH 7.38 Buffer

Purchased

BDH Cat No BDH6058-500ml

LOT # 11090364

EXP: 8/2013

2/9/13 SR 524-0209/202 Nitrite Soln
c. 250 mg N-1-Naphthylethylene diamine Dihydrochloride (JT Baker; Lot IK2587 EXP 10/19/14) ↑ 250 mL w/ DI
EXP: 8/9/13

2/9/13 SR 524-0209/203 IC02 Eluent
100 mL 524-0920 1103 (for Con't Eluent, EXP 9/20/13) ↑ 1 L w/ DI H2O. Degassed.
2/23/13

2/9/13 SR 524-0209/204 IC02 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER 5046-01 exp: 6/15/15) in 100 mL Methanol (B&J DE 937 exp: 10/10/16) Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49184 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 2/14/13

2/10/13 SR 524-02/0130/1 ~~1000~~ 995 ppm Cr6+ 2/10/13
Purchased
INORGANIC VENTURES CCCR(6)1-1
LOT: 62-CR03049
EXP: 3/1/13

2/13/13 SR 524-0213/201
5.6 mL Conc H_2SO_4 (EMD 49184; EXP: 11/20/14) ↑
to 1 L w/ DI H2O
EXP 2/13/13

2/14/12 SA 524-02141203 pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 111214G
EXP. 11/2013

2/20/12 SA 524-0220/201 500ppm NO2 STOCK
Purchased
RICCA CHEMICAL Co Cat# 5444.5-4 120ml Amber Gl
LOT# 1262292
EXP: 8/12

2/22/12 SA 524-0222/201 Alkaline DIGESTION Sol
30.0g ~~NaOH~~ (EMD 4632715; EXP: 10/11/12) + 20.0g NaO
(EMD 4402713C; EXP: 10/11/12) ↑ 1L w/ DI
EXP: 3/22/12

2/23/12 SA 524-0223/201 10PPM Cr6+ Std
1.0ml 524-02101201 (1000ppm Cr6+; EXP: 3/1/13)
↑ 100ml w/ DI H2O
EXP: 8/23/12

2/27/10 SA 524-0227/201 0.1N H2SO4
5.6ml Conc H2SO4 (EMD 4928-4; EXP: 11/20/1
↑ 2L w/ DI H2O
EXP: 2/27/13

3/20/12 SR — S24-0320/201 — 1000 PPM SO_3 Stock

0.1591 Na_2SO_3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

EXP. 4/3/12

3/20/12 SR — S24-0320/202 — 1,000ppm SO_3 ICV/CCV

0.1607 Na_2SO_3 (Mallinckrodt Lot #H25469; Exp: 8/11/14) up to 100 ml w/ DI Water.

EXP: 4/3/12

3/21/12 SR — S24-0321/201 — ICO3 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J056411 exp: 6/15/15) in 100 mL Methanol (B&J DE732 exp: 2/27/17. Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H_2SO_4 (EMD 4g384 exp: 11/30/14. Bring up to volume w/ DI H_2O; mix and degas.

EXP: 3/30/12

3/21/12 SR — S24-0321/202 — Alkaline Digestion Soln

30.0g NaOH (EMD 4702271BC; EXP 10/11/12) + 30.0g Na_2CO_3 (EMD 46-321715B EXP: 10/11/12) ↑ 1L W/DI H_2O.

EXP: 4/21/12

3/23/12 SR — S24-0323/201 — pH 7.000 buffer

Purchased

Thermo Scientific Orion 910107 475ml/plastic

LOT Code: QZ1 P/N: 702483-ACZ

EXP: 11/2014

3/23/12 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 11C9034
EXP: 8/2013

3/27/12 524-0327/201 100 PPM Cr^{6+} ICV
Purchased
Ricca Chemical Company Cat No 2695-1
500ml Plastic
LOT # 120701
EXP: 7/2013

3/28/12 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # 104514 500ml plastic
EXP: 1/31/14

3/28/12 524-0328/202 Methylene Blue 1% AQ Sol.
100ml Purchased
Alfa Aesar Stock # 42771
LOT # H04X026
EXP: 3/28/13

5/3/12 524-0503/201 Cr^{6+} Coloring Reagent

0.250g 1,5-diphenylcarbohydrazide (EMD 5056-41; EXP: 6/15/15) ↑ 50 mL 10/Acetone (EMD 47154; EXP: EXP: 6/3/12

5/4/12 524-0504/201 ICV ICV/CCV 2.5

0.25mL of 524-0521/201 (10ppm Cr^{6+}; EXP: 7/2013) mppb 0.1/10 ↑ 100mL w/ pH ADJUSTED (pH 9.455) DI. EXP: 5/18/12

LABORATORY REPORT

June 7, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 15, 2012. One of the samples was sent out for partial analysis to our Kelso facility. Please find their report attached. For your reference, these analyses have been assigned our service request number P1201921.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 11:01 am, Jun 13, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114
Service Request No: P1201921

CASE NARRATIVE

The samples were received intact under chain of custody on May 15, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q12 / 100006114
Service Request: P1201921

Date Received: 5/15/2012
Time Received: 15:51

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6	8270D - 1,4-Dioxane	521 - Nitrosamines
MW-17-5	P1201921-001	Water	5/15/2012	08:25	X		
MW-17-4	P1201921-002	Water	5/15/2012	09:12	X	X	X
MW-17-3	P1201921-003	Water	5/15/2012	11:12	X		
MW-17-2	P1201921-004	Water	5/15/2012	13:06	X		
MW-17-1	P1201921-005	Water	5/15/2012	13:38	X		
EB-14-5/15/12	P1201921-006	Water	5/15/2012	13:24	X		

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Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

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Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P120192.1

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLDTOWN AVE, C-205
SAN DIEGO, CA 92110

Project Name: JPL GW MON. 2Q12

Project Number: 100006114

Project Manager: DAVID CONNER

P.O. # / Billing Information: #285651 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE COLUMBUS OH 43201

Phone: (619) 726-7311 Fax: (619) 458-6641

Email Address for Result Reporting: Connerd@battelle.org

Sampler (Print & Sign): CHASE BRODSON

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0	0	7	Remarks
												C+II (7196A)	1,4-DIOXANE (8270SIM)	NDMA (521)	
MW-17-5	1	5/15/12	0825	GW	1							X			QC IV
MW-17-4	2		0912		8							X	X	X	MS/MSD
MW-17-3	3		1112		1							X			
MW-17-2	4		1306		1							X			
MW-17-1	5		1338		1							X			
EB-14-5/15/12	6	5/15/12	1324	GW	1							X			EQUIP BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ✓
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)		Date: 5/15/12	Time: 1500	Received by: (Signature)		Date: 5/15/12	Time: 1500
Relinquished by: (Signature)		Date: 5/15/12	Time: 1551	Received by: (Signature)		Date: 5/15/12	Time: 1551
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Date:	Time:

Cooler (Blank) Ice / No Ice
Temperature 3 °C

5 of 288

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Chain of Custody Report

Client: Battelle **Service Request:** P1201921
Project: JPL GW Mon 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201921-001.01					
	7196A				
		5/15/12	1618	SMO / MZAMORA	
		5/15/12	1618	P-37 / MZAMORA	
		5/15/12	1624	In Lab / SANDERSON	
		5/15/12	1708	P-37 / SANDERSON	
P1201921-002.01					
		5/15/12	1618	SMO / MZAMORA	
		5/15/12	1619	SUBBED / MZAMORA	
		5/17/12	1254	K-Delilah-80 / AJUELL	
P1201921-002.02					
		5/15/12	1618	SMO / MZAMORA	
		5/15/12	1619	SUBBED / MZAMORA	
		5/17/12	1254	K-Delilah-80 / AJUELL	
P1201921-002.03					
	7196A				
		5/15/12	1618	SMO / MZAMORA	
		5/15/12	1618	P-37 / MZAMORA	
		5/15/12	1624	In Lab / SANDERSON	
		5/15/12	1708	P-37 / SANDERSON	
P1201921-002.04					
	8270D				
		5/15/12	1618	SMO / MZAMORA	
		5/15/12	1619	SUBBED / MZAMORA	
		5/17/12	1254	K-Delilah-80 / AJUELL	
		5/18/12	1410	Custodian / DMOORE	
		5/18/12	1410	In Lab / DHONGEL	
		5/18/12	2058	K-Cart-Delilah / DHONGEL	
		5/21/12	1449	K-Delilah-80 / DMOORE	
P1201921-002.05					
		5/15/12	1618	SMO / MZAMORA	
		5/15/12	1619	SUBBED / MZAMORA	
		5/17/12	1254	K-Delilah-80 / AJUELL	
		5/21/12	1635	Custodian / DMOORE	
		5/22/12	0806	In Lab / RHAYES	
		5/22/12	1702	K-Delilah-80 / DMOORE	
P1201921-002.06					
	521				
		5/15/12	1618	SMO / MZAMORA	
		5/15/12	1619	SUBBED / MZAMORA	
		5/17/12	1254	K-Delilah-80 / AJUELL	
		5/21/12	1635	Custodian / DMOORE	
		5/22/12	0806	In Lab / RHAYES	

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Chain of Custody Report

Client: Battelle **Service Request:** P1201921
Project: JPL GW Mon 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
		5/22/12	1702	K-Delilah-80 / DMOORE	
P1201921-002.07					
		5/15/12	1618	SMO / MZAMORA	
		5/15/12	1618	P-37 / MZAMORA	
		5/15/12	1624	In Lab / SANDERSON	
		5/15/12	1708	P-37 / SANDERSON	
P1201921-002.08					
		5/15/12	1618	SMO / MZAMORA	
		5/15/12	1619	SUBBED / MZAMORA	
		5/17/12	1254	K-Delilah-80 / AJUELL	
		5/18/12	1410	Custodian / DMOORE	
		5/18/12	1410	In Lab / DHONGEL	
		5/18/12	2057	K-Cart-Delilah / DHONGEL	
		5/21/12	1449	K-Delilah-80 / DMOORE	
P1201921-003.01					
	7196A				
		5/15/12	1618	SMO / MZAMORA	
		5/15/12	1618	P-37 / MZAMORA	
		5/15/12	1624	In Lab / SANDERSON	
		5/15/12	1708	P-37 / SANDERSON	
P1201921-004.01					
	7196A				
		5/15/12	1618	SMO / MZAMORA	
		5/15/12	1618	P-37 / MZAMORA	
		5/15/12	1624	In Lab / SANDERSON	
		5/15/12	1708	P-37 / SANDERSON	
P1201921-005.01					
	7196A				
		5/15/12	1618	SMO / MZAMORA	
		5/15/12	1618	P-37 / MZAMORA	
		5/15/12	1624	In Lab / SANDERSON	
		5/15/12	1708	P-37 / SANDERSON	
P1201921-006.01					
	7196A				
		5/15/12	1618	SMO / MZAMORA	
		5/15/12	1618	P-37 / MZAMORA	
		5/15/12	1624	In Lab / SANDERSON	
		5/15/12	1708	P-37 / SANDERSON	

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Sample Acceptance Check Form

Client: Battelle Work order: P1201921

Project: JPL GW Mon 2Q12 / 100006114

Sample(s) received on: 5/15/12 Date opened: 5/15/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☒	☐
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201921-001.01	125mL Plastic NP					
P1201921-002.01	1000ml AG NP					
P1201921-002.02	1000ml AG NP					
P1201921-002.03	125mL Plastic NP					
P1201921-002.04	500mL AG NP					
P1201921-002.05	1000ml AG NP					
P1201921-002.06	1000ml AG NP					
P1201921-002.07	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

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Sample Acceptance Check Form

Client: Battelle Work order: P1201921

Project: JPL GW Mon 2Q12 / 100006114

Sample(s) received on: 5/15/12 Date opened: 5/15/12 by: MZAMORA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201921-002.08	500mL AG NP					
P1201921-003.01	125mL Plastic NP					
P1201921-004.01	125mL Plastic NP					
P1201921-005.01	125mL Plastic NP					
P1201921-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201921
Date Collected : 05/15/12
Date Received : 05/15/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-17-5	P1201921-001	0.010	0.003	1	NA	05/15/12 16:50	ND	
MW-17-4	P1201921-002	0.010	0.003	1	NA	05/15/12 16:50	ND	
MW-17-3	P1201921-003	0.010	0.003	1	NA	05/15/12 16:50	ND	
MW-17-2	P1201921-004	0.010	0.003	1	NA	05/15/12 16:50	ND	
MW-17-1	P1201921-005	0.010	0.003	1	NA	05/15/12 16:50	ND	
EB-14-5/15/12	P1201921-006	0.010	0.003	1	NA	05/15/12 16:50	ND	
Method Blank	P1201921-MB	0.010	0.003	1	NA	05/15/12 16:50	ND	

Approved By Karen Ryan Date : 5/17/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201921
Date Analyzed: 05/15/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Rya Date: 5/17/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201921
Date Analyzed: 05/15/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0521	104	90-110
CCV1	0.0500	0.0504	101	90-110
CCV2	0.0500	0.0504	101	90-110

Approved By: Karen Ryan Date: 5/17/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201921
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/15/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201921-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0383	96	92-110	

Approved By Karen Ryan Date : 5/17/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201921
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	05/15/12
Project Number :	100006114	**Date Received :**	05/15/12
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/15/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-17-3 Units : mg/L (ppm)
Lab Code : P1201921-003MS P1201921-003DMS Basis : NA
Test Notes :

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0443	0.0435	89	87	69-119	2	

Approved By Karen Rya Date : 5/17/12

Report By:SAnderson

Columbia Analytical Services

pH Run Log

Service Request #(s): P120/921 K1204287

Time: 0950

Sample	VWR lot #	Exp.
pH 2 Buffer	524-02141203	11/2013
pH 4 Buffer	524-10241101	2/28/13
pH 7 Buffer	524-0323201	1/2014
pH 10 Buffer	524-0328/201	1/31/14

Slope	Prep.Run #
99.0 %	—
	Run#

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3,4	2.005	22.5°
pH 4.000	|	4.002	22.7°
pH 7.000	|	7.000	22.6°
pH 10.000	|	10.001	22.9°
Ref#: T.K=738 EXP: 8/2013 524-1024/1102	↓	7.403	22.8°
DI	3	2.038	22.0°
DI	4	9.433	22.8°
pH 10.000	3,4	10.016	22.4°
TIME: 1115	SR		
pH 10.000	4	9.998	23.3°
MB 5/14/12 Solid prep	|	9.441	22.5°
LCS	|	9.424	22.5°
DLCS	|	9.455	22.9°
K1204287-003	|	9.488	22.7°
-1.03 DUP	|	9.491	22.5°
-1.03 MS	|	9.441	22.1°
-1.03 MSD	↓	9.476	22.8°

Sample	#	pH	Temp. °C
MDL 5	4	9.455	23.1°
6	|		
7	|		
pH	|		
MDL 8	|		
9	↓		
pH 10.000	4	9.994	23.0°
TIME: 1610	SR		
pH 2.000	3	1.988	21.0°
P120/921-1.01	|	2.013	6.1°
-2.01	|	1.995	5.3°
-3.01	|	1.909	5.8°
-4.01	|	1.863	5.9°
-5.01	|	1.855	5.8°
-6.01	↓	1.841	6.3°
pH 2.000	↓	1.989	20.6°

WILL pH ADJUST AND RUN ON 5/16/12 SR 5/15/12

pH Adjustments: **7196A**: Diluted/Conc H_2SO_4 0410 49284 EXP: 11/20/14

7199A: Diluted NaOH 524-04161207 EXP: 10/11/12

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 5/14/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: _____ Date: 5/15/12

Reviewer: EI Date: 5/16/12

Hexavalent Chromium (Liquids)

Columbia Analytical Services™

Method EPA 7196A

Service Request#(s): P1201921 Run#: 291776

Stock#: 524-02231201 T.V=10PPM EXP: 8/23/12 Prep Run#:

ICV/CCV#: 524-03271201 T.V=100PPM EXP: 7/2013 Conc. H_2SO_4 Lot#: EMD 49284 EXP: 11/30/14

Coloring Reagent Ref#: 524-05031201 EXP: 6/3/12

Working Curve:

Prep Dilution	NA	0.05/50	0.25/50	0.5/50	Corr. Coeff.
Concentration mg/L	0.00	0.01	0.05	0.1	0.99997358
Absorbance @ 540 nm	0.000	0.011	0058	0.115	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10ml	—	✓	0.000	0.000	0.000	0.000112	<0.003
2	ICV 0.05PPM		—	✓	0.000	0.060	0.060	0.0521	104%
3	MB		—	✓	0.000	0.001	0.001	0.000979	<0.003
4	LCS 0.04PPM		—	✓	0.000	0.044	0.044	0.0383	96%
5	P120921-1.01		—	✓	0.009	0.009	0.000	0.000112	<0.003
6	-1.01 MS 0.03PPM		—	✓	0.009	0.040	0.031	0.0270	90%
7	-2.03		—	✓	0.000	0.000	0.000	0.000112	<0.003
8	-2.03 MS		—	✓	0.000	0.051	0.051	0.0443	89%
9	-2.03 MSD		—	✓	0.000	0.050	0.050	0.0435	87%
10	-3.01		—	✓	0.002	0.002	0.000	0.000112	<0.003
11	-4.01		—	✓	0.000	0.000	0.000	↓	↓
12	-5.01		—	✓	0.000	0.000	0.000	↓	↓
13	CCV 0.05PPM		—	✓	0.000	0.058	0.058	0.0504	101%
14	CCB1		—	✓	0.000	0.000	0.000	0.000112	<0.003
15	P120921-6.01		—	✓	0.000	0.000	0.000	↓	↓
16	CCV2 0.05PPM		—	✓	0.000	0.058	0.058	0.0504	101%
17	CCB2		—	✓	0.000	0.000	0.000	0.000112	<0.003

pH Requirement: Method 7196A (2 ± 0.5) * Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.25 ml of 524-03271201 @1* ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of 524-02231201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of @10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: Date/Time: 5/15/12 @ 1655

Analyzed By: Date/Time: 5/15/12 @ 1650

Reviewed By: ET Date: 5/16/12

10/17/11 SZ

S24-10171102 1000PPM NH3

0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100ml

10/ S24-10171101 (0.1N H_2SO_4 EXP. 10/17/12)

EXP: 4/17/12

10/17/11 SZ

S24-10171103 IC Eluent

100 ml of S24-09201103 (10x conc Eluent; EXP: 9/20/10

↑ 1L w/ DI. DEGASSED.

EXP. 10/31/11

10/31/11 SZ

S24-10311101 pH 7.000 Buffer

Purchased

BDH Cat No: BDH5046-500mL

LOT # 1107491

EXP: 7/2013

10/24/11 SZ

S24-10241101 pH 4.000 Buffer

Purchased

JT Baker Cat No: 5657-01 500ml

LOT # K04505

EXP: 2/28/13

10/24/11 SZ

S24-10241102 pH 7.38 Buffer

Purchased

BDH Cat No BDH5058-500ml

LOT # 1109034

EXP: 8/2013

2/9/12 SR 524-0209/202 Nitrite Soln
0.250g N-1-Naphthylethylenediamine Dihydrochloride (JT Baker; lot IT2G487 EXP 10/19/14) ↑ 250mL w/ DI
EXP: 8/9/12

2/9/12 SR 524-0209/203 ICO2 Eluent
100mL 524-0920 1103 (Inorganic Eluent, EXP 9/20/12) ↑ SR 2/9/12 1 L w/ DI H2O. Degassed.
2/23/12

2/9/12 SR 524-0209/204 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER JC0644 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 10/10/16) Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49284 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 2/14/12

2/10/12 SR 524-02/0120 995 ~~1000~~ ppm Cal
Purchased
INORGANIC VENTURES CGCR(6)1-1
LOT: 62-CR03049
EXP: 3/1/13

2/13/12 SR 524-0213/201
5.6mL Conc H_2SO_4 (EMD 49184, EXP 11/20/14) ↑
diluted to 1L w/ DI H_2O
↑ SR 2/13/13

2/14/12 524-02141203 pH Buffer 2.000
Purchased
BDH Cat No: BDH5010-500ml
LOT# 11D2146
EXP: 11/2013

2/20/12 524-0220/201 500ppm NO_2 STOCK
Purchased
RICCA CHEMICAL CO Cat# 5444.5-4 120ml Amber
LOT# 1262290
EXP: 8/12

2/22/12 524-0222/201 Alkaline DIGESTION Sol
30.0g ~~NaOH~~ $NaNO_3$ (EMD 4632715; EXP: 10/4/12) + 20.0g NaOH
(EMD 4702713C; EXP: 10/4/12) ↑ 1L w/ DI
EXP: 3/22/12

2/23/12 524-0223/201 10PPM C-C+ Std
1.0ml 524-02101201 (1000ppm C-C+; EXP: 3/1/13)
↑ 100ml w/ DI H_2O
EXP: 8/23/12

2/27/12 524-0227/201 0.1N H_2SO_4
5.6ml Conc H_2SO_4 (EMD 4628; EXP: 11/20/
↑ 2L w/ DI H_2O
EXP: 2/27/13

3/20/12 S24-0320/201 1000 PPM SO3 Stock

0.1591 Na2SO3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

EXP. 4/3/12

3/20/12 S24-0320/202 1,000PPM SO3 ICI/CCV

0.1607 Na2SO3 (Mallinckrodt Lot #H25469; Exp: 8/11/14) up to 100 ml w/ DI Water.

EXP: 4/3/12

3/21/12 S24-0321/201 ICO3 PER

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J05641 exp: 6/15/C) in 100 mL Methanol (B&J DE933 exp: 2/27/13. Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 44384 exp: 11/30/12. Bring up to volume w/ DI H2O; mix and degas.

EXP: 3/26/12

3/21/12 S24-0321/202 Alkaline Digestion Sol'n

30.0g NaOH (EMD 47022730; EXP 10/11/12) + 30.0g Na2CO3 (EMD 46-32175B EXP: 10/11/12) IN 1L W/DI H2O.

EXP: 4/21/12

3/23/12 S24-0323/201 pH 7.000 buffer

Purchased

Thermo Scientific Orion 910107 475ml/plastic

LOT Code: QZ1 P/N: 72483-A0Z

EXP: 11/2014

3/23/12 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 11C9134
EXP: 8/2013

3/27/12 524-0327/201 100 PPM Cr^{6+} ICV
Purchased
RICCA Chemical Company Cat No 2695-1
500ml Plastic
LOT # 120170I
EXP: 7/2013

3/28/12 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # 104514 500ml plastic
EXP: 1/31/14

3/28/12 524-0328/202 Methylene Blue 1% AQ Sol.
100ml Purchased
Alfa Aesar stock # 42771
LOT # H04X026
EXP: 3/28/13

5/3/12 524-0503/201 Cr^{+6} Coloring Reagent

0.250 g 1,5-Diphenylcarbohydrazide (EMD 5056410) @ 6/15/18) ↑ 50 ml 10/Acetone (EMD 47154; Exp: Exp: 6/3/12

5/4/12 524-0504/201 ICV ICV/CCV 2.5

0.25 ml of 524-0527/201 (10 ppm Cr^{+6}; Exp: 7/2013) prep 0.1/10 ↑ 100 ml w/ pH ADJUSTED (pH 9.455) DI Exp: 5/18/12

June 12, 2012 Analytical Report for Service Request No: P1201921

Sue Anderson
Columbia Analytical Services
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

RE: JPL GW Mon 2Q12/100006114

Dear Sue:

Enclosed are the results of the samples submitted to our laboratory on May 15, 2012. For your reference, these analyses have been assigned our service request number P1201921.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3364. You may also contact me via Email at Howard.Holmes@alsglobal.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Howard Holmes
Project Manager

HH/tj

Columbia Analytical Services

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Columbia Analytical Services, Inc.
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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc. - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Louisiana DHH	Not available	LA110003
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
New Mexico ED	http://www.nmenv.state.nm.us/dwb/Index.htm	-
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.caslab.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS ENVIRONMENTAL

Client:	Battelle	**Service Request No.:**	P1201921
Project:	JPL GW Mon 2Q12	**Date Received:**	5/15/12
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water sample was received for analysis at ALS Environmental-Kelso on 5/15/12. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°Cupon receipt at the laboratory.

Nitrosamines by EPA 521

No anomalies associated with the analysis of these samples were observed.

1,4-Dioxane by EPA Method 8270

No anomalies associated with the analysis of these samples were observed.

Approved by Howard Holmes **Date** 6-12-12

Chain of Custody

Intra-Network Chain of Custody

2655 Park Center Drive, Suite A • Simi Valley, CA 93065 • 805-526-7161 • FAX 805-526-7270

CAS Contact: Sue Anderson

Project Name: JPL GW Mon 2Q12
Project Number: 100006114
Project Manager: David Conner
Company: Battelle

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	1,4-Dioxane 8270D	Nitrosamines 521
P1201921-002	MW-17-4	6	Water	5/15/12	0912	5/15/12	KELSO	IV	IV

Test Comments

Nitrosamines - 521	P1201921-002	NDMA MS/MSD on this sample
1,4-Dioxane - 8270D	P1201921-002	MS/MSD on this sample

30 of 288

Special Instructions/Comments	Turnaround Requirements	Report Requirements	Invoice Information
	____**RUSH** (Surcharges Apply) **PLEASE CIRCLE WORK DAYS** 1 2 3 4 5 X **STANDARD** Requested FAX Date: _____ Requested Report Date: 06/01/12	____ I. Results Only ____ II. Results + QC Summaries ____ III. Results + QC and Calibration Summaries X IV. Data Validation Report with Raw Data PQL/MDL/J Y EDD Y	PO# P1201921 Bill to

Relinquished By: _____ Received By: _____ Airbill Number: _____

5/16/12 1200 SRD 5/17/12 0950

PC 464

Cooler Receipt and Preservation Form

Client / Project: ALS / Simi Valley Service Request K12 1201921

Received: 5/17/12 Opened: 5/17/12 By: SMW Unloaded: 5/17/12 By: SMW

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other*_____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where?_____

If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.1	—	307		1Z 789 05X 01 4251 4539	

7. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

*Notes, Discrepancies, & Resolutions:*_____

Nitrosamines

Organic Analysis:
Nitrosamines by EPA 521

Summary Package

Sample and QC Results

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921

Cover Page - Organic Analysis Data Package
Nitrosamines by EPA 521

Sample Name	Lab Code	Date Collected	Date Received
MW-17-4MS	KWG1205366-1	05/15/2012	05/15/2012
MW-17-4DMS	KWG1205366-2	05/15/2012	05/15/2012
MW-17-4	P1201921-002	05/15/2012	05/15/2012

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Tom E Petwood

Name: Tom Petwood

Date: 6/12/12

Title: Scientist

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Collected: 05/15/2012
Date Received: 05/15/2012

Nitrosamines by EPA 521

Sample Name: MW-17-4
Lab Code: P1201921-002

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**1.0**	J	2.0	0.32	1	05/22/12	05/24/12	KWG1205366	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	87	70-130	05/24/12	Acceptable

Comments:

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Collected: NA
Date Received: NA

Nitrosamines by EPA 521

Sample Name: Method Blank
Lab Code: KWG1205366-4

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**1.9**	J	2.0	0.32	1	05/22/12	06/05/12	KWG1205366	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	91	70-130	06/05/12	Acceptable

Comments:

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921

Surrogate Recovery Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Level: Low

Sample Name	Lab Code	Sur1
MW-17-4	P1201921-002	87
Method Blank	KWG1205366-4	91
MW-17-4MS	KWG1205366-1	73
MW-17-4DMS	KWG1205366-2	71
Lab Control Sample	KWG1205366-3	84

Surrogate Recovery Control Limits (%)

Sur1 = N-Nitrosodimethylamine-d6 70-130

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.
Now part of the ALS Group
QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012
Time Analyzed: 13:17

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\052312-521\0523002.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1205780-2
Analysis Lot: KWG1205780

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	36,240	20.59
	Upper Limit ==>	47,112	20.99
	Lower Limit ==>	25,368	20.19
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1205366-3	31,648	20.57

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012
Time Analyzed: 21:44

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\052312-521\0523014.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1205780-3
Analysis Lot: KWG1205780

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	35,545	20.58
Upper Limit ==>	46,209	20.98
Lower Limit ==>	24,882	20.18
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/24/2012
Time Analyzed: 12:56

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\052412-521\0524002.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1205781-2
Analysis Lot: KWG1205781

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	31,823	20.59
	Upper Limit ==>	41,370	20.99
	Lower Limit ==>	22,276	20.19
	ICAL Result ==>	38,374	20.59
Associated Analyses			
MW-17-4	P1201921-002	28,529	20.61
MW-17-4MS	KWG1205366-1	31,283	20.62
MW-17-4DMS	KWG1205366-2	37,516	20.61

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/24/2012
Time Analyzed: 17:52

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\052412-521\0524009.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1205781-3
Analysis Lot: KWG1205781

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	38,865	20.62
Upper Limit ==>	50,525	21.02
Lower Limit ==>	27,206	20.22
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 06/05/2012
Time Analyzed: 15:33

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\060512-521\0605002.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1206337-2
Analysis Lot: KWG1206337

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	32,363	20.57
	Upper Limit ==>	42,072	20.97
	Lower Limit ==>	22,654	20.17
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Method Blank	KWG1205366-4	36,352	20.55

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 06/06/2012
Time Analyzed: 00:42

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\060512-521\0605015.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1206337-3
Analysis Lot: KWG1206337

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	37,722	20.55
Upper Limit ==>	49,039	20.95
Lower Limit ==>	26,405	20.15
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/22/2012
Date Analyzed: 05/24/2012

Matrix Spike/Duplicate Matrix Spike Summary
Nitrosamines by EPA 521

Sample Name: MW-17-4
Lab Code: P1201921-002

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low
Extraction Lot: KWG1205366

Analyte Name	Sample Result	MW-17-4MS KWG1205366-1 Matrix Spike			MW-17-4DMS KWG1205366-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
N-Nitrosodimethylamine	1.0	20.8	20.0	99	18.7	20.0	89	70-130	11	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/22/2012
Date Analyzed: 05/23/2012

Lab Control Spike Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG1205366

Analyte Name	Lab Control Sample KWG1205366-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
N-Nitrosodimethylamine	20.7	20.0	103	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/22/2012
Date Analyzed: 06/05/2012
Time Analyzed: 16:15

Method Blank Summary
Nitrosamines by EPA 521

Sample Name: Method Blank
Lab Code: KWG1205366-4

Instrument ID: MS16
File ID: J:\MS16\DATA\060512-521\0605003.D

Extraction Method: METHOD
Analysis Method: 521

Level: Low
Extraction Lot: KWG1205366

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1205366-3	J:\MS16\DATA\052312-521\0523005.D	05/23/12	15:23
MW-17-4	P1201921-002	J:\MS16\DATA\052412-521\0524006.D	05/24/12	15:45
MW-17-4MS	KWG1205366-1	J:\MS16\DATA\052412-521\0524007.D	05/24/12	16:27
MW-17-4DMS	KWG1205366-2	J:\MS16\DATA\052412-521\0524008.D	05/24/12	17:10

Client:	Battelle	**Service Request:**	P1201921
Project:	JPL GW Mon 2Q12/100006114	**Date Extracted:**	05/22/2012
Sample Matrix:	Water	**Date Analyzed:**	05/23/2012
		Time Analyzed:	15:23

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1205366-3	**File ID:**	J:\MS16\DATA\052312-521\0523005.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1205366

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
MW-17-4	P1201921-002	J:\MS16\DATA\052412-521\0524006.D	05/24/12	15:45
MW-17-4MS	KWG1205366-1	J:\MS16\DATA\052412-521\0524007.D	05/24/12	16:27
MW-17-4DMS	KWG1205366-2	J:\MS16\DATA\052412-521\0524008.D	05/24/12	17:10
Method Blank	KWG1205366-4	J:\MS16\DATA\060512-521\0605003.D	06/05/12	16:15

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Level ID	File ID
A	J:\MS16\DATA\031112-521\0311005.D
B	J:\MS16\DATA\031112-521\0311006.D
C	J:\MS16\DATA\031112-521\0311007.D
D	J:\MS16\DATA\031112-521\0311008.D
E	J:\MS16\DATA\031112-521\0311009.D
F	J:\MS16\DATA\031112-521\0311010.D
G	J:\MS16\DATA\031112-521\0311011.D
H	J:\MS16\DATA\031112-521\0311012.D
I	J:\MS16\DATA\031112-521\0311013.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
N-Nitrosodimethylamine-d6							C	1.0	1.28	D	2.0	2.08	E	5.0	2.86
	F	7.0	3.66	G	10	4.73	H	15	4.42	I	20	5.18			
N-Nitrosodimethylamine				B	0.50	1.18	C	1.0	1.63	D	2.0	2.42	E	5.0	2.51
	F	7.0	3.11	G	10	3.75	H	15	3.50	I	20	3.88			

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
N-Nitrosodimethylamine-d6	SURR	Quadratic	COD	0.992		≥ 0.99	3.46		
N-Nitrosodimethylamine	MS	Quadratic	COD	0.994		≥ 0.99	2.75		

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Calibration Date: 03/11/2012
Date Analyzed: 03/12/2012

Second Source Calibration Verification
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration ID: CAL11326
Units: ug/L

File ID: J:\MS16\DATA\031112-521\0311014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine	10	7.7	2.75	2.42	NA	-23	± 30 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1205780
Units: ug/L

File ID: J:\MS16\DATA\052312-521\0523002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.0		3.46	0.883	NA	0	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	0.88		2.75	1.52	NA	-12	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1205780
Units: ug/L

File ID: J:\MS16\DATA\052312-521\0523014.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	3.8		3.46	2.35	NA	-24	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	5.0		2.75	2.90	NA	-1	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/24/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1205781
Units: ug/L

File ID: J:\MS16\DATA\052412-521\0524002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.3		3.46	1.87	NA	27	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.4		2.75	3.11	NA	41	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/24/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1205781
Units: ug/L

File ID: J:\MS16\DATA\052412-521\0524009.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	4.6		3.46	3.02	NA	-8	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.2		2.75	3.74	NA	23	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 06/05/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1206337
Units: ug/L

File ID: J:\MS16\DATA\060512-521\0605002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.2		3.46	1.59	NA	19	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.1		2.75	2.17	NA	10	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 06/06/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1206337
Units: ug/L

File ID: J:\MS16\DATA\060512-521\0605015.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.1		3.46	3.46	NA	2	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	5.9		2.75	3.55	NA	18	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Service Request: P1201921

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1205780
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
\0523001.D	GC/MS Tuning - Decafluorotriphenylp	KWG1205780-1	5/23/2012	12:34		5/23/2012	13:00
\0523002.D	Continuing Calibration Verification	KWG1205780-2	5/23/2012	13:17		5/23/2012	13:43
\0523004.D	ZZZZZZ	ZZZZZZ	5/23/2012	14:41		5/23/2012	15:07
\0523005.D	Lab Control Sample	KWG1205366-3	5/23/2012	15:23		5/23/2012	15:49
\0523006.D	ZZZZZZ	ZZZZZZ	5/23/2012	16:06		5/23/2012	16:32
\0523007.D	ZZZZZZ	ZZZZZZ	5/23/2012	16:48		5/23/2012	17:14
\0523008.D	ZZZZZZ	ZZZZZZ	5/23/2012	17:30		5/23/2012	17:56
\0523009.D	ZZZZZZ	ZZZZZZ	5/23/2012	18:13		5/23/2012	18:39
\0523010.D	ZZZZZZ	ZZZZZZ	5/23/2012	18:55		5/23/2012	19:21
\0523011.D	ZZZZZZ	ZZZZZZ	5/23/2012	19:37		5/23/2012	20:03
\0523012.D	ZZZZZZ	ZZZZZZ	5/23/2012	20:20		5/23/2012	20:46
\0523013.D	ZZZZZZ	ZZZZZZ	5/23/2012	21:02		5/23/2012	21:28
\0523014.D	Continuing Calibration Verification	KWG1205780-3	5/23/2012	21:44		5/23/2012	22:10

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Service Request: P1201921

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1205781
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
\0524001.D	GC/MS Tuning - Decafluorotriphenylp	KWG1205781-1	5/24/2012	12:13		5/24/2012	12:39
\0524002.D	Continuing Calibration Verification	KWG1205781-2	5/24/2012	12:56		5/24/2012	13:22
\0524006.D	MW-17-4	P1201921-002	5/24/2012	15:45		5/24/2012	16:11
\0524007.D	MW-17-4MS	KWG1205366-1	5/24/2012	16:27		5/24/2012	16:53
\0524008.D	MW-17-4DMS	KWG1205366-2	5/24/2012	17:10		5/24/2012	17:36
\0524009.D	Continuing Calibration Verification	KWG1205781-3	5/24/2012	17:52		5/24/2012	18:18

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Service Request: P1201921

Analysis Run Log
Nitrosamines by EPA 521

Analysis Method: 521
Analysis Lot: KWG1206337
Instrument ID: MS16

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
\0605001.D	GC/MS Tuning - Decafluorotriphenylp	KWG1206337-1	6/5/2012	14:51		6/5/2012	15:17
\0605002.D	Continuing Calibration Verification	KWG1206337-2	6/5/2012	15:33		6/5/2012	15:59
\0605003.D	Method Blank	KWG1205366-4	6/5/2012	16:15		6/5/2012	16:41
\0605005.D	ZZZZZZ	ZZZZZZ	6/5/2012	17:40		6/5/2012	18:06
\0605006.D	ZZZZZZ	ZZZZZZ	6/5/2012	18:22		6/5/2012	18:48
\0605008.D	ZZZZZZ	ZZZZZZ	6/5/2012	19:46		6/5/2012	20:12
\0605009.D	ZZZZZZ	ZZZZZZ	6/5/2012	20:29		6/5/2012	20:55
\0605010.D	ZZZZZZ	ZZZZZZ	6/5/2012	21:11		6/5/2012	21:37
\0605012.D	ZZZZZZ	ZZZZZZ	6/5/2012	22:36		6/5/2012	23:02
\0605014.D	ZZZZZZ	ZZZZZZ	6/6/2012	00:00		6/6/2012	00:26
\0605015.D	Continuing Calibration Verification	KWG1206337-3	6/6/2012	00:42		6/6/2012	01:08

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/22/2012

Extraction Prep Log
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Extraction Lot: KWG1205366
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MW-17-4	P1201921-002	05/15/12	05/15/12	500ml	1ml	NA	
Method Blank	KWG1205366-4	NA	NA	500ml	1ml	NA	
MW-17-4MS	KWG1205366-1	05/15/12	05/15/12	500ml	1ml	NA	
MW-17-4DMS	KWG1205366-2	05/15/12	05/15/12	500ml	1ml	NA	
Lab Control Sample	KWG1205366-3	NA	NA	500ml	1ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

QC Reports

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921

Surrogate Recovery Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Level: Low

Sample Name	Lab Code	Sur1
MW-17-4	P1201921-002	87
Method Blank	KWG1205366-4	91
MW-17-4MS	KWG1205366-1	73
MW-17-4DMS	KWG1205366-2	71
Lab Control Sample	KWG1205366-3	84

Surrogate Recovery Control Limits (%)

Sur1 = N-Nitrosodimethylamine-d6 70-130

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012
Time Analyzed: 13:17

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\052312-521\0523002.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1205780-2
Analysis Lot: KWG1205780

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	36,240	20.59
	Upper Limit ==>	47,112	20.99
	Lower Limit ==>	25,368	20.19
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Lab Control Sample	KWG1205366-3	31,648	20.57

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012
Time Analyzed: 21:44

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\052312-521\0523014.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1205780-3
Analysis Lot: KWG1205780

	-Nitrosodi-n-propylamine-d
	Area	RT
Results ==>	35,545	20.58
Upper Limit ==>	46,209	20.98
Lower Limit ==>	24,882	20.18
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/24/2012
Time Analyzed: 12:56

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\052412-521\0524002.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1205781-2
Analysis Lot: KWG1205781

		-Nitrosodi-n-propylamine-d	
		Area	**RT**
	Results ==>	31,823	20.59
	Upper Limit ==>	41,370	20.99
	Lower Limit ==>	22,276	20.19
	ICAL Result ==>	38,374	20.59
Associated Analyses			
MW-17-4	P1201921-002	28,529	20.61
MW-17-4MS	KWG1205366-1	31,283	20.62
MW-17-4DMS	KWG1205366-2	37,516	20.61

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/24/2012
Time Analyzed: 17:52

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\052412-521\0524009.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1205781-3
Analysis Lot: KWG1205781

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	38,865	20.62
Upper Limit ==>	50,525	21.02
Lower Limit ==>	27,206	20.22
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 06/05/2012
Time Analyzed: 15:33

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\060512-521\0605002.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1206337-2
Analysis Lot: KWG1206337

		-Nitrosodi-n-propylamine-d
		Area	RT
	Results ==>	32,363	20.57
	Upper Limit ==>	42,072	20.97
	Lower Limit ==>	22,654	20.17
	ICAL Result ==>	38,374	20.59
Associated Analyses			
Method Blank	KWG1205366-4	36,352	20.55

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 06/06/2012
Time Analyzed: 00:42

Internal Standard Area and RT Summary
Nitrosamines by EPA 521

File ID: J:\MS16\DATA\060512-521\0605015.D
Instrument ID: MS16
Analysis Method: 521

Lab Code: KWG1206337-3
Analysis Lot: KWG1206337

	-Nitrosodi-n-propylamine-d	
	Area	**RT**
Results ==>	37,722	20.55
Upper Limit ==>	49,039	20.95
Lower Limit ==>	26,405	20.15
ICAL Result ==>	30,053	20.57

Associated Analyses

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/22/2012
Date Analyzed: 05/24/2012

Matrix Spike/Duplicate Matrix Spike Summary
Nitrosamines by EPA 521

Sample Name: MW-17-4
Lab Code: P1201921-002

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low
Extraction Lot: KWG1205366

Analyte Name	Sample Result	MW-17-4MS KWG1205366-1 Matrix Spike			MW-17-4DMS KWG1205366-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
N-Nitrosodimethylamine	1.0	20.8	20.0	99	18.7	20.0	89	70-130	11	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.
Percent reeoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/22/2012
Date Analyzed: 05/23/2012

Lab Control Spike Summary
Nitrosamines by EPA 521

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG1205366

Analyte Name	Lab Control Sample KWG1205366-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
N-Nitrosodimethylamine	20.7	20.0	103	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201921
Project:	JPL GW Mon 2Q12/100006114	**Date Extracted:**	05/22/2012
Sample Matrix:	Water	**Date Analyzed:**	06/05/2012
		Time Analyzed:	16:15

Method Blank Summary
Nitrosamines by EPA 521

Sample Name:	Method Blank	**Instrument ID:**	MS16
Lab Code:	KWG1205366-4	**File ID:**	J:\MS16\DATA\060512-521\0605003.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1205366

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1205366-3	J:\MS16\DATA\052312-521\0523005.D	05/23/12	15:23
MW-17-4	P1201921-002	J:\MS16\DATA\052412-521\0524006.D	05/24/12	15:45
MW-17-4MS	KWG1205366-1	J:\MS16\DATA\052412-521\0524007.D	05/24/12	16:27
MW-17-4DMS	KWG1205366-2	J:\MS16\DATA\052412-521\0524008.D	05/24/12	17:10

Client:	Battelle	**Service Request:**	P1201921
Project:	JPL GW Mon 2Q12/100006114	**Date Extracted:**	05/22/2012
Sample Matrix:	Water	**Date Analyzed:**	05/23/2012
		Time Analyzed:	15:23

Lab Control Sample Summary
Nitrosamines by EPA 521

Sample Name:	Lab Control Sample	**Instrument ID:**	MS16
Lab Code:	KWG1205366-3	**File ID:**	J:\MS16\DATA\052312-521\0523005.D
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	521	**Extraction Lot:**	KWG1205366

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
MW-17-4	P1201921-002	J:\MS16\DATA\052412-521\0524006.D	05/24/12	15:45
MW-17-4MS	KWG1205366-1	J:\MS16\DATA\052412-521\0524007.D	05/24/12	16:27
MW-17-4DMS	KWG1205366-2	J:\MS16\DATA\052412-521\0524008.D	05/24/12	17:10
Method Blank	KWG1205366-4	J:\MS16\DATA\060512-521\0605003.D	06/05/12	16:15

Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Raw Data

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Collected: 05/15/2012
Date Received: 05/15/2012

Nitrosamines by EPA 521

Sample Name: MW-17-4
Lab Code: P1201921-002

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	1.0	J	2.0	0.32	1	05/22/12	05/24/12	KWG1205366	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	87	70-130	05/24/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\052412-521\0524006.D
Lab ID: P1201921-002
RunType: SMPL
Matrix: WATER

Date Acquired: 05/24/2012 15:45
Date Quantitated: 05/24/2012 18:33
Batch ID: KWG1205781
Analysis Method: 521
ListJoinID: LJ11419

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA		x
Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Analyte Exceptions

Exception Categories	Analyte Name	Result	Low Limit	High Limit	Corrective Action
MB Surrogate Recovery	N-Nitrosodimethylamine-d6	53	70	130	see narr

Primary Review: 6/11/12

Secondary Review: _____

Quantitation Report

Data File:	J:\MS16\DATA\052412-521\0524006.D			**Instrument:**	MS16
Acqu Date:	05/24/2012 15:45	**Quant Date:**	05/24/2012 18:33	**Vial:**	11
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201921-002			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**	05/15/2012	**Receive Date:**	05/15/2012

Analysis Lot:	KWG1205781	**Prep Lot:**	KWG1205366	**Report Group:**	P1201921
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1128560	**Prep Date:**	05/22/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:	Nitrosamines by EPA 521	**Report List ID:**	LJ11419
Tune Ref:	J:\MS16\DATA\052412-521\0524001.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\052312-521\0523004.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.61	0.02	97	28529	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.90	0.00	0.00	50	19592	8.70	87	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	11.04	0.02	0.00	47	217	0.5000	1.0	J	NR

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052412-521\0524006.D Vial: 11
Acq On : 24 May 12 15:45 Operator: SVO-DW
Sample : P1201921-002 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 18:33:39 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.61	97	28529	50.00	ug/L	0.03
System Monitoring Compounds						
3) NDMA-d6	10.90	50	19592	8.70	ug/L	-0.05
Target Compounds						Qvalue
4) NDMA	11.04	47	217	0.50	ug/L	77
8) NPYR	23.15	55	862	0.82	ug/L	94

(#) = qualifier out of range (m) = manual integration
0524006.D 031112_D14.M Thu May 31 12:12:27 2012 Page 1

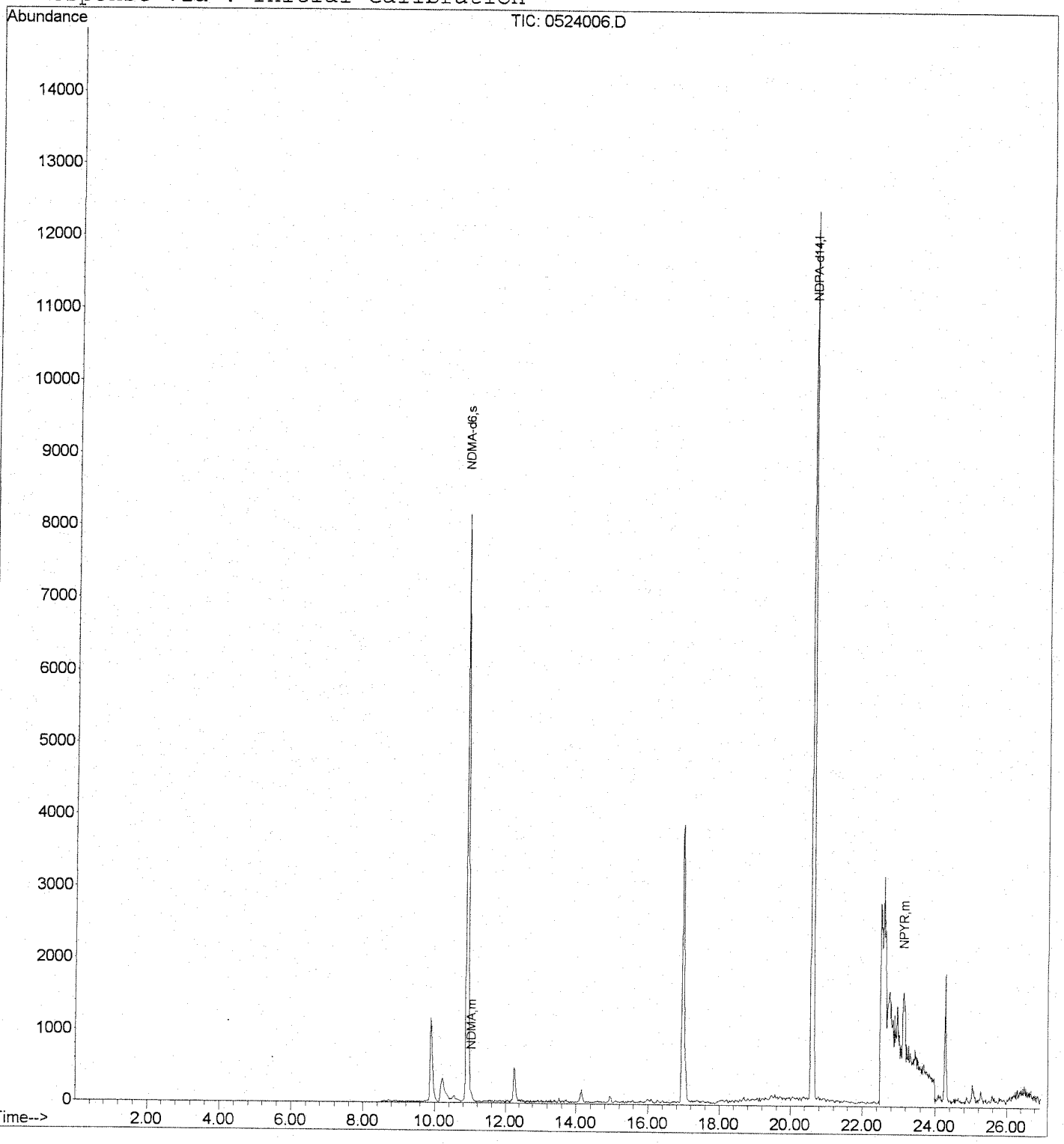
Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052412-521\0524006.D
Acq On : 24 May 12 15:45
Sample : P1201921-002
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 18:33 2012

Vial: 11
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00

Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Collected: NA
Date Received: NA

Nitrosamines by EPA 521

Sample Name: Method Blank
Lab Code: KWG1205366-4

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**1.9**	J	2.0	0.32	1	05/22/12	06/05/12	KWG1205366	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	91	70-130	06/05/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\060512-521\0605003.D
Lab ID: KWG1205366-4
RunType: MB
Matrix: WATER

Date Acquired: 06/05/2012 16:15
Date Quantitated: 06/06/2012 10:25
Batch ID: KWG1206337
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 6/12/12

Secondary Review: _____

Quantitation Report

Data File:	J:\MS16\DATA\060512-521\0605003.D			**Instrument:**	MS16
Acqu Date:	06/05/2012 16:15	**Quant Date:**	06/06/2012 10:25	**Vial:**	3
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1205366-4			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	05/22/2012

Analysis Lot:	KWG1206337	**Prep Lot:**	KWG1205366	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1128569	**Prep Date:**	05/22/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\060512-521\0605001.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	-0.02	97	36352	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.88	0.00	0.00	50	26314	9.06	91	70-130 OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	11.02	0.03	0.00	47	1286	0.9700	1.94	J	
1	N-Nitrosomethylethylamine				61	0		0.50	U	
1	N-Nitrosodiethylamine				75	0		0.76	U	
1	N-Nitrosodi-n-propylamine				89	0		0.76	U	
1	N-Nitrosopyrrolidine	23.10	-0.13	-0.01	55	946	0.7900	1.58	J	
1	N-Nitrosopiperidine				69	0		0.55	U	
1	N-Nitrosodi-n-butylamine				57	0		0.77	U	

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\060512-521\0605003.D Vial: 3
Acq On : 05 Jun 12 16:15 Operator: SVO-DW
Sample : 052212 MB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Jun 06 10:25:15 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

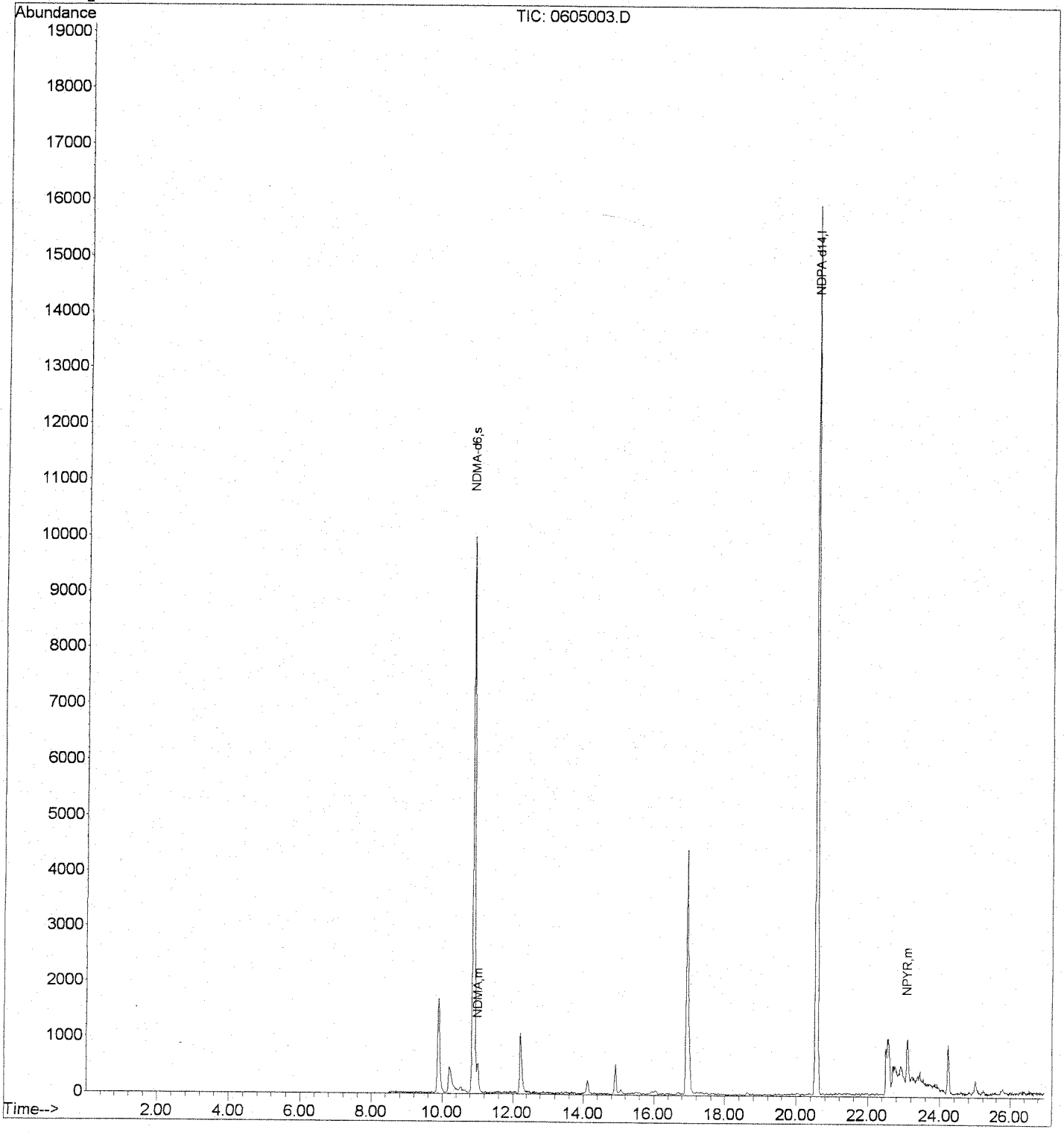
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	36352	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.88	50	26314	9.06	ug/L	-0.07
Target Compounds						Qvalue
4) NDMA	11.02	47	1286	0.97	ug/L	96
8) NPYR	23.10	55	946	0.79	ug/L	95

(#) = qualifier out of range (m) = manual integration
0605003.D 031112_D14.M Tue Jun 12 10:14:01 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\060512-521\0605003.D Vial: 3
Acq On : 05 Jun 12 16:15 Operator: SVO-DW
Sample : 052212 MB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Jun 6 10:25 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Collected: 05/15/2012
Date Received: 05/15/2012

Nitrosamines by EPA 521

Sample Name: MW-17-4MS
Lab Code: KWG1205366-1

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**20.8**		2.0	0.32	1	05/22/12	05/24/12	KWG1205366	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	73	70-130	05/24/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\052412-521\0524007.D
Lab ID: KWG1205366-1 -- P1201921-002MS
RunType: MS
Matrix: WATER

Date Acquired: 05/24/2012 16:27
Date Quantitated: 05/24/2012 18:33
Batch ID: KWG1205781
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 6/1/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\052412-521\0524007.D			**Instrument:**	MS16
Acqu Date:	05/24/2012 16:27	**Quant Date:**	05/24/2012 18:33	**Vial:**	12
Run Type:	MS			**Dilution:**	1.0
Lab ID:	KWG1205366-1 -- P1201921-002MS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	05/22/2012

Analysis Lot:	KWG1205781	**Prep Lot:**	KWG1205366	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1128566	**Prep Date:**	05/22/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\052412-521\0524001.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\052312-521\0523004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.62	0.03	97	31283	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.90	0.00	0.00	50	17248	7.32	73	70-130	OK	NR

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	11.03	0.01	0.00	47	21766	10.42	20.8		NR
1	N-Nitrosomethylethylamine	13.61	-0.01	0.00	61	21803	7.25	14.5		
1	N-Nitrosodiethylamine	15.74	0.01	0.00	75	3682	8.77	17.5		
1	N-Nitrosodi-n-propylamine	20.92		0.00	89	3022	8.16	16.3		
1	N-Nitrosopyrrolidine	23.27	-0.01	0.00	55	38095	8.70	17.4		
1	N-Nitrosopiperidine	24.19	-0.01	0.00	69	93357	11.61	23.2		
1	N-Nitrosodi-n-butylamine	26.42	-0.01	0.00	57	29375	11.12	22.2		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052412-521\0524007.D
Acq On : 24 May 12 16:27
Sample : P1201921-002 MS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 18:33:54 2012

Vial: 12
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00

Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.62	97	31283	50.00	ug/L	0.04
System Monitoring Compounds						
3) NDMA-d6	10.90	50	17248	7.32	ug/L	-0.05
Target Compounds						Qvalue
4) NDMA	11.03	47	21766	10.42	ug/L	95
5) NMEA	13.61	61	21803	7.25	ug/L	100
6) NDEA	15.74	75	3682	8.77	ug/L	100
7) NDPA	20.92	89	3022	8.16	ug/L	100
8) NPYR	23.27	55	38095	8.70	ug/L	94
9) NPIP	24.19	69	93357	11.61	ug/L	100
10) NDBA	26.42	57	29375	11.12	ug/L	100

(#) = qualifier out of range (m) = manual integration

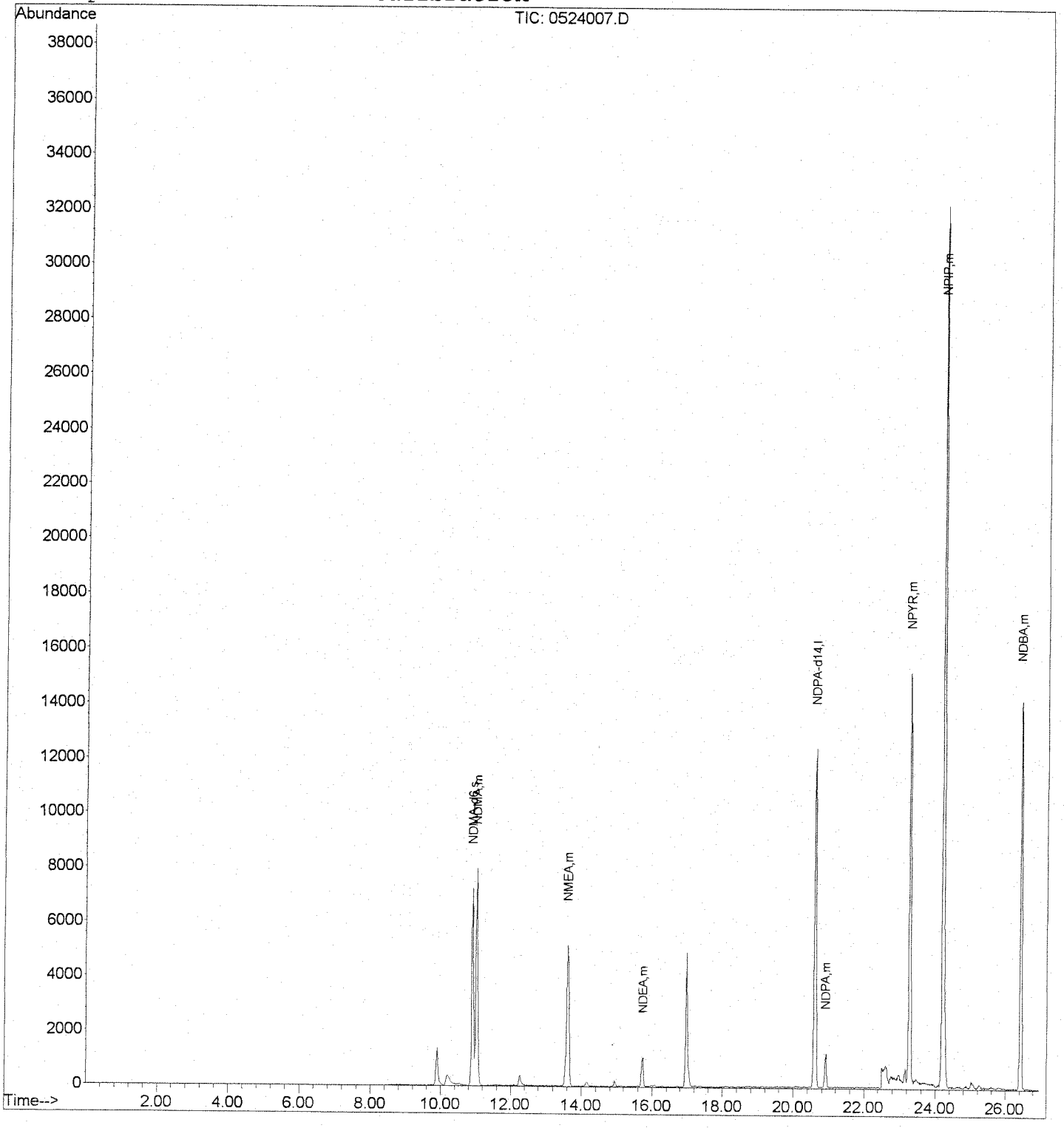
Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052412-521\0524007.D
Acq On : 24 May 12 16:27
Sample : P1201921-002 MS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 18:33 2012

Vial: 12
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00

Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Collected: 05/15/2012
Date Received: 05/15/2012

Nitrosamines by EPA 521

Sample Name: MW-17-4DMS
Lab Code: KWG1205366-2

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**18.**7		2.0	0.32	1	05/22/12	05/24/12	KWG1205366	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	71	70-130	05/24/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\052412-521\0524008.D
Lab ID: KWG1205366-2 -- P1201921-002DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/24/2012 17:10
Date Quantitated: 05/24/2012 18:34
Batch ID: KWG1205781
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 6/4/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\052412-521\0524008.D			**Instrument:**	MS16
Acqu Date:	05/24/2012 17:10	**Quant Date:**	05/24/2012 18:34	**Vial:**	13
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1205366-2 -- P1201921-002DMS			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	05/22/2012

Analysis Lot:	KWG1205781	**Prep Lot:**	KWG1205366	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1128567	**Prep Date:**	05/22/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\052412-521\0524001.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\052312-521\0523004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.61	0.02	97	37516	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.91	0.01	0.00	50	19903	7.11	71	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	11.02		0.00	47	23022	9.37	18.7		NR
1	N-Nitrosomethylethylamine	13.60	-0.02	0.00	61	24441	6.89	13.8		
1	N-Nitrosodiethylamine	15.71	-0.02	0.00	75	4182	8.41	16.8		
1	N-Nitrosodi-n-propylamine	20.91	-0.01	0.00	89	3341	7.66	15.3		
1	N-Nitrosopyrrolidine	23.29	0.01	0.00	55	45374	8.65	17.3		
1	N-Nitrosopiperidine	24.20		0.00	69	97637	10.35	20.7		
1	N-Nitrosodi-n-butylamine	26.43		0.00	57	20838	7.70	15.4		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052412-521\0524008.D Vial: 13
Acq On : 24 May 12 17:10 Operator: SVO-DW
Sample : P1201921-002 DMS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 18:34:09 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.61	97	37516	50.00	ug/L	0.04
System Monitoring Compounds						
3) NDMA-d6	10.91	50	19903	7.11	ug/L	-0.04
Target Compounds						Qvalue
4) NDMA	11.02	47	23022	9.37	ug/L	96
5) NMEA	13.60	61	24441	6.89	ug/L	100
6) NDEA	15.71	75	4182	8.41	ug/L	100
7) NDPA	20.91	89	3341	7.66	ug/L	100
8) NPYR	23.29	55	45374	8.65	ug/L	94
9) NPIP	24.20	69	97637	10.35	ug/L	100
10) NDBA	26.43	57	20838	7.70	ug/L	100

(#) = qualifier out of range (m) = manual integration
0524008.D 031112_D14.M Thu May 31 12:12:28 2012 Page 1

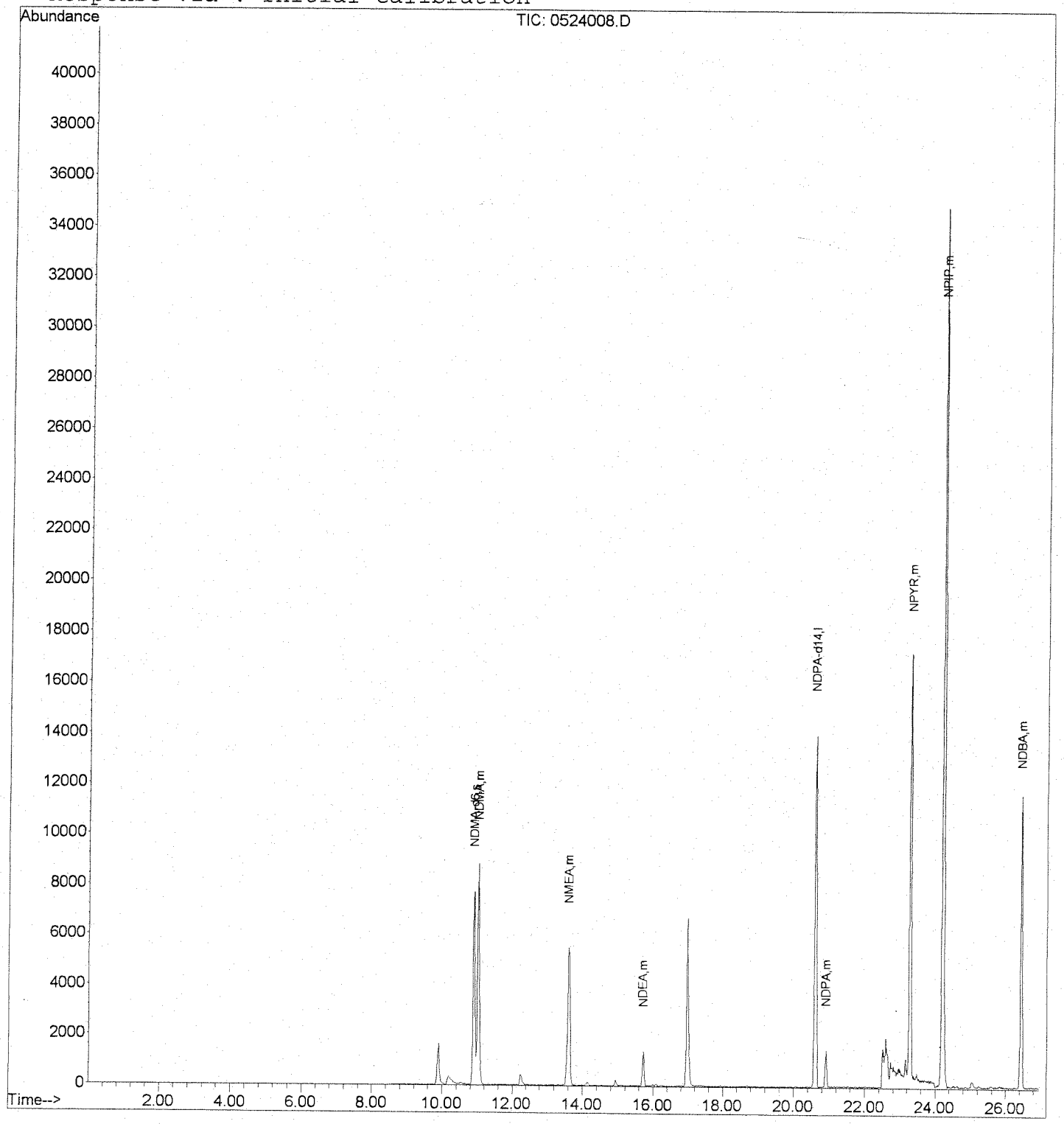
Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052412-521\0524008.D
Acq On : 24 May 12 17:10
Sample : P1201921-002 DMS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 18:34 2012

Vial: 13
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00

Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Collected: NA
Date Received: NA

Nitrosamines by EPA 521

Sample Name: Lab Control Sample
Lab Code: KWG1205366-3

Extraction Method: METHOD
Analysis Method: 521

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
N-Nitrosodimethylamine	**20.7**		2.0	0.32	1	05/22/12	05/23/12	KWG1205366	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
N-Nitrosodimethylamine-d6	84	70-130	05/23/12	Acceptable

Comments:

Exception Report

Data File: J:\MS16\DATA\052312-521\0523005.D
Lab ID: KWG1205366-3
RunType: LCS
Matrix: WATER

Date Acquired: 05/23/2012 15:23
Date Quantitated: 05/24/2012 10:38
Batch ID: KWG1205780
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Continuing Calibration Recovery (Closing)	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: 6/11/12

Secondary Review:

Printed: 05/31/2012 12:39:15
c:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS16\DATA\052312-521\0523005.D			**Instrument:**	MS16
Acqu Date:	05/23/2012 15:23	**Quant Date:**	05/24/2012 10:38	**Vial:**	5
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1205366-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	521 Nitrosamine	**Collect Date:**		**Receive Date:**	05/22/2012

Analysis Lot:	KWG1205780	**Prep Lot:**	KWG1205366	**Report Group:**	
Analysis Method:	521	**Prep Method:**	METHOD		
Prep Ref:	1128568	**Prep Date:**	05/22/2012		

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\052312-521\0523001.D	**Method ID:**	MJ808
MB Ref:	J:\MS16\DATA\052312-521\0523004.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.57	-0.02	97	31648	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.88	0.00	0.00	50	20706	8.37	84	70-130	OK	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	11.00		0.00	47	21793	10.33	20.7		
1	N-Nitrosomethylethylamine	13.59		0.00	61	25254	8.03	16.1		
1	N-Nitrosodiethylamine	15.69		0.00	75	2625	6.70	13.4		
1	N-Nitrosodi-n-propylamine	20.89		0.00	89	3784	9.63	19.3		
1	N-Nitrosopyrrolidine	23.24	-0.01	0.00	55	42605	9.48	19.0		
1	N-Nitrosopiperidine	24.18	0.01	0.00	69	87463	10.89	21.8		
1	N-Nitrosodi-n-butylamine	26.40	-0.01	0.00	57	23070	9.32	18.6		

Prep Amount:	500 ml	**Dilution:**	1.0
Prep Final Vol:	1 ml	**Unit Factor:**	1000

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
P: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052312-521\0523005.D Vial: 5
Acq On : 23 May 12 15:23 Operator: SVO-DW
Sample : 052212 LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:38:13 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

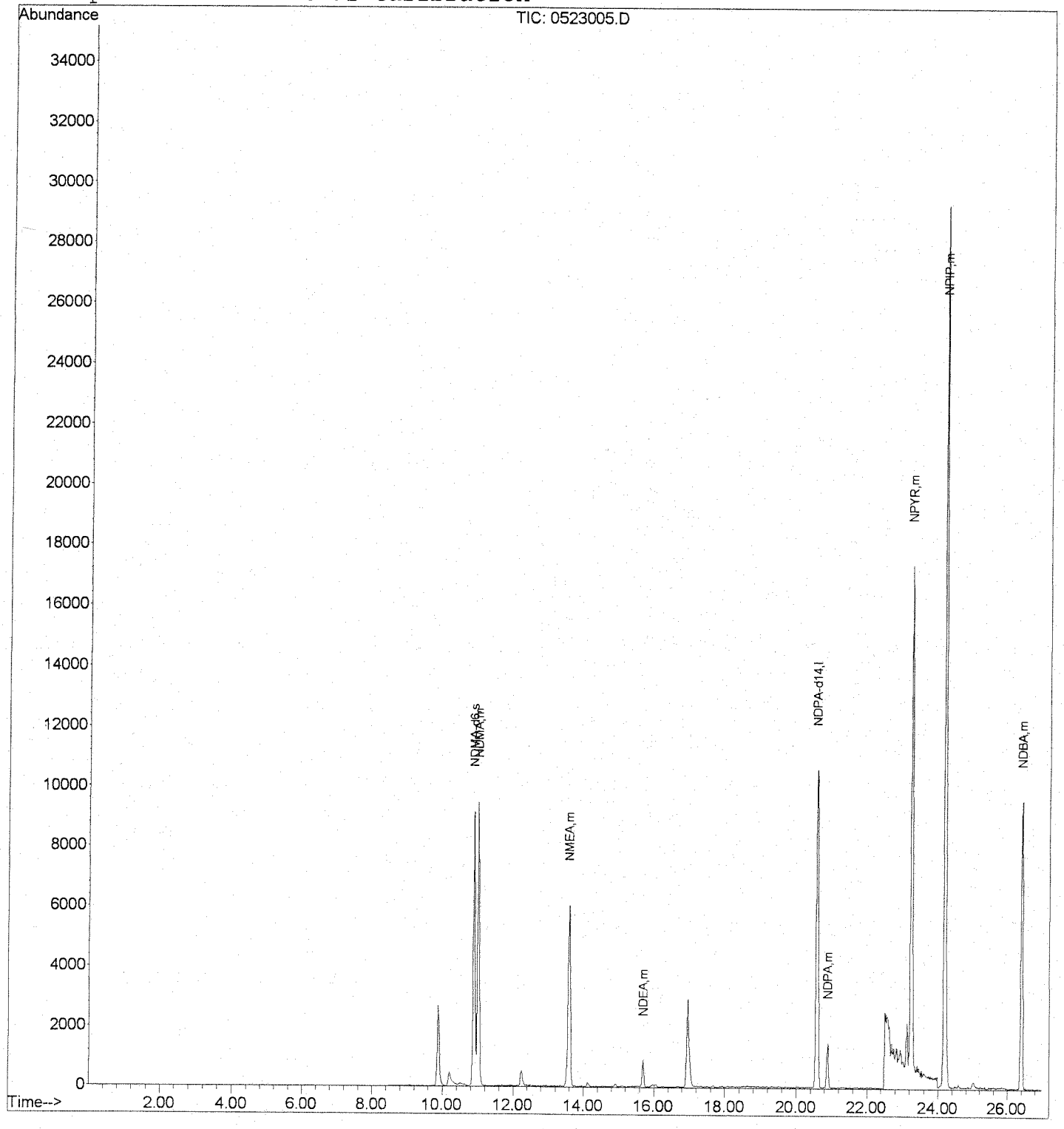
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	31648	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.88	50	20706	8.37	ug/L	-0.07
Target Compounds						Qvalue
4) NDMA	11.00	47	21793	10.33	ug/L	99
5) NMEA	13.59	61	25254	8.03	ug/L	100
6) NDEA	15.69	75	2625	6.70	ug/L	100
7) NDPA	20.89	89	3784	9.63	ug/L	100
8) NPYR	23.24	55	42605	9.48	ug/L	95
9) NPIP	24.18	69	87463	10.89	ug/L	100
10) NDBA	26.40	57	23070	9.32	ug/L	100

(#) = qualifier out of range (m) = manual integration
0523005.D 031112_D14.M Thu May 31 12:05:19 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052312-521\0523005.D Vial: 5
Acq On : 23 May 12 15:23 Operator: SVO-DW
Sample : 052212 LCS Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:38 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Standards Data

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Level ID	File ID
A	J:\MS16\DATA\031112-521\0311005.D
B	J:\MS16\DATA\031112-521\0311006.D
C	J:\MS16\DATA\031112-521\0311007.D
D	J:\MS16\DATA\031112-521\0311008.D
E	J:\MS16\DATA\031112-521\0311009.D
F	J:\MS16\DATA\031112-521\0311010.D
G	J:\MS16\DATA\031112-521\0311011.D
H	J:\MS16\DATA\031112-521\0311012.D
I	J:\MS16\DATA\031112-521\0311013.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
N-Nitrosodimethylamine-d6							C	1.0	1.28	D	2.0	2.08	E	5.0	2.86
	F	7.0	3.66	G	10	4.73	H	15	4.42	I	20	5.18			
N-Nitrosodimethylamine				B	0.50	1.18	C	1.0	1.63	D	2.0	2.42	E	5.0	2.51
	F	7.0	3.11	G	10	3.75	H	15	3.50	I	20	3.88			

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Calibration Date: 03/11/2012

Initial Calibration Summary
Nitrosamines by EPA 521

Calibration ID: CAL11326
Instrument ID: MS16

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
N-Nitrosodimethylamine-d6	SURR	Quadratic	COD	0.992		≥ 0.99	3.46		
N-Nitrosodimethylamine	MS	Quadratic	COD	0.994		≥ 0.99	2.75		

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Calibration Date: 03/11/2012
Date Analyzed: 03/12/2012

Second Source Calibration Verification
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration ID: CAL11326
Units: ug/L

File ID: J:\MS16\DATA\031112-521\0311014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine	10	7.7	2.75	2.42	NA	-23	± 30 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Injection Log

ICAL 11326

Directory: J:\MS16\DATA\031112-521

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		0311.D	1.	DCM		
2	1	0311001.D	1.	DWSTD5-49H 0.25 PPB		11 Mar 2012 29:0
3	2	0311002.D	1.	DWSTD5-49I 0.5 PPB		11 Mar 2012 29:4
4	13	0311003.D	1.	K1201175-002 MS		11 Mar 2012 30:2
5		0311004.D	1.	DCM		11 Mar 2012 31:1
6	1	0311005.D	1.	DWSTD5-42H 0.25 PPB		11 Mar 2012 31:5
7	2	0311006.D	1.	DWSTD5-51J 0.5 PPB		11 Mar 2012 32:3
8	3	0311007.D	1.	DWSTD5-50A 1 PPB		11 Mar 2012 33:2
9	4	0311008.D	1.	DWSTD5-42J 2 PPB		11 Mar 2012 34:0
10	5	0311009.D	1.	DWSTD5-48P 5 PPB		11 Mar 2012 34:4
11	6	0311010.D	1.	DWSTD5-43P 7 PPB		11 Mar 2012 35:2
12	7	0311011.D	1.	DWSTD5-42G 10 PPB		12 Mar 2012 12:1
13	8	0311012.D	1.	DWSTD5-42L 15 PPB		12 Mar 2012 12:5
14	9	0311013.D	1.	DWSTD5-42M 20 PPB		12 Mar 2012 13:3
15	10	0311014.D	1.	DWSTD5-50B ICV 10		12 Mar 2012 14:1
16		0311015.D	1.	DCM		12 Mar 2012 15:0
17	3	0311016.D	1.	DWSTD5-49J 1 PPB		12 Mar 2012 15:4
18	11	0311017.D	1.	K1201175-001		12 Mar 2012 16:2
19	12	0311018.D	1.	K1201175-002		12 Mar 2012 17:0
20	13	0311019.D	1.	K1201175-002 MS		12 Mar 2012 17:5
21	14	0311020.D	1.	K1201175-002 DMS		12 Mar 2012 18:3
						12 Mar 2012 19:1

3/12/14

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311005.D Vial: 1
Acq On : 11 Mar 12 20:38 Operator: SVO-DW
Sample : DWSTD5-42H 0.25 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:54 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	27591	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	162	0.43	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.11	47	496	0.34	ug/L	100
5) NMEA	13.63	61	240	0.38	ug/L	98

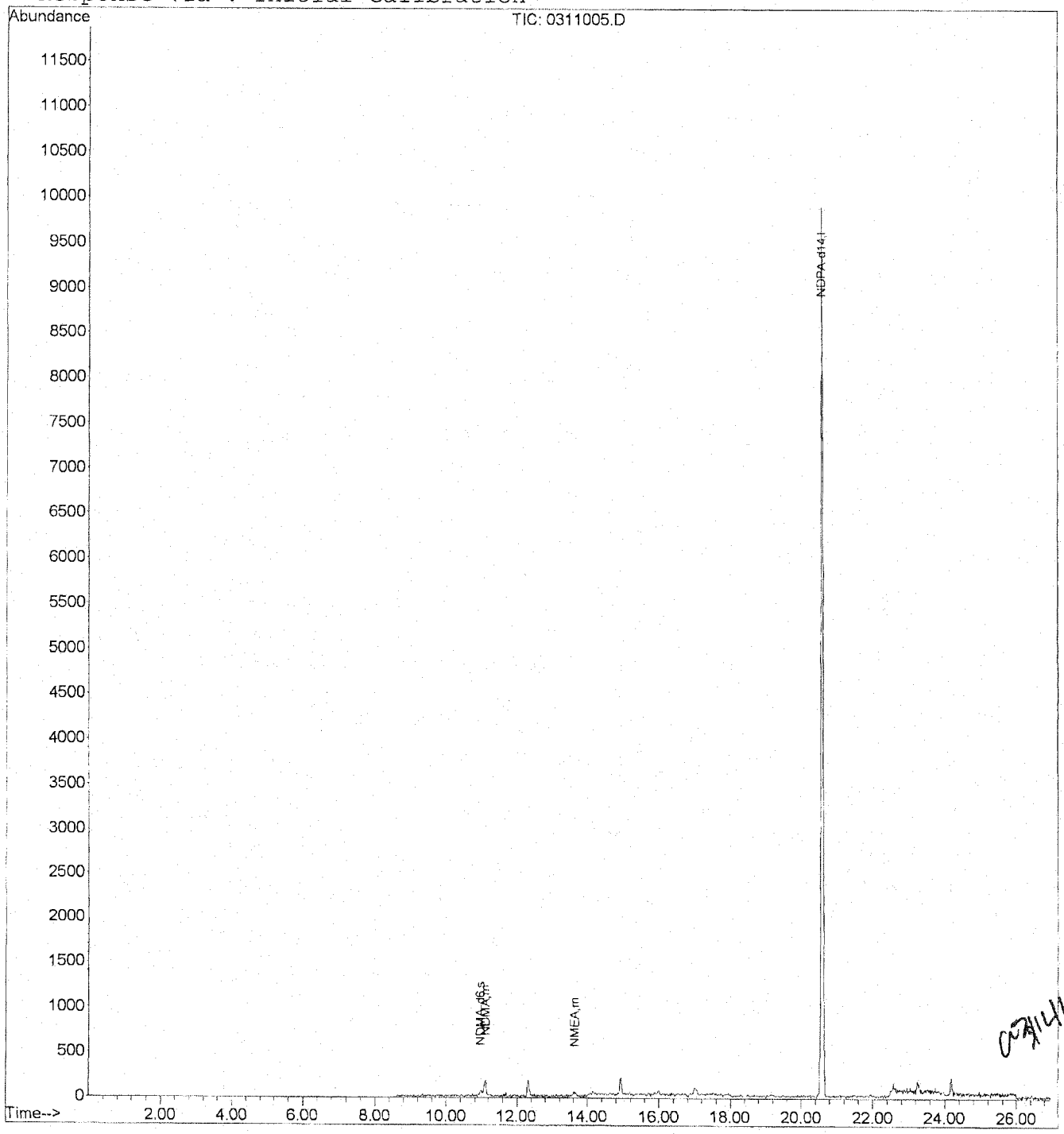
03/12/12

(#) = qualifier out of range (m) = manual integration
0311005.D 031112_D14.M Mon Mar 12 08:23:18 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311005.D Vial: 1
Acq On : 11 Mar 12 20:38 Operator: SVO-DW
Sample : DWSTD5-42H 0.25 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:18 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311005.D 031112_D14.M Mon Mar 12 08:23:19 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311006.D Vial: 2
Acq On : 11 Mar 12 21:21 Operator: SVO-DW
Sample : DWSTD5-51J 0.5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:54 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	28801	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	288	0.51	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	340	0.24	ug/L	99
5) NMEA	13.64	61	513	0.55	ug/L	98
8) NPYR	23.26	55	613	0.34	ug/L	100
9) NPIP	24.18	69	993	0.37	ug/L	99

3/12/12

(#) = qualifier out of range (m) = manual integration
0311006.D 031112_D14.M Mon Mar 12 08:23:20 2012 Page 1

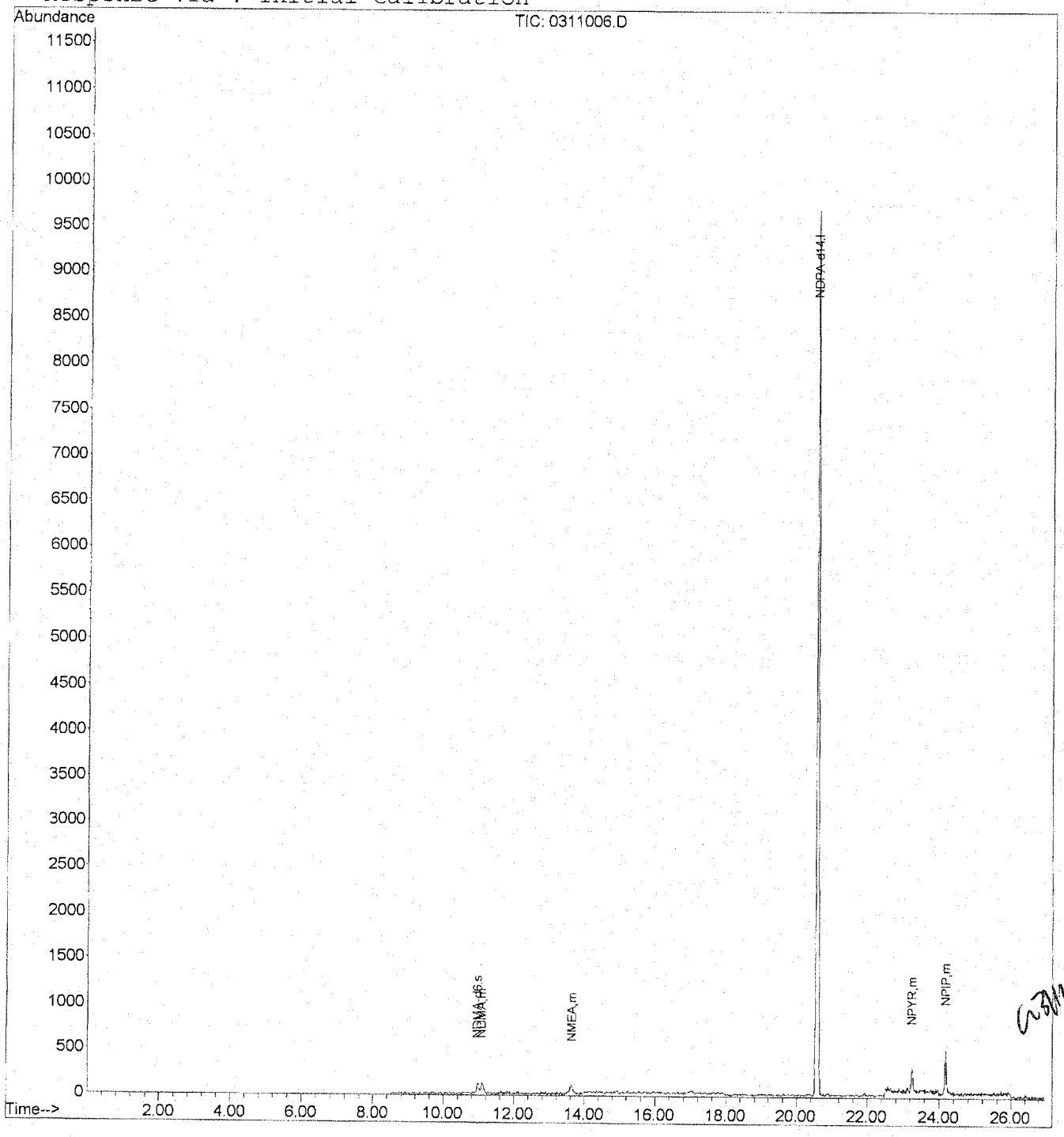
Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311006.D
Acq On : 11 Mar 12 21:21
Sample : DWSTD5-51J 0.5 PPB
Misc :
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012

Vial: 2
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00

Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



6/14/12

0311006.D 031112_D14.M Mon Mar 12 08:23:21 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311007.D Vial: 3
Acq On : 11 Mar 12 22:04 Operator: SVO-DW
Sample : DWSTD5-50A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

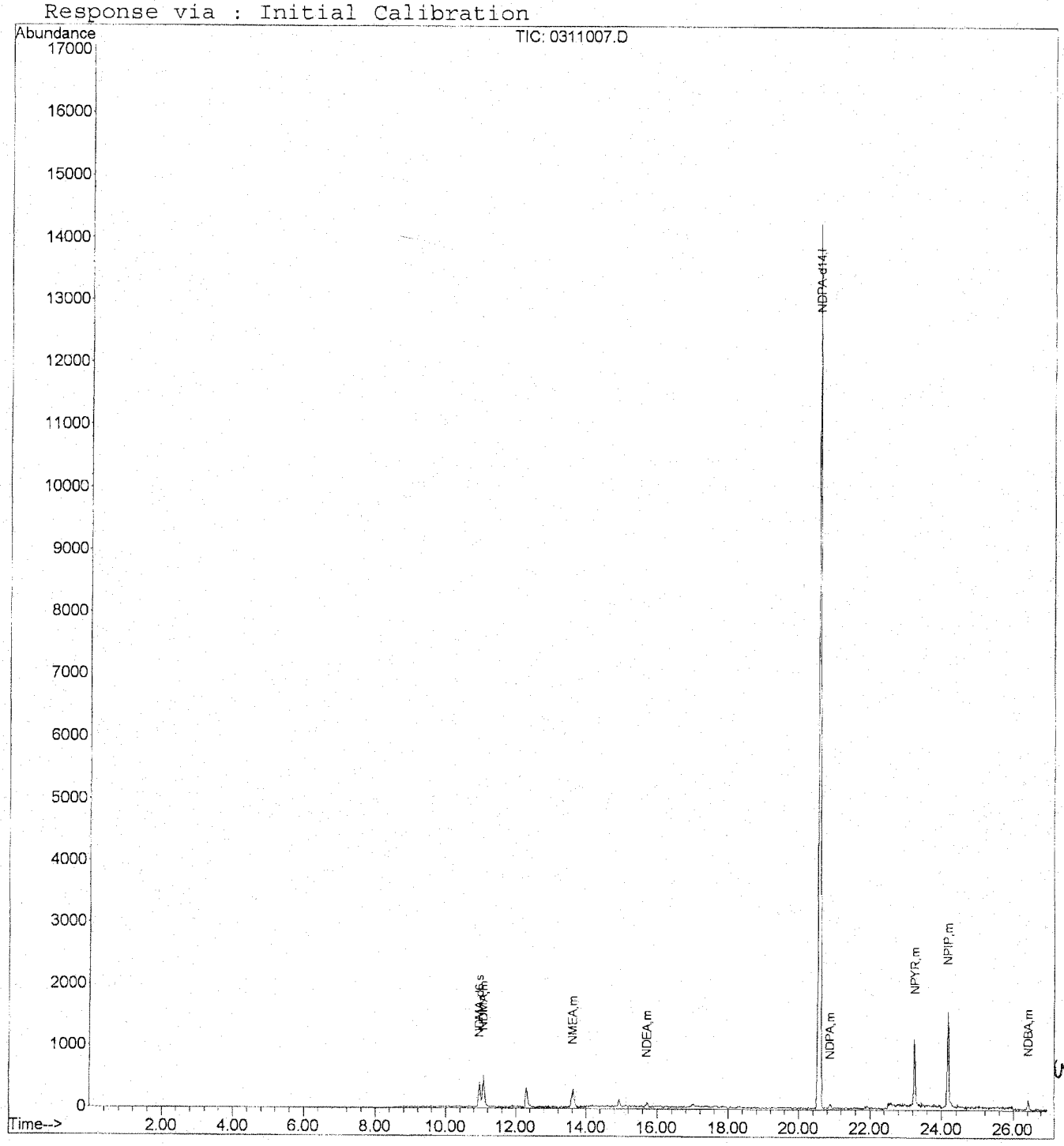
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	38374	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.97	50	981	0.83	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	1254	0.57	ug/L	98
5) NMEA	13.63	61	1290	0.84	ug/L	99
6) NDEA	15.73	75	176	1.02	ug/L	100
7) NDPA	20.89	89	119	0.47	ug/L	100
8) NPYR	23.25	55	2466	0.76	ug/L	100
9) NPIP	24.17	69	3591	0.68	ug/L	99
10) NDBA	26.43	57	181	0.76	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311007.D 031112_D14.M Mon Mar 12 08:23:22 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311007.D Vial: 3
Acq On : 11 Mar 12 22:04 Operator: SVO-DW
Sample : DWSTD5-50A 1 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311007.D 031112_D14.M Mon Mar 12 08:23:22 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311008.D Vial: 4
Acq On : 11 Mar 12 22:46 Operator: SVO-DW
Sample : DWSTD5-42J 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.58	97	29381	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.97	50	2445	1.96	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	2840	1.57	ug/L	98
5) NMEA	13.63	61	2984	1.97	ug/L	99
6) NDEA	15.73	75	437	1.98	ug/L	100
7) NDPA	20.90	89	343	1.41	ug/L	100
8) NPYR	23.26	55	5523	1.89	ug/L	100
9) NPIP	24.18	69	8481	1.66	ug/L	99
10) NDBA	26.43	57	1130	1.19	ug/L	100

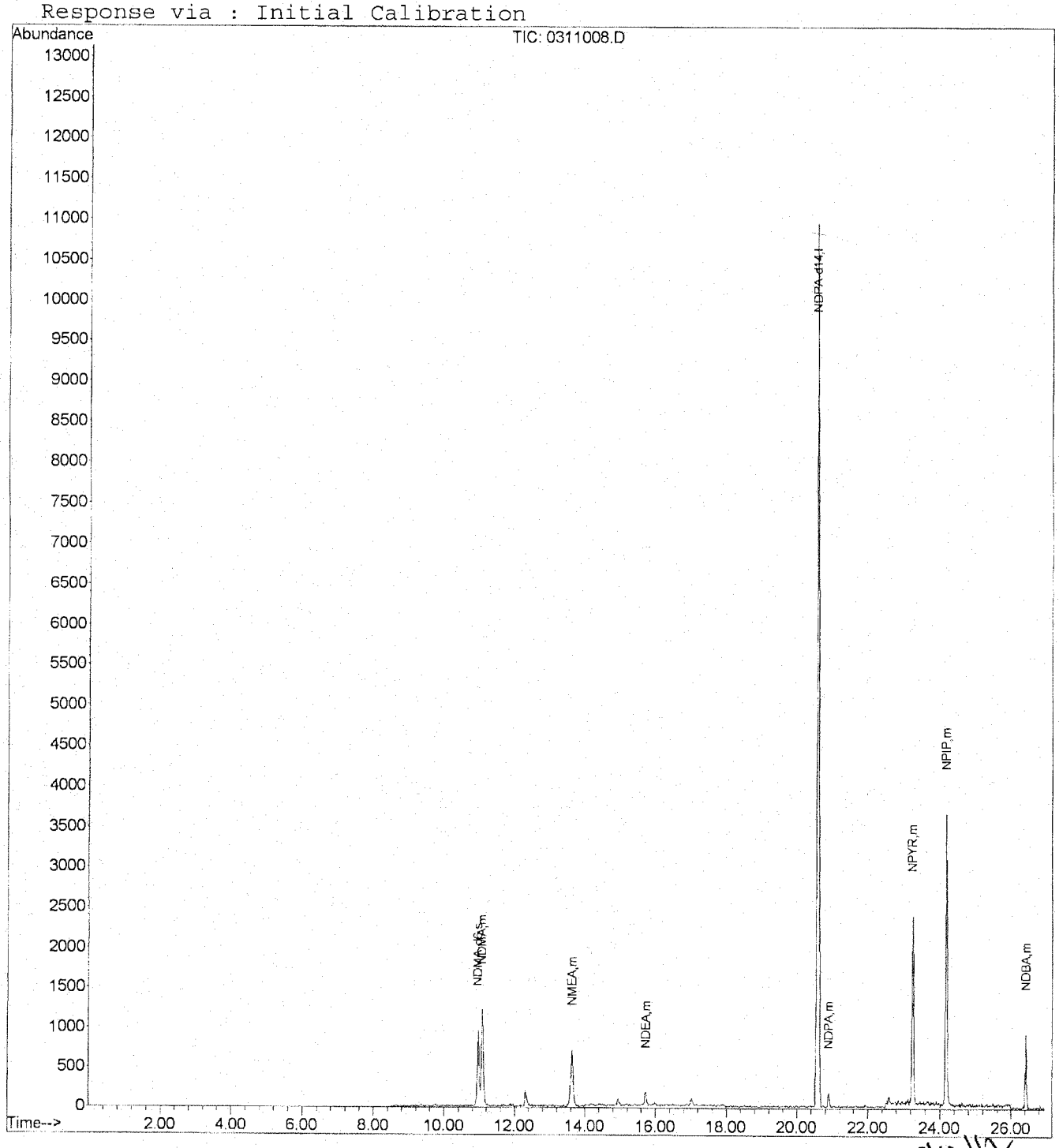
3/12/12

(#) = qualifier out of range (m) = manual integration
0311008.D 031112_D14.M Mon Mar 12 08:23:24 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311008.D Vial: 4
Acq On : 11 Mar 12 22:46 Operator: SVO-DW
Sample : DWSTD5-42J 2 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311008.D 031112_D14.M Mon Mar 12 08:23:24 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311009.D Vial: 5
Acq On : 11 Mar 12 23:28 Operator: SVO-DW
Sample : DWSTD5-48P 5 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:55 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	30053	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.95	50	8605	5.32	ug/L	0.06
Target Compounds						Qvalue
4) NDMA	11.07	47	7538	3.83	ug/L	98
5) NMEA	13.63	61	11231	5.57	ug/L	99
6) NDEA	15.73	75	1840	5.66	ug/L	100
7) NDPA	20.90	89	1496	4.59	ug/L	100
8) NPYR	23.26	55	17249	4.88	ug/L	99
9) NPIP	24.18	69	31523	4.94	ug/L	99
10) NDBA	26.43	57	8214	3.74	ug/L	100

3/12/12

(#) = qualifier out of range (m) = manual integration
0311009.D 031112_D14.M Mon Mar 12 08:23:25 2012 Page 1

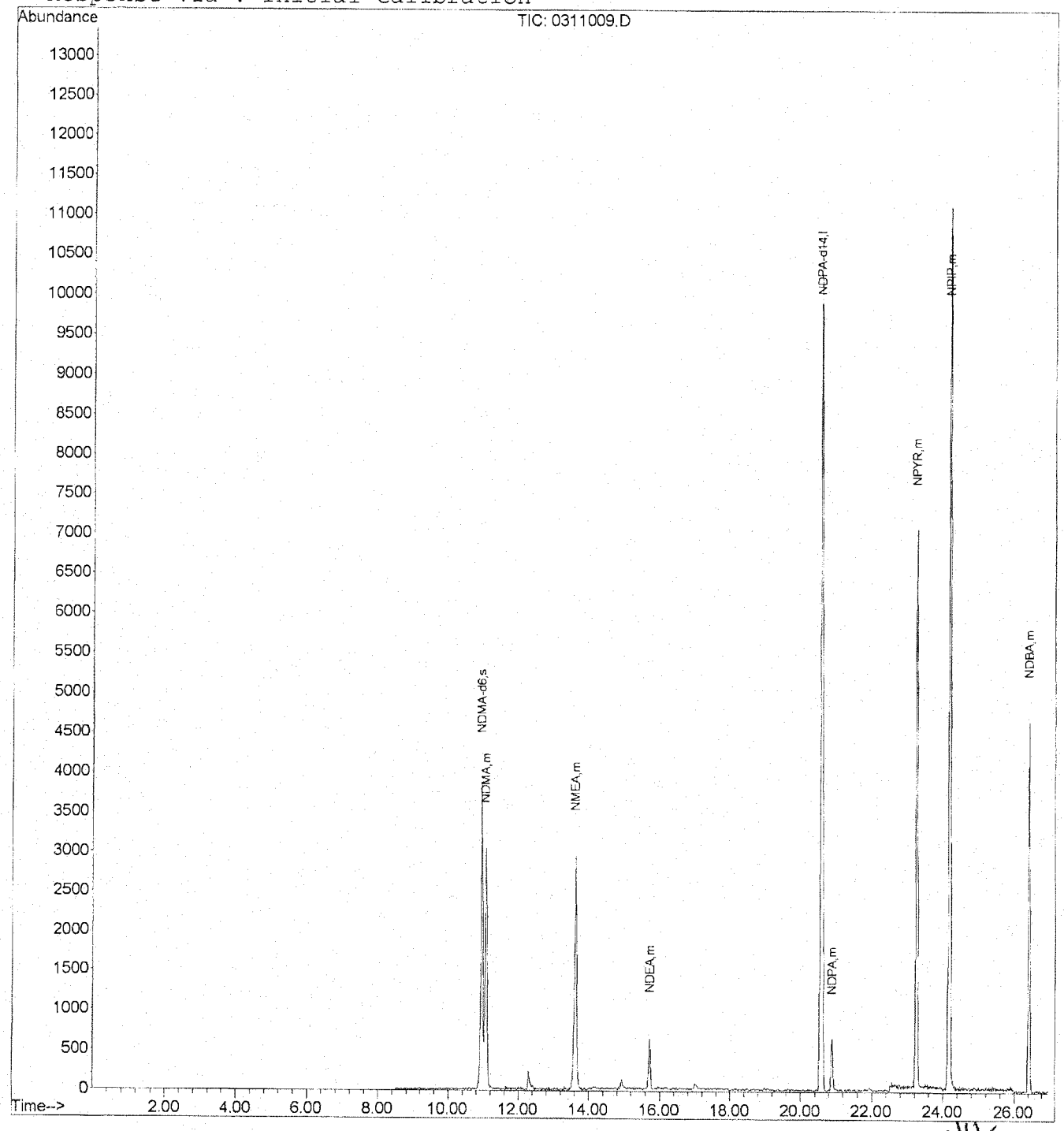
Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311009.D
Acq On : 11 Mar 12 23:28
Sample : DWSTD5-48P 5 PPB
Misc :
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012

Vial: 5
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00

Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311009.D 031112_D14.M Mon Mar 12 08:23:26 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311010.D Vial: 6
Acq On : 12 Mar 2012 00:11 Operator: SVO-DW
Sample : DWSTD5-43P 7 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:56 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	24830	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.97	50	12740	8.40	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	10802	6.36	ug/L	100
5) NMEA	13.64	61	17148	8.81	ug/L	99
6) NDEA	15.71	75	2090	7.20	ug/L	100
7) NDPA	20.90	89	1908	6.34	ug/L	100
8) NPYR	23.26	55	22562	7.05	ug/L	100
9) NPIP	24.19	69	40716	7.10	ug/L	99
10) NDBA	26.43	57	12687	5.81	ug/L	100

(#) = qualifier out of range (m) = manual integration
0311010.D 031112_D14.M Mon Mar 12 08:23:27 2012 Page 1

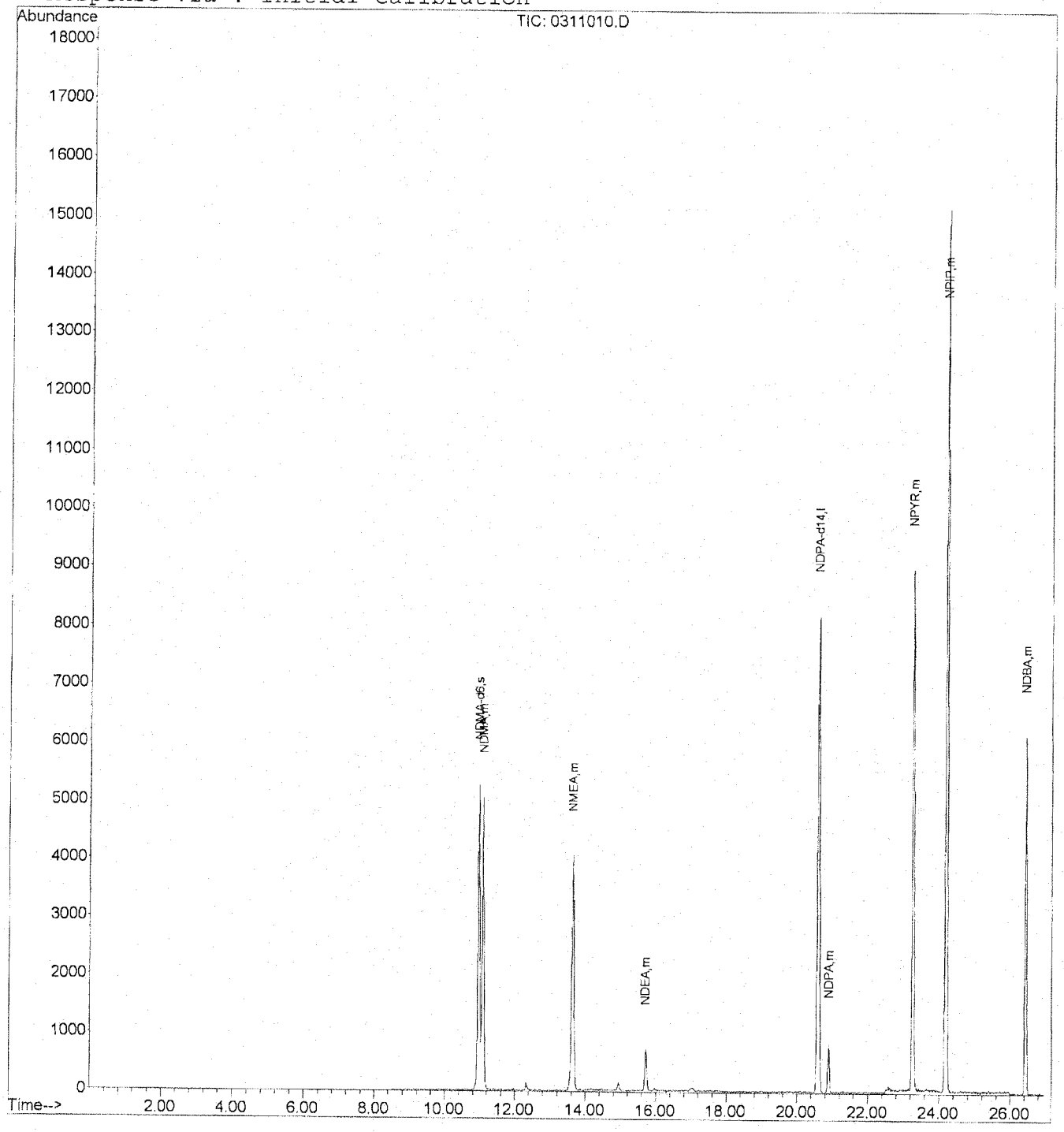
Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311010.D
Acq On : 12 Mar 2012 00:11
Sample : DWSTD5-43P 7 PPB
Misc :
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012

Vial: 6
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00

Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311010.D 031112_D14.M Mon Mar 12 08:23:27 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311011.D Vial: 7
Acq On : 12 Mar 2012 00:53 Operator: SVO-DW
Sample : DWSTD5-42G 10 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:56 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	23331	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.96	50	22064	13.23	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.08	47	17491	10.29	ug/L	97
5) NMEA	13.63	61	27747	12.90	ug/L	99
6) NDEA	15.74	75	3394	10.82	ug/L	100
7) NDPA	20.89	89	3130	9.38	ug/L	100
8) NPYR	23.27	55	36060	10.55	ug/L	100
9) NPIP	24.18	69	61376	10.26	ug/L	99
10) NDBA	26.44	57	19158	8.10	ug/L	100

3/12/12

(#) = qualifier out of range (m) = manual integration
0311011.D 031112_D14.M Mon Mar 12 08:23:29 2012 Page 1

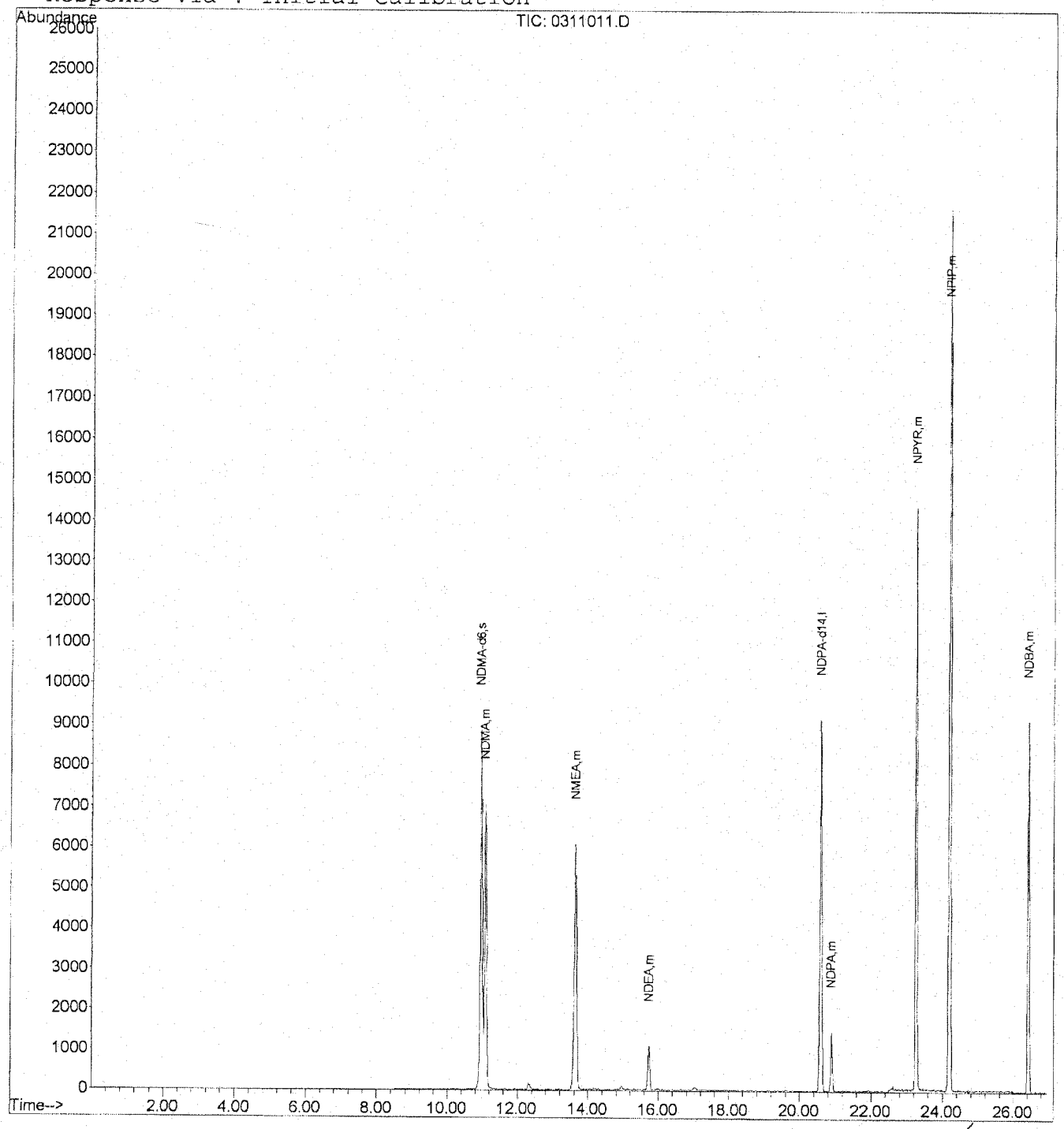
Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311011.D
Acq On : 12 Mar 2012 00:53
Sample : DWSTD5-42G 10 PPB
Misc :
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012

Vial: 7
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00

Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311011.D 031112_D14.M Mon Mar 12 08:23:29 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311012.D Vial: 8
Acq On : 12 Mar 2012 01:36 Operator: SVO-DW
Sample : DWSTD5-42L 15 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.60	97	28601	50.00	ug/L	0.03
System Monitoring Compounds						
3) NDMA-d6	10.97	50	37928	16.79	ug/L	0.08
Target Compounds						Qvalue
4) NDMA	11.09	47	29994	13.71	ug/L	100
5) NMEA	13.63	61	50017	16.69	ug/L	100
6) NDEA	15.71	75	6644	15.10	ug/L	100
7) NDPA	20.90	89	6020	12.66	ug/L	100
8) NPYR	23.26	55	67126	14.25	ug/L	100
9) NPIP	24.19	69	113622	13.93	ug/L	99
10) NDBA	26.43	57	42125	12.04	ug/L	100

03/12/12

(#) = qualifier out of range (m) = manual integration
0311012.D 031112_D14.M Mon Mar 12 08:23:30 2012 Page 1

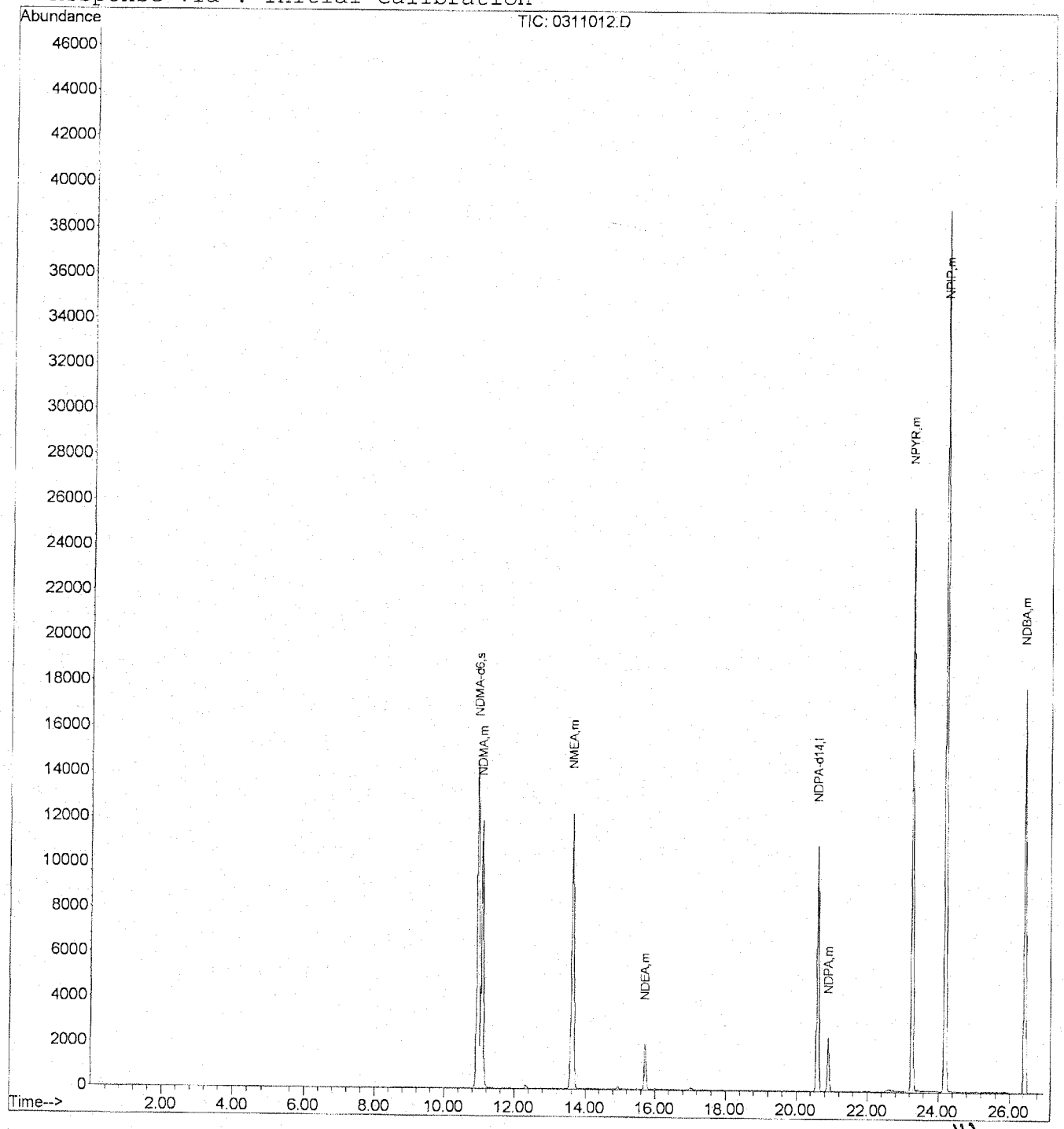
Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311012.D
Acq On : 12 Mar 2012 01:36
Sample : DWSTD5-42L 15 PPB
Misc :
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012

Vial: 8
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00

Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



0311012.D 031112_D14.M Mon Mar 12 08:23:31 2012 Page 2

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311013.D Vial: 9
Acq On : 12 Mar 2012 02:18 Operator: SVO-DW
Sample : DWSTD5-42M 20 PPB Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:17:57 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 030312_D14.m MJ808 CAL 11307
Last Update : Sun Mar 04 15:00:27 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.60	97	29929	50.00	ug/L	0.03
System Monitoring Compounds						
3) NDMA-d6	10.96	50	62054	22.72	ug/L	0.07
Target Compounds						Qvalue
4) NDMA	11.08	47	46487	18.92	ug/L	99
5) NMEA	13.64	61	86114	22.95	ug/L	99
6) NDEA	15.73	75	11096	20.76	ug/L	100
7) NDPA	20.90	89	9412	16.35	ug/L	100
8) NPYR	23.28	55	96259	17.71	ug/L	100
9) NPIP	24.19	69	172721	18.16	ug/L	100
10) NDBA	26.45	57	66211	15.71	ug/L	100

3/14/12

(#) = qualifier out of range (m) = manual integration
0311013.D 031112_D14.M Mon Mar 12 08:23:32 2012 Page 1

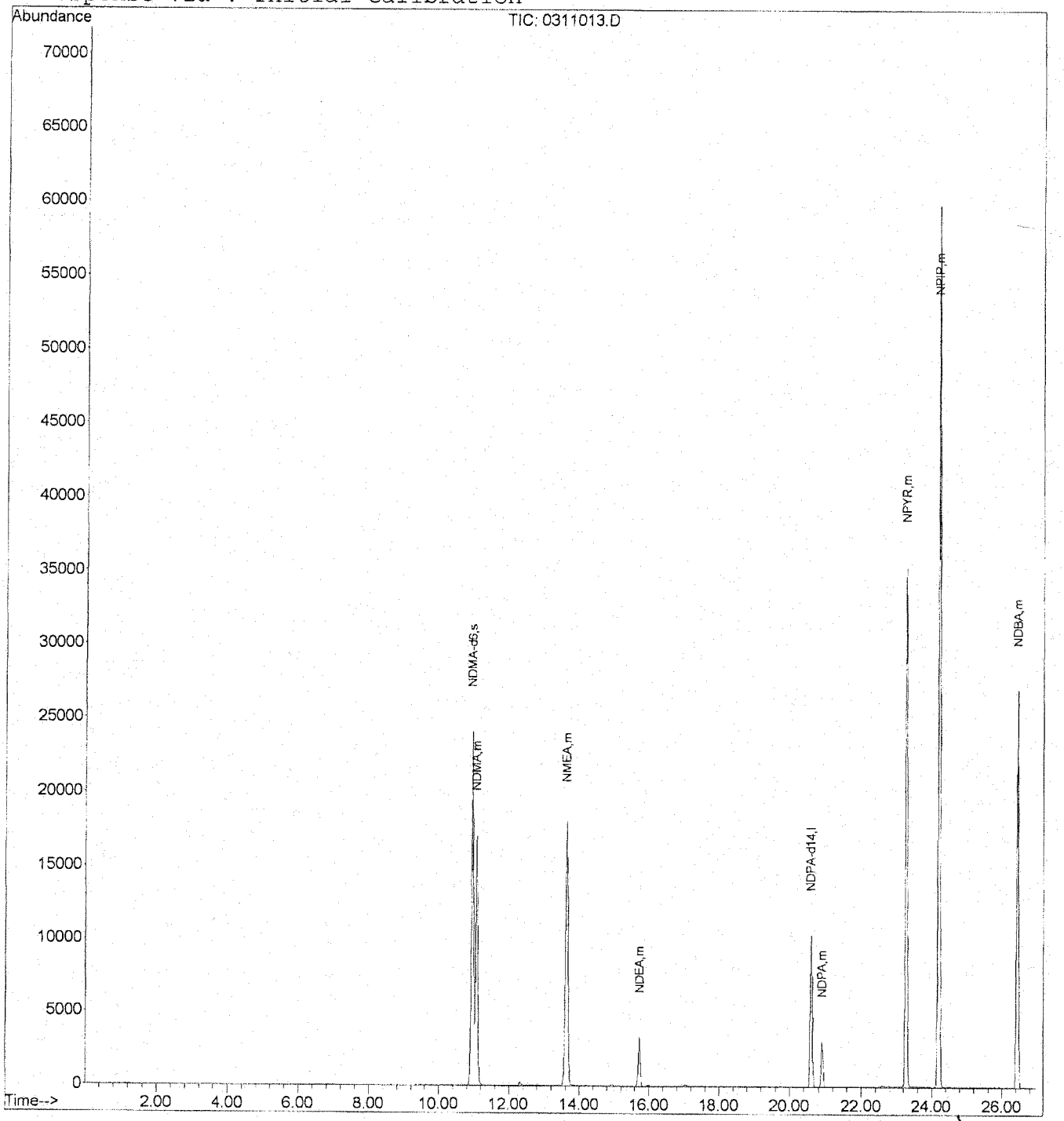
Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\031112-521\0311013.D
Acq On : 12 Mar 2012 02:18
Sample : DWSTD5-42M 20 PPB
Misc :
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:17 2012

Vial: 9
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00

Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:21:24 2012
Response via : Initial Calibration



03/14/12

Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\031112-521\0311014.D Vial: 10
Acq On : 12 Mar 2012 03:01 Operator: SVO-DW
Sample : DWSTD5-50B ICV 10 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 08:40:42 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	25007	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	0.00	50	0	0.00	ug/L	
Target Compounds						Qvalue
4) NDMA	11.08	47	12119	7.67	ug/L	97
5) NMEA	13.62	61	20016	8.05	ug/L	100
6) NDEA	15.71	75	2597	7.97	ug/L	100
7) NDPA	20.89	89	2542	8.49	ug/L	100
8) NPYR	23.26	55	28231	8.16	ug/L	94
9) NPIP	24.19	69	49441	8.21	ug/L	100
10) NDBA	26.43	57	15154	8.18	ug/L	100

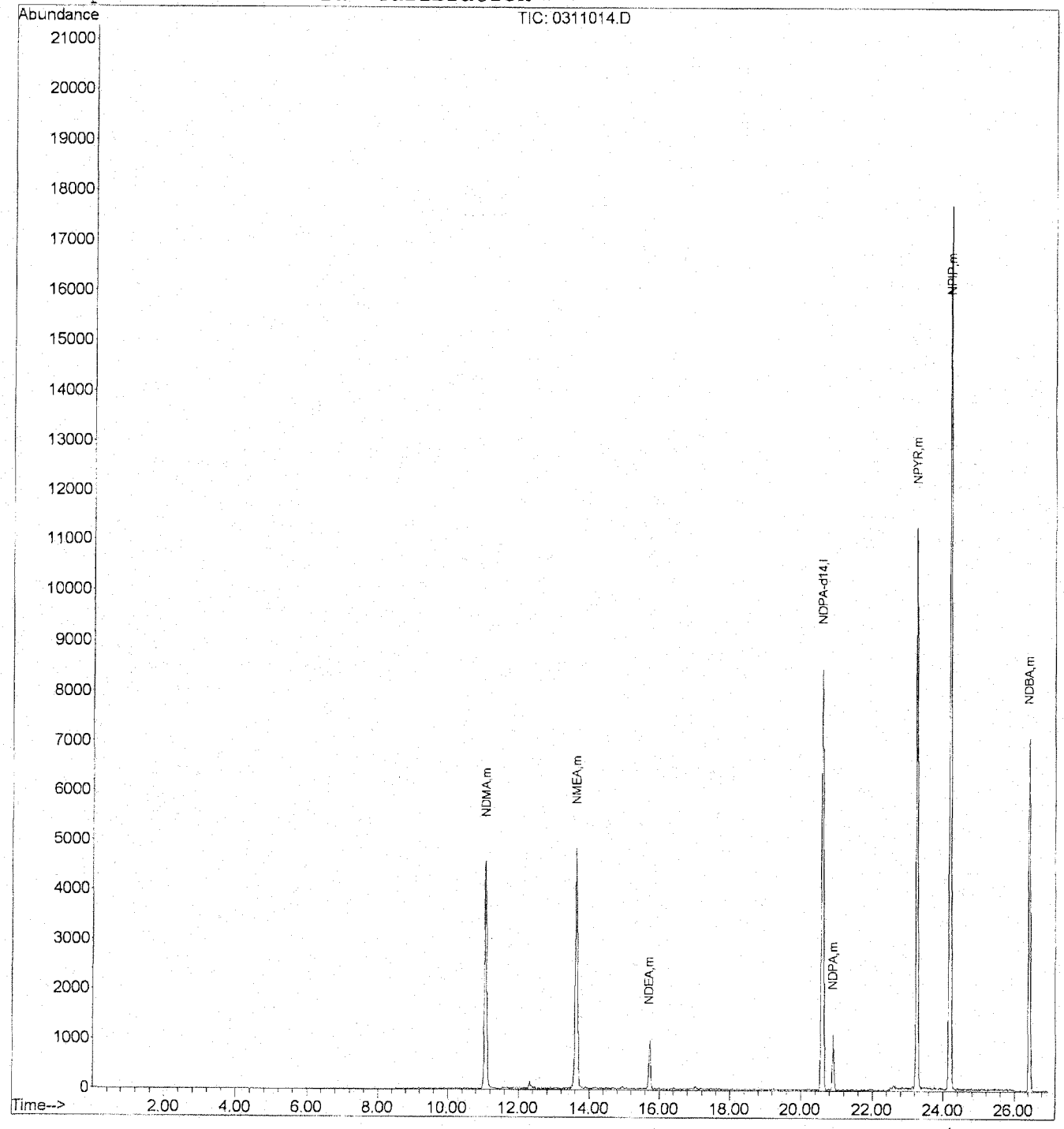
3/12/12

(#) = qualifier out of range (m) = manual integration
0311014.D 031112_D14.M Mon Mar 12 08:40:42 2012 Page 1

Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\031112-521\0311014.D Vial: 10
Acq On : 12 Mar 2012 03:01 Operator: SVO-DW
Sample : DWSTD5-50B ICV 10 Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 12 8:40 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



0311014.D 031112_D14.M Mon Mar 12 08:40:42 2012 Page 2

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1205780
Units: ug/L

File ID: J:\MS16\DATA\052312-521\0523002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.0		3.46	0.883	NA	0	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	0.88		2.75	1.52	NA	-12	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\052312-521\0523002.D
Lab ID: KWG1205780-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/23/2012 13:17
Date Quantitated: 05/24/2012 18:34
Batch ID: KWG1205780
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 6/1/12

Secondary Review: _____

Quantitation Report

Data File:	J:\MS16\DATA\052312-521\0523002.D			**Instrument:**	MS16
Acqu Date:	05/23/2012 13:17	**Quant Date:**	05/24/2012 18:34	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1205780-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/31/2012

Analysis Lot:	KWG1205780	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\052312-521\0523001.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.59	0.00	97	36240	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.88			50	640	1.00		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	11.00			47	1103	0.8800			
1	N-Nitrosomethylethylamine	13.59			61	1162	1.08			
1	N-Nitrosodiethylamine	15.69			75	155	0.9900			
1	N-Nitrosodi-n-propylamine	20.89			89	168	1.22			
1	N-Nitrosopyrrolidine	23.25			55	3075	1.22			
1	N-Nitrosopiperidine	24.17			69	5813	1.34			
1	N-Nitrosodi-n-butylamine	26.41			57	494	1.31			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052312-521\0523002.D Vial: 1
Acq On : 23 May 12 13:17 Operator: SVO-DW
Sample : DWSTD5-55J 1 ppb Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 18:34:38 2012 Quant Results File: 031112_D14.RES

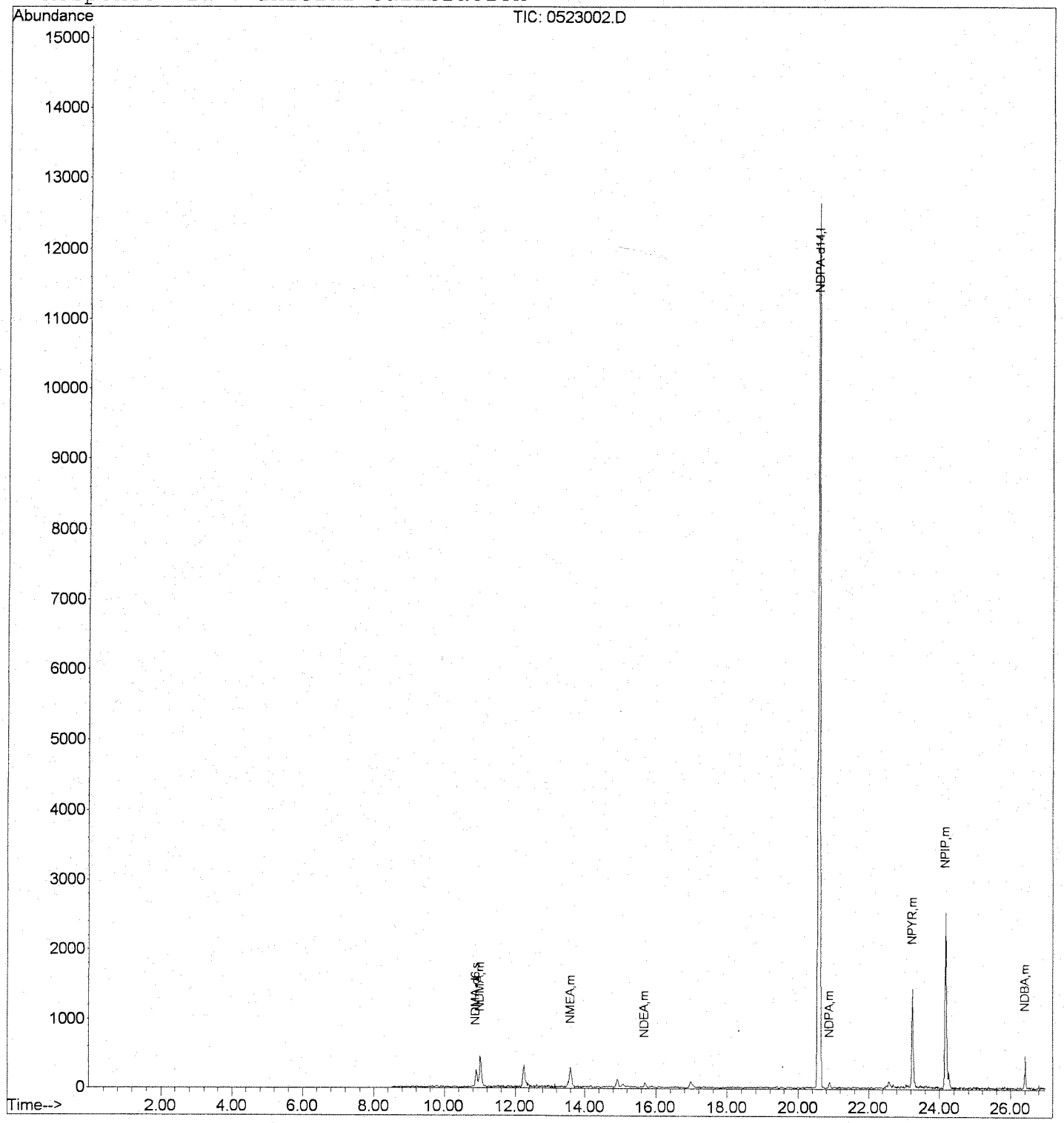
Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	36240	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.88	50	640	1.00	ug/L	-0.07
Target Compounds						Qvalue
4) NDMA	11.00	47	1103	0.88	ug/L	95
5) NMEA	13.59	61	1162	1.08	ug/L	100
6) NDEA	15.69	75	155	0.99	ug/L	100
7) NDPA	20.89	89	168	1.22	ug/L	100
8) NPYR	23.25	55	3075	1.22	ug/L	94
9) NPIP	24.17	69	5813	1.34	ug/L	100
10) NDBA	26.41	57	494	1.31	ug/L	100

(#) = qualifier out of range (m) = manual integration
0523002.D 031112_D14.M Thu May 31 12:05:09 2012 Page 1

Data File : J:\MS16\DATA\052312-521\0523002.D Vial: 1
Acq On : 23 May 12 13:17 Operator: SVO-DW
Sample : DWSTD5-55J 1 ppb Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 18:34 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1205780
Units: ug/L

File ID: J:\MS16\DATA\052312-521\0523014.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	3.8		3.46	2.35	NA	-24	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	5.0		2.75	2.90	NA	-1	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Exception Report

Data File: J:\MS16\DATA\052312-521\0523014.D
Lab ID: KWG1205780-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/23/2012 21:44
Date Quantitated: 05/24/2012 18:35
Batch ID: KWG1205780
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 6/1/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\052312-521\0523014.D			**Instrument:**	MS16
Acqu Date:	05/23/2012 21:44	**Quant Date:**	05/24/2012 18:35	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1205780-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/31/2012

Analysis Lot:	KWG1205780	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M			**Calibration ID:**	CAL11326
Title:					
Tune Ref:	J:\MS16\DATA\052312-521\0523001.D			**Method ID:**	MJ808
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.58	0.01	97	35545	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.88			50	8347	3.79		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	11.00			47	10321	4.95			
1	N-Nitrosomethylethylamine	13.59			61	10135	3.70			
1	N-Nitrosodiethylamine	15.69			75	1814	4.60			
1	N-Nitrosodi-n-propylamine	20.88			89	1880	5.11			
1	N-Nitrosopyrrolidine	23.25			55	25351	5.52			
1	N-Nitrosopiperidine	24.16			69	49483	6.11			
1	N-Nitrosodi-n-butylamine	26.39			57	15646	6.54			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052312-521\0523014.D Vial: 2
Acq On : 23 May 12 21:44 Operator: SVO-DW
Sample : DWSTD5-55L 5ppb Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 18:34:59 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

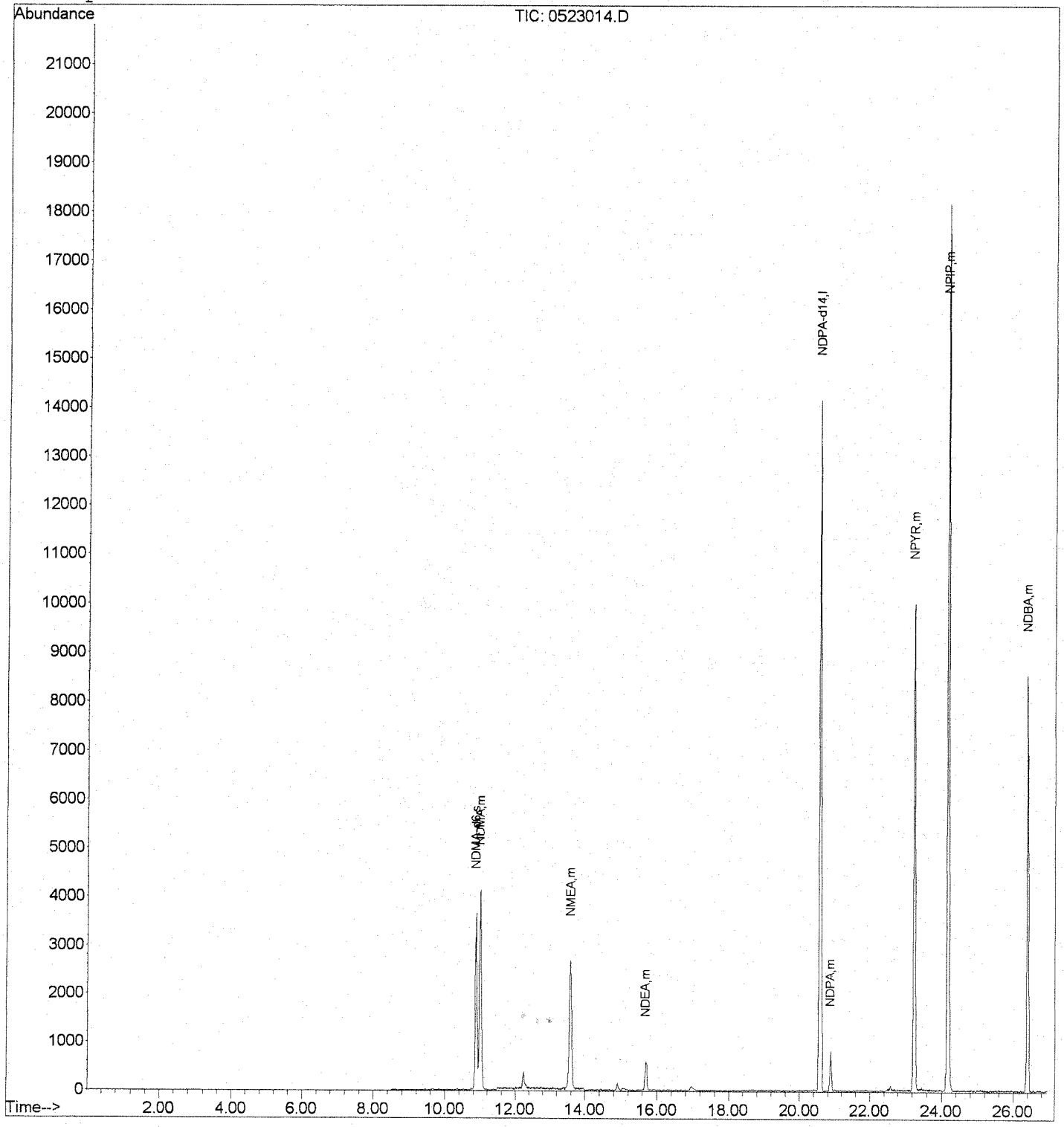
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.58	97	35545	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.88	50	8347	3.79	ug/L	-0.07
Target Compounds						Qvalue
4) NDMA	11.00	47	10321	4.95	ug/L	95
5) NMEA	13.59	61	10135	3.70	ug/L	100
6) NDEA	15.69	75	1814	4.60	ug/L	100
7) NDPA	20.88	89	1880	5.11	ug/L	100
8) NPYR	23.25	55	25351	5.52	ug/L	94
9) NPIP	24.16	69	49483	6.11	ug/L	100
10) NDBA	26.39	57	15646	6.54	ug/L	100

(#) = qualifier out of range (m) = manual integration
0523014.D 031112_D14.M Thu May 31 12:05:24 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052312-521\0523014.D Vial: 2
Acq On : 23 May 12 21:44 Operator: SVO-DW
Sample : DWSTD5-55L 5ppb Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 18:35 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/24/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1205781
Units: ug/L

File ID: J:\MS16\DATA\052412-521\0524002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.3		3.46	1.87	NA	27	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.4		2.75	3.11	NA	41	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Exception Report

Data File: J:\MS16\DATA\052412-521\0524002.D
Lab ID: KWG1205781-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/24/2012 12:56
Date Quantitated: 05/24/2012 18:31
Batch ID: KWG1205781
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 6/1/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\052412-521\0524002.D			**Instrument:**	MS16
Acqu Date:	05/24/2012 12:56	**Quant Date:**	05/24/2012 18:31	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1205781-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/31/2012

Analysis Lot:	KWG1205781	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\052412-521\0524001.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.59	0.00	97	31823	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.90			50	1191	1.27		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	11.02			47	1977	1.41			
1	N-Nitrosomethylethylamine	13.62			61	1376	1.21			
1	N-Nitrosodiethylamine	15.73			75	210	1.19			
1	N-Nitrosodi-n-propylamine	20.92			89	104	1.10			
1	N-Nitrosopyrrolidine	23.28			55	2731	1.22			
1	N-Nitrosopiperidine	24.20			69	5575	1.40			
1	N-Nitrosodi-n-butylamine	26.43			57	439	1.31			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052412-521\0524002.D Vial: 1
Acq On : 24 May 2012 12:56 Operator: SVO-DW
Sample : DWSTD5-55J 1 ppb Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 18:31:29 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.59	97	31823	50.00	ug/L	0.02
System Monitoring Compounds						
3) NDMA-d6	10.90	50	1191	1.27	ug/L	-0.05
Target Compounds						Qvalue
4) NDMA	11.02	47	1977	1.41	ug/L	99
5) NMEA	13.62	61	1376	1.21	ug/L	98
6) NDEA	15.73	75	210	1.19	ug/L	100
7) NDPA	20.92	89	104	1.10	ug/L	100
8) NPYR	23.28	55	2731	1.22	ug/L	94
9) NPIP	24.20	69	5575	1.40	ug/L	100
10) NDBA	26.43	57	439	1.31	ug/L	100

(#) = qualifier out of range (m) = manual integration
0524002.D 031112_D14.M Thu May 31 12:12:22 2012 Page 1

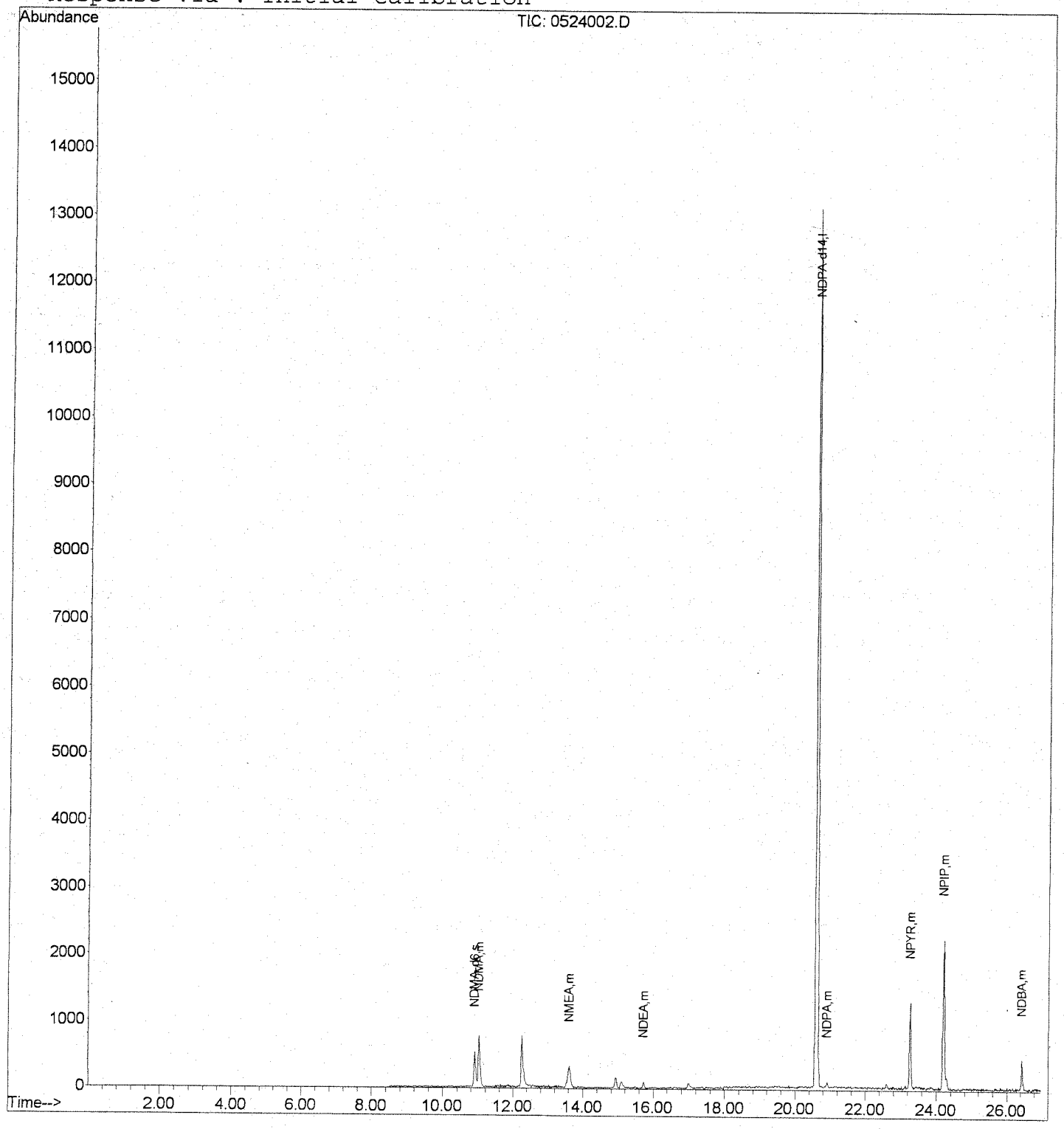
Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052412-521\0524002.D
Acq On : 24 May 2012 12:56
Sample : DWSTD5-55J 1 ppb
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 18:31 2012

Vial: 1
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00

Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/24/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1205781
Units: ug/L

File ID: J:\MS16\DATA\052412-521\0524009.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	4.6		3.46	3.02	NA	-8	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	6.2		2.75	3.74	NA	23	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\052412-521\0524009.D
Lab ID: KWG1205781-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 05/24/2012 17:52
Date Quantitated: 05/24/2012 18:34
Batch ID: KWG1205781
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: _____

Secondary Review: _____

Quantitation Report

Data File:	J:\MS16\DATA\052412-521\0524009.D			**Instrument:**	MS16
Acqu Date:	05/24/2012 17:52	**Quant Date:**	05/24/2012 18:34	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1205781-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	05/31/2012

Analysis Lot:	KWG1205781	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\052412-521\0524001.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.62	0.05	97	38865	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.88			50	11720	4.58		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	11.02			47	14551	6.15			
1	N-Nitrosomethylethylamine	13.61			61	13876	4.38			
1	N-Nitrosodiethylamine	15.73			75	2670	5.79			
1	N-Nitrosodi-n-propylamine	20.92			89	2752	6.41			
1	N-Nitrosopyrrolidine	23.28			55	27205	5.43			
1	N-Nitrosopiperidine	24.20			69	56565	6.34			
1	N-Nitrosodi-n-butylamine	26.43			57	15480	6.09			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052412-521\0524009.D Vial: 2
Acq On : 24 May 12 17:52 Operator: SVO-DW
Sample : DWSTD5-55L 5ppb Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 18:34:15 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

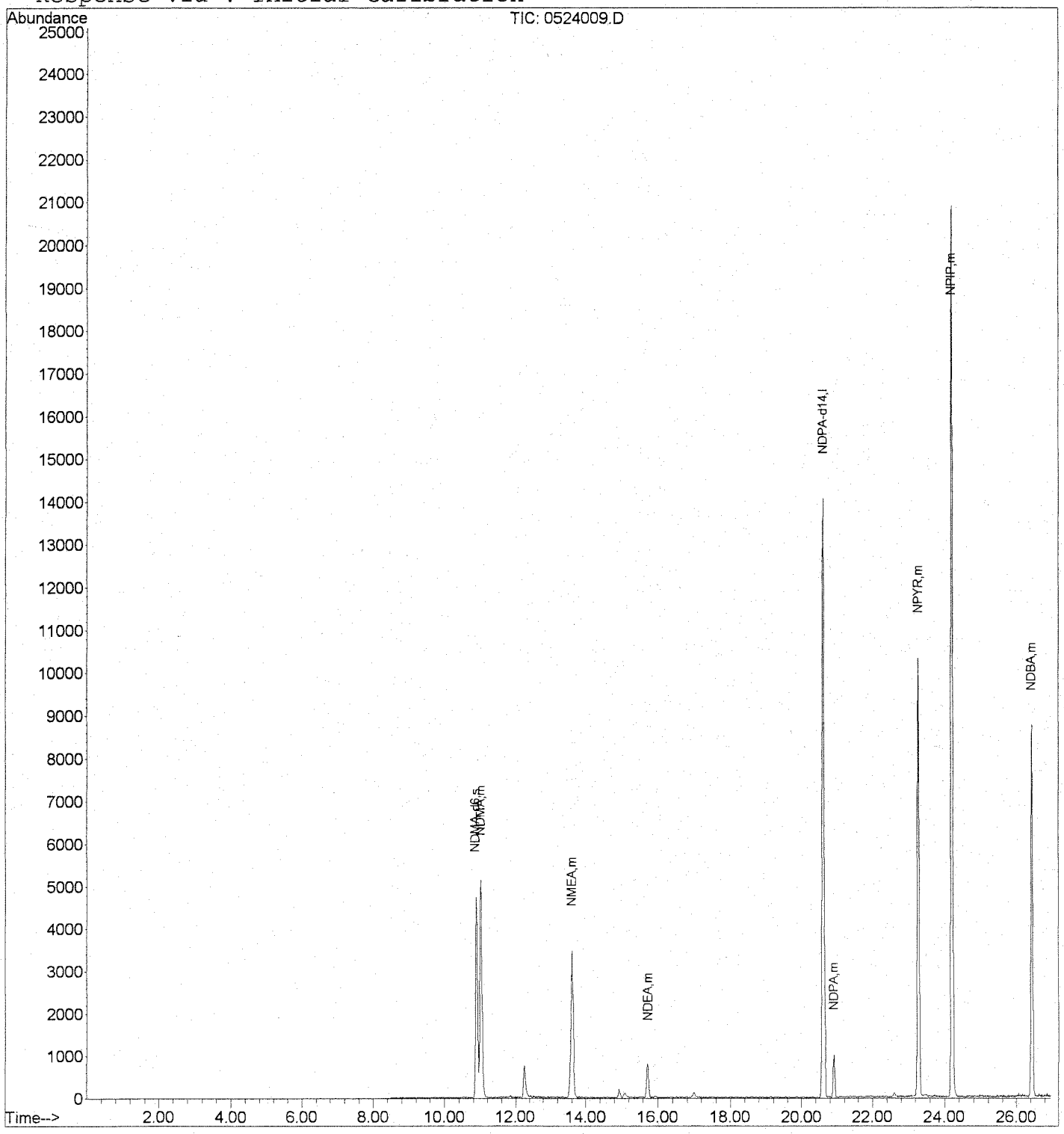
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.62	97	38865	50.00	ug/L	0.04
System Monitoring Compounds						
3) NDMA-d6	10.88	50	11720	4.58	ug/L	-0.07
Target Compounds						Qvalue
4) NDMA	11.02	47	14551	6.15	ug/L	95
5) NMEA	13.61	61	13876	4.38	ug/L	100
6) NDEA	15.73	75	2670	5.79	ug/L	100
7) NDPA	20.92	89	2752	6.41	ug/L	100
8) NPYR	23.28	55	27205	5.43	ug/L	94
9) NPIP	24.20	69	56565	6.34	ug/L	100
10) NDBA	26.43	57	15480	6.09	ug/L	100

(#) = qualifier out of range (m) = manual integration
0524009.D 031112_D14.M Thu May 31 12:12:29 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\052412-521\0524009.D Vial: 2
Acq On : 24 May 12 17:52 Operator: SVO-DW
Sample : DWSTD5-55L 5ppb Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 18:34 2012 Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 06/05/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1206337
Units: ug/L

File ID: J:\MS16\DATA\060512-521\0605002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	1.0	1.2		3.46	1.59	NA	19	± 50 %	Quadratic
N-Nitrosodimethylamine	1.0	1.1		2.75	2.17	NA	10	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Exception Report

Data File: J:\MS16\DATA\060512-521\0605002.D
Lab ID: KWG1206337-2
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 06/05/2012 15:33
Date Quantitated: 06/06/2012 10:24
Batch ID: KWG1206337
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 6/12/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\060512-521\0605002.D			**Instrument:**	MS16
Acqu Date:	06/05/2012 15:33	**Quant Date:**	06/06/2012 10:24	**Vial:**	1
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1206337-2			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	06/12/2012

Analysis Lot:	KWG1206337	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\060512-521\0605001.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.57	-0.02	97	32363	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	N-Nitrosodimethylamine-d6	10.88			50	1032	1.19		70-130	NA	

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	10.99			47	1404	1.10			
1	N-Nitrosomethylethylamine	13.59			61	1604	1.28			
1	N-Nitrosodiethylamine	15.68			75	221	1.21			
1	N-Nitrosodi-n-propylamine	20.85			89	100	1.09			
1	N-Nitrosopyrrolidine	23.23			55	2134	1.08			
1	N-Nitrosopiperidine	24.15			69	4448	1.25			
1	N-Nitrosodi-n-butylamine	26.38			57	491	1.33			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS16\DATA\060512-521\0605002.D Vial: 1
Acq On : 05 Jun 12 15:33 Operator: SVO-DW
Sample : DWSTD5-57G 1 ppb Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Jun 06 10:24:59 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

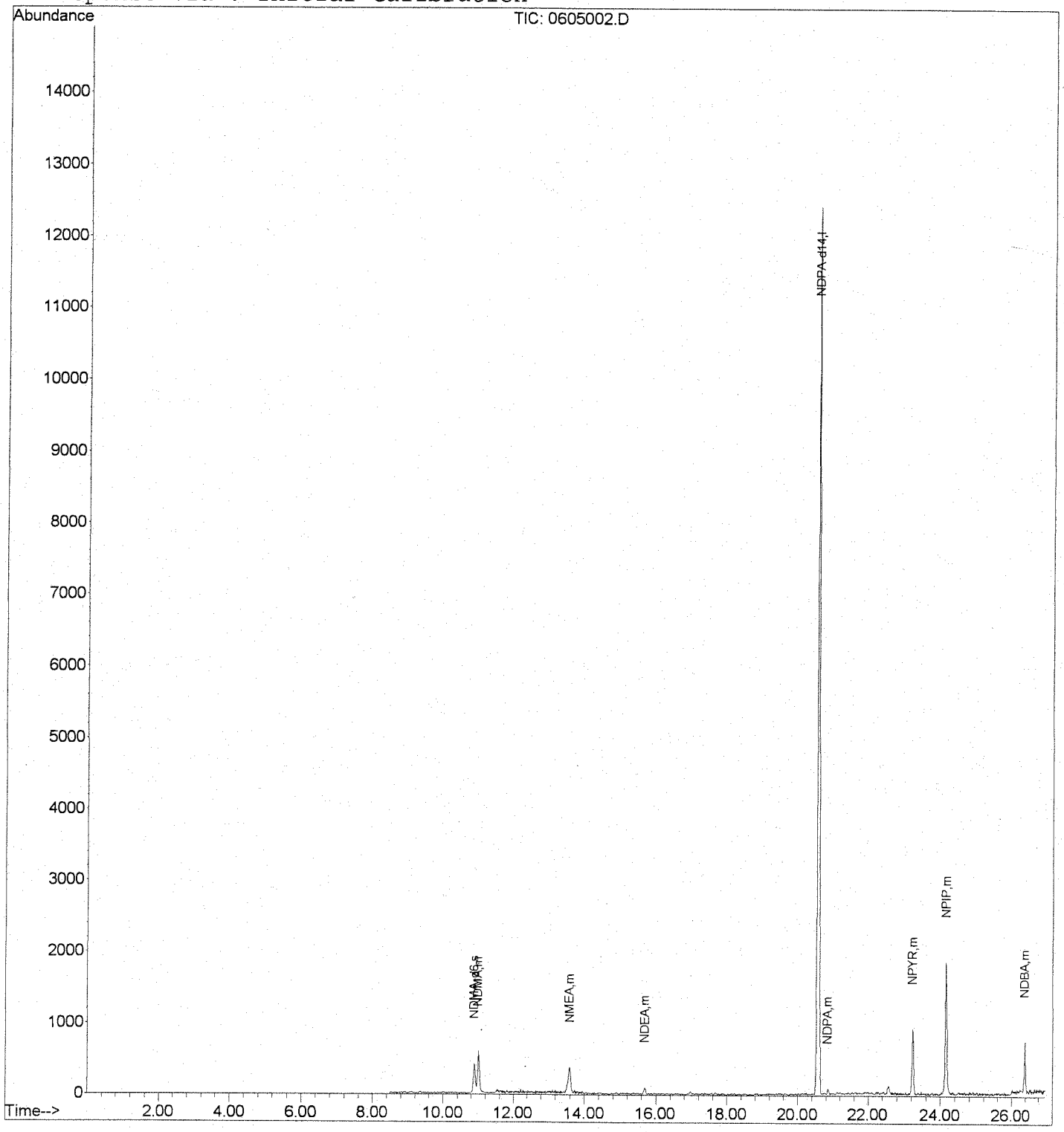
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.57	97	32363	50.00	ug/L	0.00
System Monitoring Compounds						
3) NDMA-d6	10.88	50	1032	1.19	ug/L	-0.07
Target Compounds						Qvalue
4) NDMA	10.99	47	1404	1.10	ug/L	95
5) NMEA	13.59	61	1604	1.28	ug/L	100
6) NDEA	15.68	75	221	1.21	ug/L	100
7) NDPA	20.85	89	100	1.09	ug/L	100
8) NPYR	23.23	55	2134	1.08	ug/L	95
9) NPIP	24.15	69	4448	1.25	ug/L	100
10) NDBA	26.38	57	491	1.33	ug/L	100

(#) = qualifier out of range (m) = manual integration
0605002.D 031112_D14.M Tue Jun 12 10:13:57 2012 Page 1

Data File : J:\MS16\DATA\060512-521\0605002.D
Acq On : 05 Jun 12 15:33
Sample : DWSTD5-57G 1 ppb
Misc :
MS Integration Params: RTEINT.P
Quant Time: Jun 6 10:24 2012

Vial: 1
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00
Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 06/06/2012

Continuing Calibration Verification Summary
Nitrosamines by EPA 521

Calibration Type: Internal Standard
Analysis Method: 521

Calibration Date: 03/11/2012
Calibration ID: CAL11326
Analysis Lot: KWG1206337
Units: ug/L

File ID: J:\MS16\DATA\060512-521\0605015.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
N-Nitrosodimethylamine-d6	5.0	5.1		3.46	3.46	NA	2	± 50 %	Quadratic
N-Nitrosodimethylamine	5.0	5.9		2.75	3.55	NA	18	± 50 %	Quadratic

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Exception Report

Data File: J:\MS16\DATA\060512-521\0605015.D
Lab ID: KWG1206337-3
RunType: CCV
Matrix: NOT APPLICABLE

Date Acquired: 06/06/2012 00:42
Date Quantitated: 06/06/2012 10:27
Batch ID: KWG1206337
Analysis Method: 521
MethodJoinID: MJ808

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: 6/12/12

Secondary Review:

Quantitation Report

Data File:	J:\MS16\DATA\060512-521\0605015.D			**Instrument:**	MS16
Acqu Date:	06/06/2012 00:42	**Quant Date:**	06/06/2012 10:27	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1206337-3			**Soln Conc. Units:**	ug/L

Bottle ID:		**Tier:**		**Matrix:**	NOT APPLICABLE
Prod Code:	521 NITROSAMINE	**Collect Date:**		**Receive Date:**	06/12/2012

Analysis Lot:	KWG1206337	**Prep Lot:**		**Report Group:**	
Analysis Method:	521	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS16\METHODS\031112_D14.M	**Calibration ID:**	CAL11326
Title:			
Tune Ref:	J:\MS16\DATA\060512-521\0605001.D	**Method ID:**	MJ808
MB Ref:		**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	N-Nitrosodi-n-propylamine-d14	20.55	-0.02	97	37722	50.00	OK
1	N-Nitrosodiethylamine-d10			81	0		OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	N-Nitrosodimethylamine-d6	10.90			50	13057	5.09		70-130	NA

Target Compounds

Final Conc. Units: ng/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	N-Nitrosodimethylamine	11.02			47	13394	5.88			
1	N-Nitrosomethylethylamine	13.58			61	16486	5.09			
1	N-Nitrosodiethylamine	15.70			75	2585	5.78			
1	N-Nitrosodi-n-propylamine	20.85			89	2970	6.96			
1	N-Nitrosopyrrolidine	23.22			55	31967	6.38			
1	N-Nitrosopiperidine	24.15			69	67129	7.51			
1	N-Nitrosodi-n-butylamine	26.38			57	20879	7.68			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\060512-521\0605015.D Vial: 2
Acq On : 06 Jun 2012 00:42 Operator: SVO-DW
Sample : DWSTD5-57H 5 ppb Inst : MS16
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Jun 06 10:27:44 2012 Quant Results File: 031112_D14.RES

Quant Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration
DataAcq Meth : 521.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) NDPA-d14	20.55	97	37722	50.00	ug/L	-0.02
System Monitoring Compounds						
3) NDMA-d6	10.90	50	13057	5.09	ug/L	-0.05
Target Compounds						Qvalue
4) NDMA	11.02	47	13394	5.88	ug/L	99
5) NMEA	13.58	61	16486	5.09	ug/L	100
6) NDEA	15.70	75	2585	5.78	ug/L	100
7) NDPA	20.85	89	2970	6.96	ug/L	100
8) NPYR	23.22	55	31967	6.38	ug/L	94
9) NPIP	24.15	69	67129	7.51	ug/L	100
10) NDBA	26.38	57	20879	7.68	ug/L	100

(#) = qualifier out of range (m) = manual integration
0605015.D 031112_D14.M Tue Jun 12 10:14:08 2012 Page 1

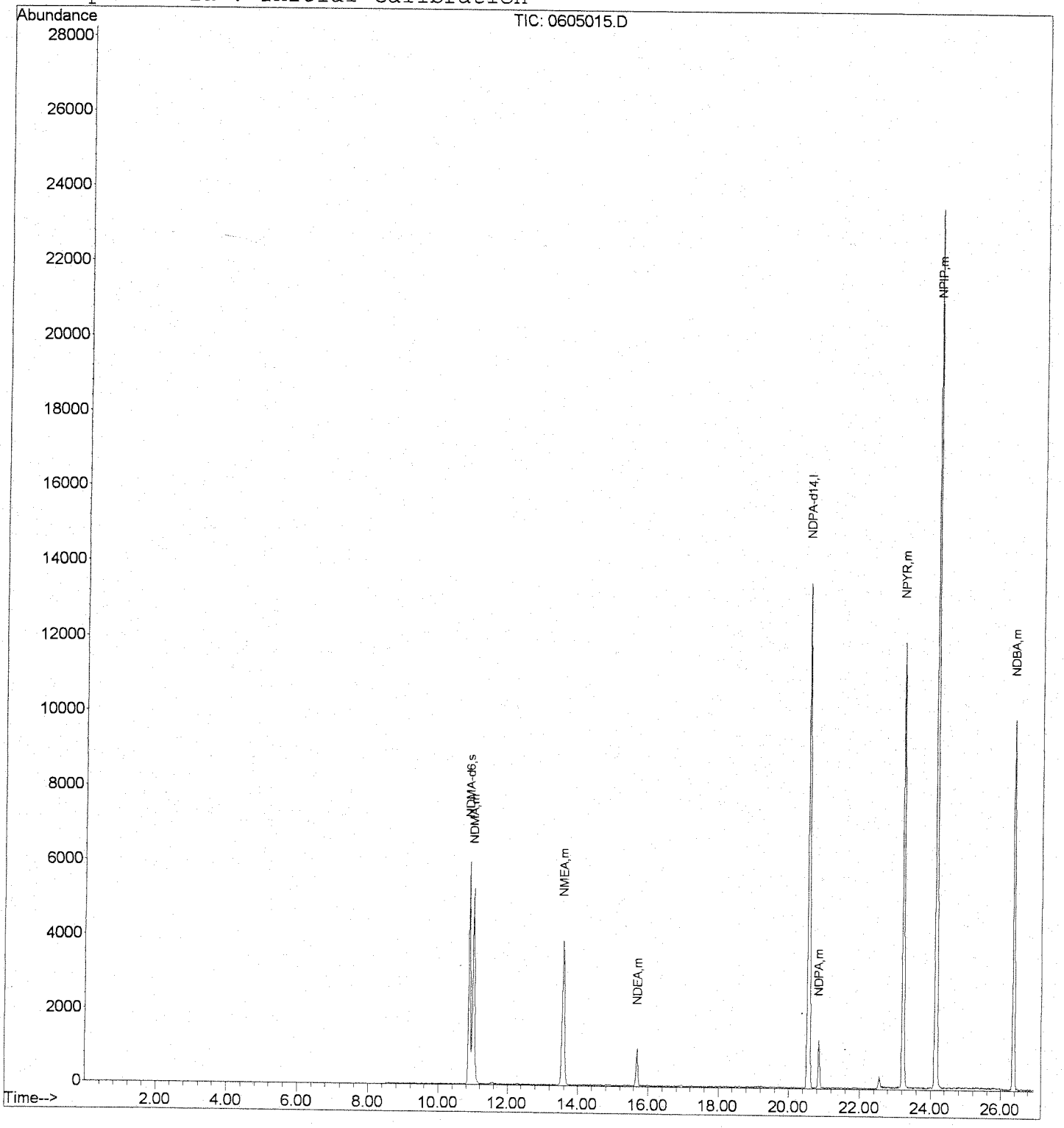
Quantitation Report (Not Reviewed)

Data File : J:\MS16\DATA\060512-521\0605015.D
Acq On : 06 Jun 2012 00:42
Sample : DWSTD5-57H 5 ppb
Misc :
MS Integration Params: RTEINT.P
Quant Time: Jun 6 10:27 2012

Vial: 2
Operator: SVO-DW
Inst : MS16
Multiplr: 1.00

Quant Results File: 031112_D14.R

Method : J:\MS16\METHODS\031112_D14.M (RTE Integrator)
Title : 031112_D14.m MJ808 CAL 11326
Last Update : Mon Mar 12 08:40:22 2012
Response via : Initial Calibration



Organic Analysis:
Nitrosamines by EPA 521

Validation Package

Sample Prep and Screen Data

Preparation Information

Group ID:	KWG1205366	**Prep Method:**	METHOD	**Prep Date:**	05/22/12 08:00
Department:	Semivoa GC				

Lab Code	Client ID	Product	Matrix	Amt. Ext.	Final Vol.
K1204661-005	27010-0512-01	521 Nitrosamines	WATER	500ml	1ml
K1204737-001	22043-0512-01	521 Nitrosamines	WATER	500ml	1ml
K1204780-001	22081-0512-01	521 Nitrosamines	WATER	500ml	1ml
K1204780-002	22505-0512-01	521 Nitrosamines	WATER	500ml	1ml
K1204780-003	22008-0512-01	521 Nitrosamines	WATER	500ml	1ml
KWG1205366-1	Matrix Spike	521 Nitrosamines	WATER	500ml	1ml
KWG1205366-2	Duplicate Matrix Spike	521 Nitrosamines	WATER	500ml	1ml
KWG1205366-3	Lab Control Sample	521 Nitrosamines	WATER	500ml	1ml
KWG1205366-4	Method Blank	521 Nitrosamines	WATER	500ml	1ml
P1201921-002	MW-17-4	521 Nitrosamines	WATER	500ml	1ml

Lab Code	Parent Lab Code	Comments
KWG1205366-1	P1201921-002	
KWG1205366-2	P1201921-002	

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
K1204661-005	1128562	DWSTD05-56 K	10uL			
K1204737-001	1128563	DWSTD05-56 K	10uL			
K1204780-001	1128564	DWSTD05-56 K	10uL			
K1204780-002	1128565	DWSTD05-56 K	10uL			
K1204780-003	1128561	DWSTD05-56 K	10uL			
KWG1205366-1	1128566	DWSTD05-56 K	10uL	DWSTD05-55 B	100uL	
KWG1205366-2	1128567	DWSTD05-56 K	10uL	DWSTD05-55 B	100uL	
KWG1205366-3	1128568	DWSTD05-56 K	10uL	DWSTD05-55 B	100uL	
KWG1205366-4	1128569	DWSTD05-56 K	10uL			
P1201921-002	1128560	DWSTD05-56 K	10uL			

Comments:

Started By: RHayes Assisted By:

Completed By: RHayes Assisted By:

Training: Yes / No Yes / No

Reviewed By: Date: 5/23/12 Storage: TO INST

Chain of Custody

Relinquished By: Date: 5/22/12

Received By: Date: 5/22/12

Extracts Examined: Yes / No

COLUMBIA ANALYTICAL SERVICES, INC.

Service Request No.: As listed **Date Extracted:** 5-22-12

Analyst: Ross Hayes **Method:** EPA 521

StarLims Run :

Nitrosoamines in Water

Lab ID	Client ID	Sample Volume (mL)	Surr (mL)	MS (mL)	Residual Chlorine	Final Volume (mL)
P1201921-002		500	10		<0.1	1
K1204661-005		500	10		<0.1	1
K1204737-001		500	10		<0.1	1
K1204780-001		500	10		<0.1	1
-002		500	10		<0.1	1
-003		500	10		<0.1	1
MB		500	10		<0.1	1
LCS		500	10	100	<0.1	1
P1201921-002	MS	500	10	100	<0.1	1
P1201921-002	DMS	500	10	100	<0.1	1
MRL		500	10	10	<0.1	1

Comments:

DCM Lot # DF597 **MeOH Lot #** DF700 **Sulfate Lot #** 5/3/12-113858

SPE Cartridge Lot # 94627-EC

Surrogate ID: DWSTD05-56K 1ppm XP 11/22/12

Spike ID : DWSTD05-55B 100ppb XP 10/30/12

Vial: Amber **Extract Storage:** TO inst **Extracts Received:**

Reviewed By:	**Date:** 5/23/12

Preparation Information Benchsheet

Prep Run#: 158594 **Prep WorkFlow:** OrgExtDW(14/28) **Status:** Draft
Team: Semivoa GC **Prep Method:** Method **Prep Date/Time:** 5/22/12 08:08 AM
Number of Copies to make: 4

#	Lab Code	Client ID	B#	√	Test	Matrix	Amt Ext.	pH	Int Vol	Final Vol	Surr Added	Spike Added
1	K1204661-005	27010-0512-01	.09		521/Nitrosamines	Water						
2	K1204737-001	22043-0512-01	.01		521/Nitrosamines	Water						
3	K1204780-001	22081-0512-01	.01		521/Nitrosamines	Water						
4	K1204780-002	22505-0512-01	.04		521/Nitrosamines	Water						
5	K1204780-003	22008-0512-01	.04		521/Nitrosamines	Water						
6	P1201921-002	MW-17-4	.06		521/Nitrosamines	Water						

Comments: used for ID only

Surrogate ID: _____ Spike ID: _____

Witnessed By: _____

Analyst: _____ Assisted By: _____

1,4-Dioxane

Organic Analysis:
1,4-Dioxane by GC/MS

Summary Package

Sample and QC Results

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921

Cover Page - Organic Analysis Data Package
1,4-Dioxane by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
MW-17-4MS	KWG1205231-3	05/15/2012	05/15/2012
MW-17-4DMS	KWG1205231-4	05/15/2012	05/15/2012
MW-17-4	P1201921-002	05/15/2012	05/15/2012

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Karin Bailey
Date: 5/25/12

Name: Karin Bailey
Title: Scientist

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Collected: 05/15/2012
Date Received: 05/15/2012

1,4-Dioxane by GC/MS

Sample Name: MW-17-4
Lab Code: P1201921-002

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	05/18/12	05/23/12	KWG1205231	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	77	48-118	05/23/12	Acceptable

Comments:

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Collected: NA
Date Received: NA

1,4-Dioxane by GC/MS

Sample Name: Method Blank
Lab Code: KWG1205231-7

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	05/18/12	05/23/12	KWG1205231	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	79	48-118	05/23/12	Acceptable

Comments:

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921

Surrogate Recovery Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
MW-17-4	P1201921-002	77
Method Blank	KWG1205231-7	79
MW-17-4MS	KWG1205231-3	61
MW-17-4DMS	KWG1205231-4	78
Lab Control Sample	KWG1205231-5	74
Duplicate Lab Control Sample	KWG1205231-6	68

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Dioxane-d8	48-118

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012
Time Analyzed: 14:48

Internal Standard Area and RT Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\052312\0523F018.D
Instrument ID: MS26
Analysis Method: 8270D SIM

Lab Code: KWG1205449-2
Analysis Lot: KWG1205449

		1,4-Dichlorobenzene-d4	
		Area	RT
	Results ==>	13,285	5.25
	Upper Limit ==>	26,570	5.75
	Lower Limit ==>	6,643	4.75
	ICAL Result ==>	12,824	5.25
Associated Analyses			
Method Blank	KWG1205231-7	13,815	5.25
Lab Control Sample	KWG1205231-5	14,155	5.25
Duplicate Lab Control Sample	KWG1205231-6	13,461	5.25
MW-17-4MS	KWG1205231-3	13,321	5.25
MW-17-4DMS	KWG1205231-4	13,932	5.25
MW-17-4	P1201921-002	14,551	5.25

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/18/2012
Date Analyzed: 05/23/2012

Matrix Spike/Duplicate Matrix Spike Summary
1,4-Dioxane by GC/MS

Sample Name: MW-17-4
Lab Code: P1201921-002

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA

Level: Low
Extraction Lot: KWG1205231

Analyte Name	Sample Result	MW-17-4MS KWG1205231-3 Matrix Spike			MW-17-4DMS KWG1205231-4 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,4-Dioxane	ND	15.0	25.0	60	19.5	25.0	78	33-127	26	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/18/2012
Date Analyzed: 05/23/2012

Lab Control Spike/Duplicate Lab Control Spike Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1205231

	Lab Control Sample KWG1205231-5 Lab Control Spike			Duplicate Lab Control Sample KWG1205231-6 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,4-Dioxane	18.6	25.0	74	19.2	25.0	77	52-111	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/18/2012
Date Analyzed: 05/23/2012
Time Analyzed: 20:52

Method Blank Summary
1,4-Dioxane by GC/MS

Sample Name: Method Blank
Lab Code: KWG1205231-7

Instrument ID: MS26
File ID: J:\MS26\DATA\052312\0523F037.D

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Level: Low
Extraction Lot: KWG1205231

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1205231-5	J:\MS26\DATA\052312\0523F038.D	05/23/12	21:11
Duplicate Lab Control Sample	KWG1205231-6	J:\MS26\DATA\052312\0523F039.D	05/23/12	21:30
MW-17-4MS	KWG1205231-3	J:\MS26\DATA\052312\0523F040.D	05/23/12	21:49
MW-17-4DMS	KWG1205231-4	J:\MS26\DATA\052312\0523F041.D	05/23/12	22:08
MW-17-4	P1201921-002	J:\MS26\DATA\052312\0523F042.D	05/23/12	22:27

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/18/2012
Date Analyzed: 05/23/2012
Time Analyzed: 21:11

Lab Control Sample Summary
1,4-Dioxane by GC/MS

Sample Name: Lab Control Sample
Lab Code: KWG1205231-5

Instrument ID: MS26
File ID: J:\MS26\DATA\052312\0523F038.D

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Level: Low
Extraction Lot: KWG1205231

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1205231-7	J:\MS26\DATA\052312\0523F037.D	05/23/12	20:52
MW-17-4MS	KWG1205231-3	J:\MS26\DATA\052312\0523F040.D	05/23/12	21:49
MW-17-4DMS	KWG1205231-4	J:\MS26\DATA\052312\0523F041.D	05/23/12	22:08
MW-17-4	P1201921-002	J:\MS26\DATA\052312\0523F042.D	05/23/12	22:27

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012
Time Analyzed: 14:29

Tune Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\052312\0523F017.D
Instrument ID: MS26
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1205449

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	17.8	56202	PASS
68	69	0	2	1.4	1026	PASS
69	198	0	100	23.8	75256	PASS
70	69	0	2	0.5	357	PASS
127	198	10	80	42.3	133701	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	59.7	315946	PASS
199	198	5	9	6.8	21623	PASS
275	198	10	60	28.9	91160	PASS
365	442	1	50	2.2	11651	PASS
441	443	0	100	77.4	79622	PASS
442	442	100	100	100.0	528829	PASS
443	442	15	24	19.5	102920	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1205449-2	J:\MS26\DATA\052312\0523F018.D	05/23/2012	14:48	
Method Blank	KWG1205231-7	J:\MS26\DATA\052312\0523F037.D	05/23/2012	20:52	
Lab Control Sample	KWG1205231-5	J:\MS26\DATA\052312\0523F038.D	05/23/2012	21:11	
Duplicate Lab Control Sample	KWG1205231-6	J:\MS26\DATA\052312\0523F039.D	05/23/2012	21:30	
MW-17-4MS	KWG1205231-3	J:\MS26\DATA\052312\0523F040.D	05/23/2012	21:49	
MW-17-4DMS	KWG1205231-4	J:\MS26\DATA\052312\0523F041.D	05/23/2012	22:08	
MW-17-4	P1201921-002	J:\MS26\DATA\052312\0523F042.D	05/23/2012	22:27	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Calibration Date: 05/23/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11557
Instrument ID: MS26

Column: MS

Level ID	File ID
A	J:\MS26\DATA\052312\0523F005.D
B	J:\MS26\DATA\052312\0523F006.D
C	J:\MS26\DATA\052312\0523F007.D
D	J:\MS26\DATA\052312\0523F008.D
E	J:\MS26\DATA\052312\0523F009.D
F	J:\MS26\DATA\052312\0523F010.D
G	J:\MS26\DATA\052312\0523F011.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,4-Dioxane	A	2.0	0.456	B	4.0	0.385	C	10	0.379	D	20	0.400	E	50	0.395
	F	100	0.431	G	200	0.418									
1,4-Dioxane-d8	A	2.0	0.392	B	4.0	0.360	C	10	0.344	D	20	0.385	E	50	0.373
	F	100	0.407	G	200	0.410									

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Calibration Date: 05/23/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11557
Instrument ID: MS26

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,4-Dioxane	MS	AverageRF	% RSD	6.7		≤ 20	0.409		0.01
1,4-Dioxane-d8	SURR	AverageRF	% RSD	6.4		≤ 20	0.382		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Calibration Date: 05/23/2012
Date Analyzed: 05/23/2012

Second Source Calibration Verification
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL11557
Units: ng/ml

File ID: J:\MS26\DATA\052312\0523F012.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	20	0.409	0.419	2	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012

Continuing Calibration Verification Summary
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 05/23/2012
Calibration ID: CAL11557
Analysis Lot: KWG1205449
Units: ng/ml

File ID: J:\MS26\DATA\052312\0523F018.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	19	0.01	0.409	0.387	-6	NA	± 20 %	AverageRF
1,4-Dioxane-d8	20	20	0.01	0.382	0.375	-2	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Service Request: P1201921

Analysis Run Log
1,4-Dioxane by GC/MS

Analysis Method: 8270D SIM
Analysis Lot: KWG1205449
Instrument ID: MS26

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0523F017.D	GC/MS Tuning - Generic	KWG1205449-1	5/23/2012	14:29		5/23/2012	14:39
0523F018.D	Continuing Calibration Verification	KWG1205449-2	5/23/2012	14:48		5/23/2012	14:58
0523F019.D	ZZZZZZ	ZZZZZZ	5/23/2012	15:07		5/23/2012	15:17
0523F020.D	ZZZZZZ	ZZZZZZ	5/23/2012	15:26		5/23/2012	15:36
0523F021.D	ZZZZZZ	ZZZZZZ	5/23/2012	15:46		5/23/2012	15:56
0523F022.D	ZZZZZZ	ZZZZZZ	5/23/2012	16:05		5/23/2012	16:15
0523F023.D	ZZZZZZ	ZZZZZZ	5/23/2012	16:24		5/23/2012	16:34
0523F024.D	ZZZZZZ	ZZZZZZ	5/23/2012	16:43		5/23/2012	16:53
0523F025.D	ZZZZZZ	ZZZZZZ	5/23/2012	17:02		5/23/2012	17:12
0523F026.D	ZZZZZZ	ZZZZZZ	5/23/2012	17:21		5/23/2012	17:31
0523F027.D	ZZZZZZ	ZZZZZZ	5/23/2012	17:40		5/23/2012	17:50
0523F028.D	ZZZZZZ	ZZZZZZ	5/23/2012	17:59		5/23/2012	18:09
0523F029.D	ZZZZZZ	ZZZZZZ	5/23/2012	18:19		5/23/2012	18:29
0523F030.D	ZZZZZZ	ZZZZZZ	5/23/2012	18:38		5/23/2012	18:48
0523F031.D	ZZZZZZ	ZZZZZZ	5/23/2012	18:57		5/23/2012	19:07
0523F032.D	ZZZZZZ	ZZZZZZ	5/23/2012	19:16		5/23/2012	19:26
0523F033.D	ZZZZZZ	ZZZZZZ	5/23/2012	19:35		5/23/2012	19:45
0523F034.D	ZZZZZZ	ZZZZZZ	5/23/2012	19:54		5/23/2012	20:04
0523F035.D	ZZZZZZ	ZZZZZZ	5/23/2012	20:13		5/23/2012	20:23
0523F036.D	ZZZZZZ	ZZZZZZ	5/23/2012	20:32		5/23/2012	20:42
0523F037.D	Method Blank	KWG1205231-7	5/23/2012	20:52		5/23/2012	21:02
0523F038.D	Lab Control Sample	KWG1205231-5	5/23/2012	21:11		5/23/2012	21:21
0523F039.D	Duplicate Lab Control Sample	KWG1205231-6	5/23/2012	21:30		5/23/2012	21:40
0523F040.D	MW-17-4MS	KWG1205231-3	5/23/2012	21:49		5/23/2012	21:59
0523F041.D	MW-17-4DMS	KWG1205231-4	5/23/2012	22:08		5/23/2012	22:18
0523F042.D	MW-17-4	P1201921-002	5/23/2012	22:27		5/23/2012	22:37
0523F043.D	ZZZZZZ	ZZZZZZ	5/23/2012	22:47		5/23/2012	22:57
0523F044.D	ZZZZZZ	ZZZZZZ	5/23/2012	23:06		5/23/2012	23:16
0523F045.D	ZZZZZZ	ZZZZZZ	5/23/2012	23:25		5/23/2012	23:35
0523F046.D	ZZZZZZ	ZZZZZZ	5/23/2012	23:44		5/23/2012	23:54
0523F047.D	ZZZZZZ	ZZZZZZ	5/24/2012	00:03		5/24/2012	00:13
0523F048.D	ZZZZZZ	ZZZZZZ	5/24/2012	00:22		5/24/2012	00:32
0523F049.D	ZZZZZZ	ZZZZZZ	5/24/2012	00:42		5/24/2012	00:52
0523F050.D	ZZZZZZ	ZZZZZZ	5/24/2012	01:01		5/24/2012	01:11

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/18/2012

Extraction Prep Log
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Extraction Lot: KWG1205231
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
MW-17-4	P1201921-002	05/15/12	05/15/12	100ml	50ml	NA	
Method Blank	KWG1205231-7	NA	NA	100ml	50ml	NA	
MW-17-4MS	KWG1205231-3	05/15/12	05/15/12	100ml	50ml	NA	
MW-17-4DMS	KWG1205231-4	05/15/12	05/15/12	100ml	50ml	NA	
Lab Control Sample	KWG1205231-5	NA	NA	100ml	50ml	NA	
Duplicate Lab Control Sample	KWG1205231-6	NA	NA	100ml	50ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

QC Reports

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921

Surrogate Recovery Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
MW-17-4	P1201921-002	77
Method Blank	KWG1205231-7	79
MW-17-4MS	KWG1205231-3	61
MW-17-4DMS	KWG1205231-4	78
Lab Control Sample	KWG1205231-5	74
Duplicate Lab Control Sample	KWG1205231-6	68

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Dioxane-d8	48-118

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012
Time Analyzed: 14:48

Internal Standard Area and RT Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\052312\0523F018.D
Instrument ID: MS26
Analysis Method: 8270D SIM

Lab Code: KWG1205449-2
Analysis Lot: KWG1205449

		1,4-Dichlorobenzene-d4	
		Area	RT
	Results ==>	13,285	5.25
	Upper Limit ==>	26,570	5.75
	Lower Limit ==>	6,643	4.75
	ICAL Result ==>	12,824	5.25
Associated Analyses			
Method Blank	KWG1205231-7	13,815	5.25
Lab Control Sample	KWG1205231-5	14,155	5.25
Duplicate Lab Control Sample	KWG1205231-6	13,461	5.25
MW-17-4MS	KWG1205231-3	13,321	5.25
MW-17-4DMS	KWG1205231-4	13,932	5.25
MW-17-4	P1201921-002	14,551	5.25

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/18/2012
Date Analyzed: 05/23/2012

Matrix Spike/Duplicate Matrix Spike Summary
1,4-Dioxane by GC/MS

Sample Name: MW-17-4
Lab Code: P1201921-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Level: Low
Extraction Lot: KWG1205231

Analyte Name	Sample Result	MW-17-4MS KWG1205231-3 Matrix Spike			MW-17-4DMS KWG1205231-4 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
1,4-Dioxane	ND	15.0	25.0	60	19.5	25.0	78	33-127	26	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/18/2012
Date Analyzed: 05/23/2012

Lab Control Spike/Duplicate Lab Control Spike Summary
1,4-Dioxane by GC/MS

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1205231

	Lab Control Sample KWG1205231-5 Lab Control Spike			Duplicate Lab Control Sample KWG1205231-6 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
1,4-Dioxane	18.6	25.0	74	19.2	25.0	77	52-111	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Battelle	**Service Request:**	P1201921
Project:	JPL GW Mon 2Q12/100006114	**Date Extracted:**	05/18/2012
Sample Matrix:	Water	**Date Analyzed:**	05/23/2012
		Time Analyzed:	20:52

Method Blank Summary
1,4-Dioxane by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS26
Lab Code:	KWG1205231-7	**File ID:**	J:\MS26\DATA\052312\0523F037.D
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1205231

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1205231-5	J:\MS26\DATA\052312\0523F038.D	05/23/12	21:11
Duplicate Lab Control Sample	KWG1205231-6	J:\MS26\DATA\052312\0523F039.D	05/23/12	21:30
MW-17-4MS	KWG1205231-3	J:\MS26\DATA\052312\0523F040.D	05/23/12	21:49
MW-17-4DMS	KWG1205231-4	J:\MS26\DATA\052312\0523F041.D	05/23/12	22:08
MW-17-4	P1201921-002	J:\MS26\DATA\052312\0523F042.D	05/23/12	22:27

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Extracted: 05/18/2012
Date Analyzed: 05/23/2012
Time Analyzed: 21:11

Lab Control Sample Summary
1,4-Dioxane by GC/MS

Sample Name: Lab Control Sample
Lab Code: KWG1205231-5

Instrument ID: MS26
File ID: J:\MS26\DATA\052312\0523F038.D

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Level: Low
Extraction Lot: KWG1205231

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1205231-7	J:\MS26\DATA\052312\0523F037.D	05/23/12	20:52
MW-17-4MS	KWG1205231-3	J:\MS26\DATA\052312\0523F040.D	05/23/12	21:49
MW-17-4DMS	KWG1205231-4	J:\MS26\DATA\052312\0523F041.D	05/23/12	22:08
MW-17-4	P1201921-002	J:\MS26\DATA\052312\0523F042.D	05/23/12	22:27

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Raw Data

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Collected: 05/15/2012
Date Received: 05/15/2012

1,4-Dioxane by GC/MS

Sample Name: MW-17-4
Lab Code: P1201921-002

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	05/18/12	05/23/12	KWG1205231	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	77	48-118	05/23/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\052312\0523F042.D
Lab ID: P1201921-002
RunType: SMPL
Matrix: WATER

Date Acquired: 05/23/2012 22:27
Date Quantitated: 05/24/2012 09:06
Batch ID: KWG1205449
Analysis Method: 8270D SIM
ListJoinID: LJ2865

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
Preparation Holding Time	NA	NA	NA	x	
Pre-Preparation Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Method Blank	NA	NA	NA	x	
MB Surrogate Recovery	NA	NA	NA	x	
Lab Control Spike	NA	NA	NA	x	
Duplicate Lab Control Spike	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: LB MAY 24 2012

Secondary Review: CH 05·24·12

Quantitation Report

Data File:	J:\MS26\DATA\052312\0523F042.D			**Instrument:**	MS26
Acqu Date:	05/23/2012 22:27	**Quant Date:**	05/24/2012 09:06	**Vial:**	25
Run Type:	SMPL			**Dilution:**	1.0
Lab ID:	P1201921-002			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**	IV	**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**	05/15/2012	**Receive Date:**	05/15/2012

Analysis Lot:	KWG1205449	**Prep Lot:**	KWG1205231	**Report Group:**	P1201921
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
		Prep Date:	05/18/2012		
Prep Ref:	1127187				

Quant Method:	J:\MS26\METHODS\SIM\052312_DX.M	**Calibration ID:**	CAL11557
Title:	1,4-Dioxane by GC/MS	**Report List ID:**	LJ2865
Tune Ref:	J:\MS26\DATA\052312\0523F017.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\052312\0523F037.D	**Quant based on Report List**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.25	0.00?	152	14551	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.17	0.00	0.00	96	4279	38.52	77	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F042.D Vial: 25
Acq On : 23 May 2012 10:27 pm Operator: KBailey
Sample : P1201921-002 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 09:06:34 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	14551	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.17	96	4279	38.52	ng/ml	0.01
Spiked Amount 50.000			Recovery =	77.04%		

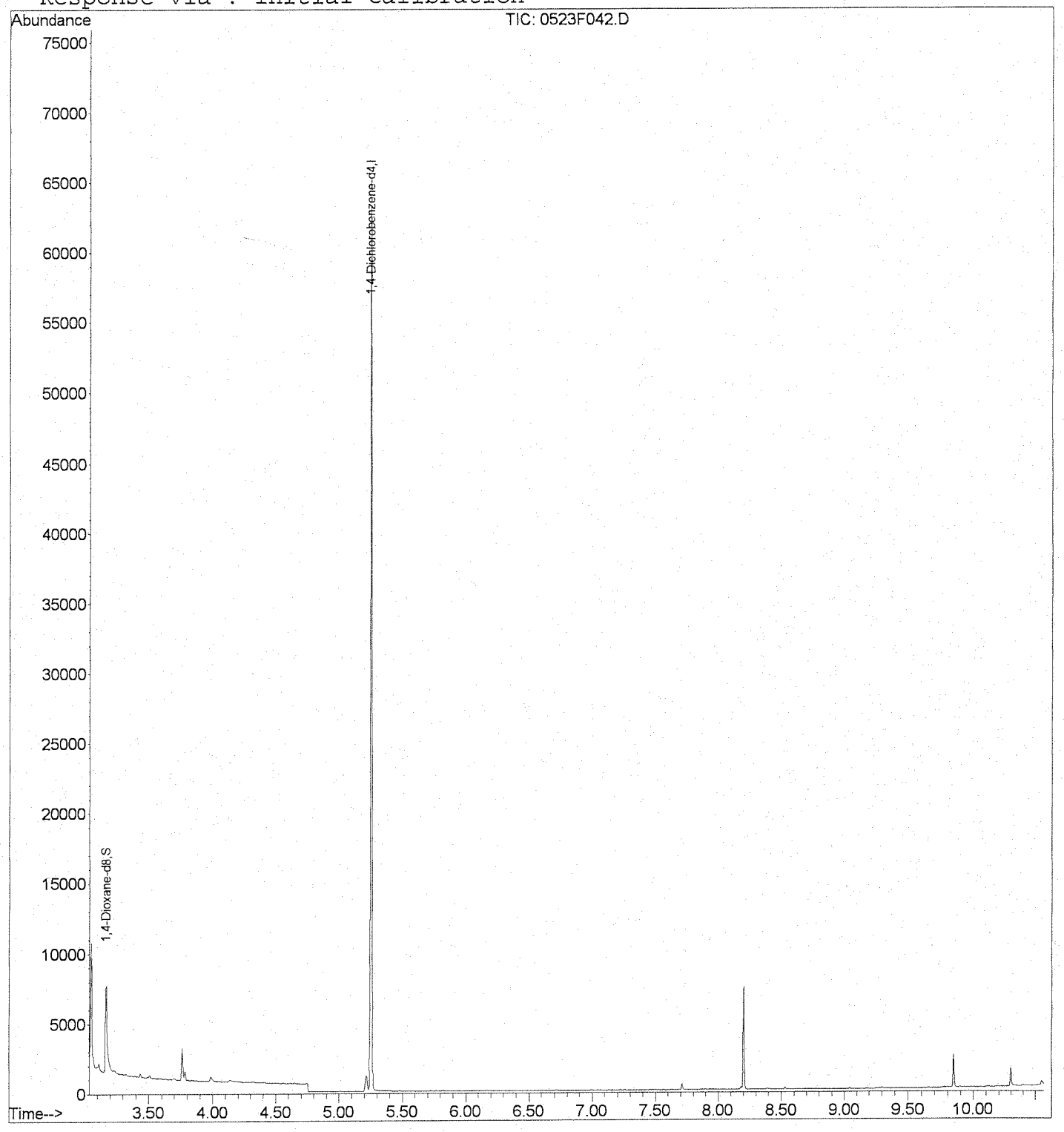
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration
0523F042.D 052312_DX.M Thu May 24 09:09:56 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F042.D Vial: 25
Acq On : 23 May 2012 10:27 pm Operator: KBailey
Sample : P1201921-002 Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 9:06 2012 Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration



Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Collected: NA
Date Received: NA

1,4-Dioxane by GC/MS

Sample Name: Method Blank
Lab Code: KWG1205231-7

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	ND	U	1.0	0.16	1	05/18/12	05/23/12	KWG1205231	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	79	48-118	05/23/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\052312\0523F037.D
Lab ID: KWG1205231-7
RunType: MB
Matrix: WATER

Date Acquired: 05/23/2012 20:52
Date Quantitated: 05/24/2012 09:06
Batch ID: KWG1205449
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

K4411
K4737
P1921

Primary Review: MAY 24 2012

Secondary Review: 05.24.12

Quantitation Report

Data File:	J:\MS26\DATA\052312\0523F037.D			**Instrument:**	MS26
Acqu Date:	05/23/2012 20:52	**Quant Date:**	05/24/2012 09:06	**Vial:**	20
Run Type:	MB			**Dilution:**	1.0
Lab ID:	KWG1205231-7			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/21/2012

Analysis Lot:	KWG1205449	**Prep Lot:**	KWG1205231	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
		Prep Date:	05/18/2012		
Prep Ref:	1127194				

Quant Method:	J:\MS26\METHODS\SIM\052312_DX.M			**Calibration ID:**	CAL11557
Title:					
Tune Ref:	J:\MS26\DATA\052312\0523F017.D			**Method ID:**	MJ402
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.25	0.00?	152	13815	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.16	-0.01	0.00	96	4147	39.32	79	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane				88	0		0.16	U	

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F037.D Vial: 20
Acq On : 23 May 2012 8:52 pm Operator: KBailey
Sample : KWG1205231-7 | MB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 09:06:33 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	13815	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.16	96	4147	39.32	ng/ml	0.00
Spiked Amount 50.000			Recovery =	78.64%		

Target Compounds Qvalue

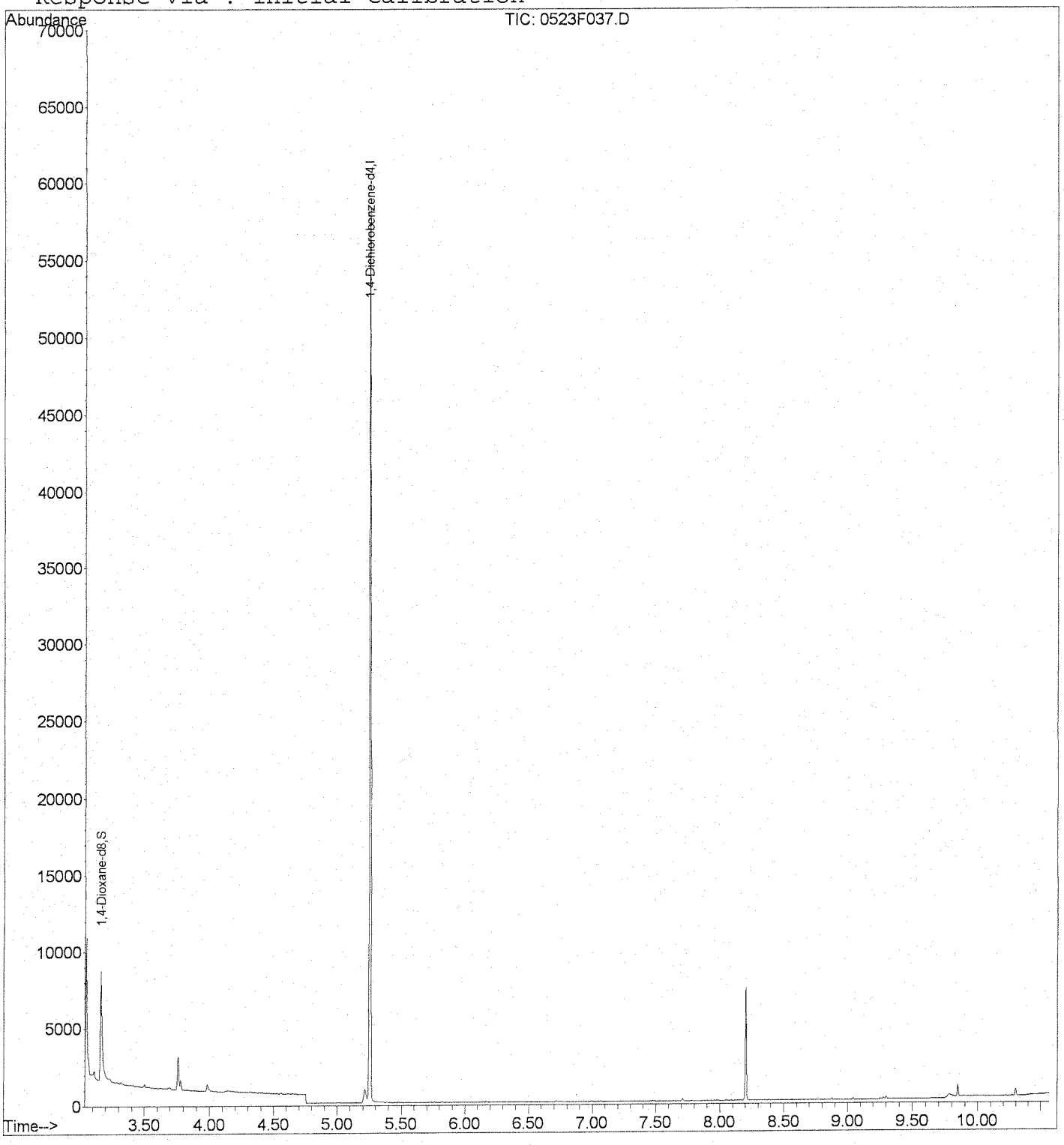
(#) = qualifier out of range (m) = manual integration
0523F037.D 052312_DX.M Thu May 24 09:09:54 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F037.D
Acq On : 23 May 2012 8:52 pm
Sample : KWG1205231-7 | MB
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 9:06 2012

Vial: 20
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration



Client:	Battelle	**Service Request:**	P1201921
Project:	JPL GW Mon 2Q12/100006114	**Date Collected:**	05/15/2012
Sample Matrix:	Water	**Date Received:**	05/15/2012

1,4-Dioxane by GC/MS

Sample Name:	MW-17-4MS	**Units:**	ug/L
Lab Code:	KWG1205231-3	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**15.0**		1.0	0.16	1	05/18/12	05/23/12	KWG1205231	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	61	48-118	05/23/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\052312\0523F040.D
Lab ID: KWG1205231-3 -- P1201921-002MS
RunType: MS
Matrix: WATER

Date Acquired: 05/23/2012 21:49
Date Quantitated: 05/24/2012 09:08
Batch ID: KWG1205449
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: MAY 24 2012

Secondary Review: 05·24·12

Quantitation Report

Data File:	J:\MS26\DATA\052312\0523F040.D			**Instrument:**	MS26
Acqu Date:	05/23/2012 21:49	**Quant Date:**	05/24/2012 09:08	**Vial:**	23
Run Type:	MS			**Dilution:**	1.0
Lab ID:	KWG1205231-3 -- P1201921-002MS			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/21/2012

Analysis Lot:	KWG1205449	**Prep Lot:**	KWG1205231	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
		Prep Date:	05/18/2012		
Prep Ref:	1127190				

Quant Method:	J:\MS26\METHODS\SIM\052312_DX.M			**Calibration ID:**	CAL11557
Title:					
Tune Ref:	J:\MS26\DATA\052312\0523F017.D			**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\052312\0523F037.D			**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.25	0.00?	152	13321	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.14	-0.03	-0.01	96	3076	30.25	61	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.16	-0.02	0.00	88	3261**m**	29.92	15.0		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F040.D Vial: 23
Acq On : 23 May 2012 9:49 pm Operator: KBailey
Sample : P1201921-002MS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 09:06:34 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	13321	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.14	96	3076	30.25	ng/ml	-0.02
Spiked Amount 50.000			Recovery = 60.50%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.16	88	3261m	29.92	ng/ml	

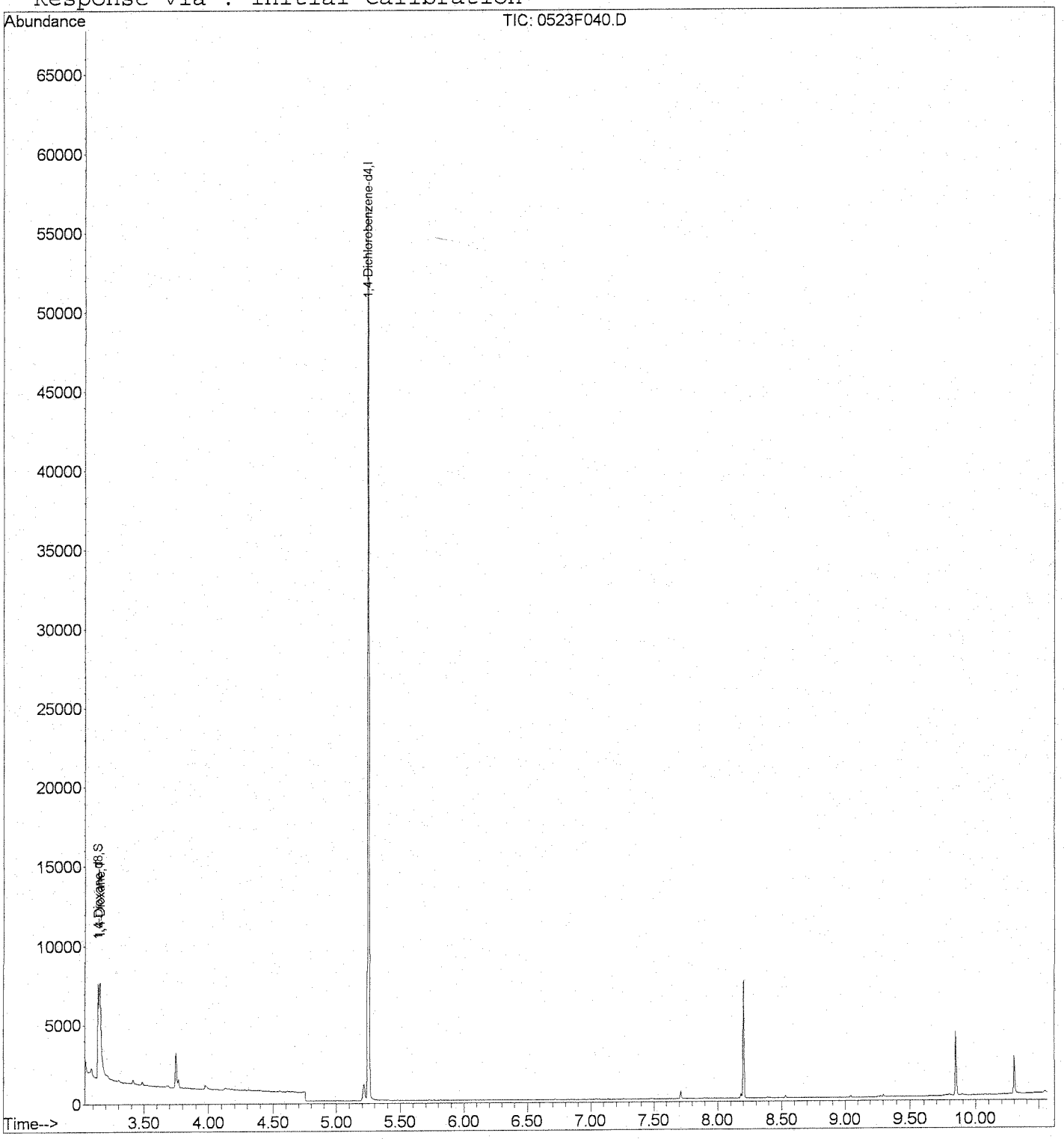
(#) = qualifier out of range (m) = manual integration
0523F040.D 052312_DX.M Thu May 24 09:09:55 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F040.D
Acq On : 23 May 2012 9:49 pm
Sample : P1201921-002MS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 9:08 2012

Vial: 23
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration

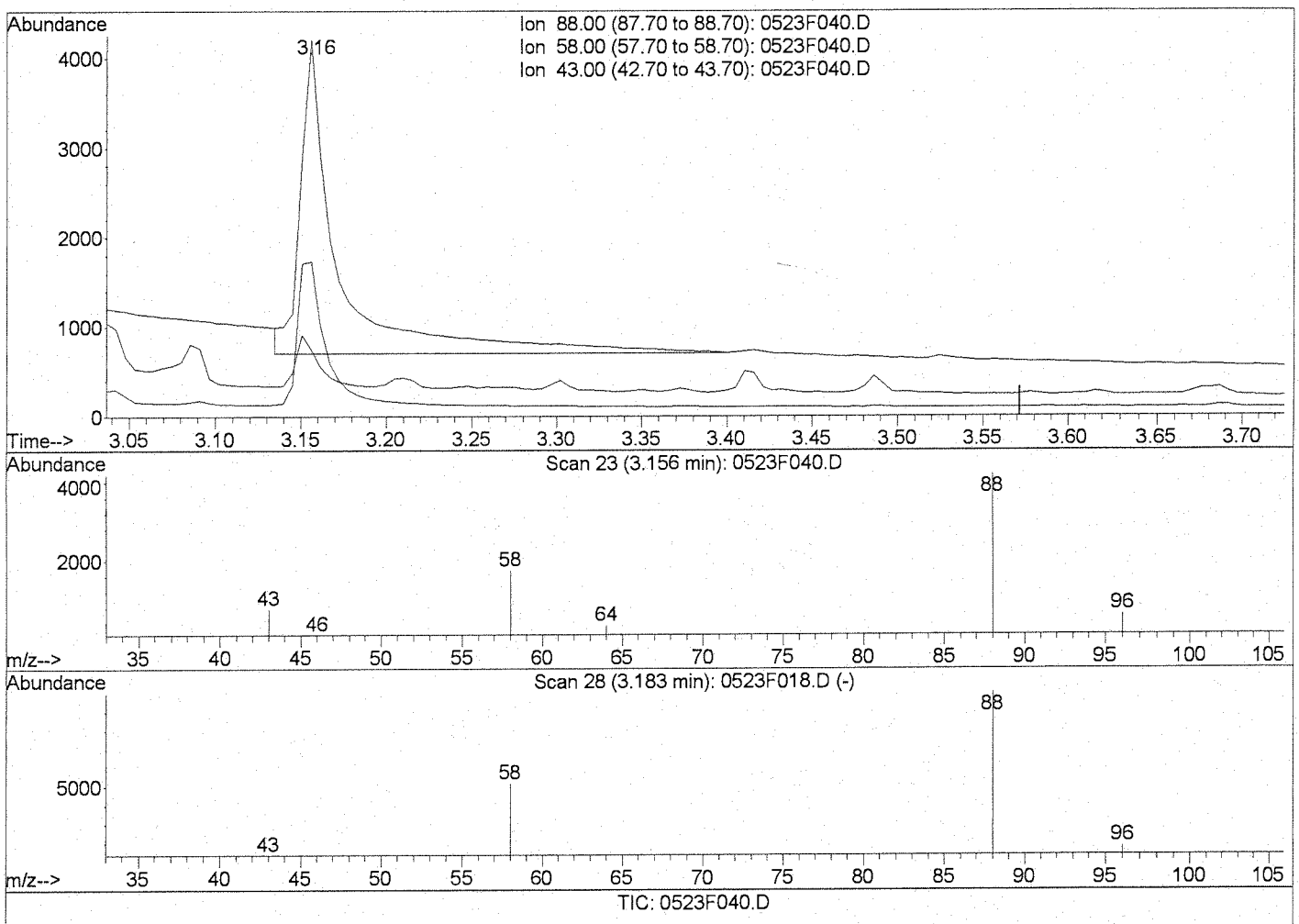


Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F040.D
Acq On : 23 May 2012 9:49 pm
Sample : P1201921-002MS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 9:06 2012

Vial: 23
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Multiple Level Calibration



TIC: 0523F040.D

(3) 1,4-Dioxane (T)

3.16min 49.94ng/ml

response 5443

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	46.66
43.00	16.10	13.32
0.00	0.00	0.00

Manual Integration:

Before

0523F040.D 052312_DX.M Thu May 24 09:08:15 2012

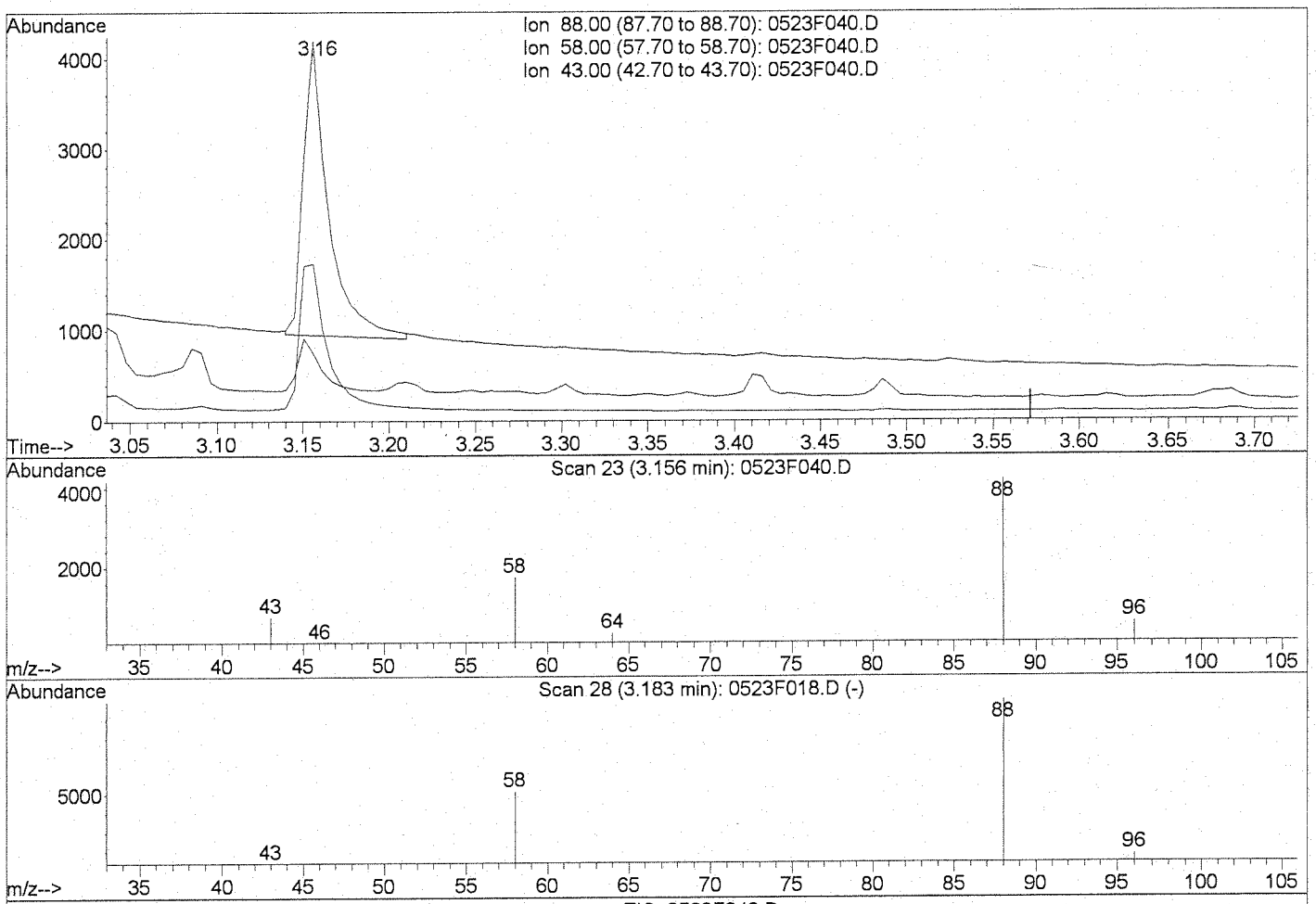
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F040.D
Acq On : 23 May 2012 9:49 pm
Sample : P1201921-002MS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 9:08 2012

Vial: 23
Operator: KBailey
Inst : MS26
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Multiple Level Calibration



TIC: 0523F040.D

(3) 1,4-Dioxane (T)

3.16min 29.92ng/ml m

response 3261

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	41.27
43.00	16.10	17.89
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/24/12

0523F040.D 052312_DX.M Thu May 24 09:08:20 2012

Client:	Battelle	**Service Request:**	P1201921
Project:	JPL GW Mon 2Q12/100006114	**Date Collected:**	05/15/2012
Sample Matrix:	Water	**Date Received:**	05/15/2012

1,4-Dioxane by GC/MS

Sample Name:	MW-17-4DMS	**Units:**	ug/L
Lab Code:	KWG1205231-4	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**19.5**		1.0	0.16	1	05/18/12	05/23/12	KWG1205231	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	78	48-118	05/23/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\052312\0523F041.D
Lab ID: KWG1205231-4 -- P1201921-002DMS
RunType: DMS
Matrix: WATER

Date Acquired: 05/23/2012 22:08
Date Quantitated: 05/24/2012 09:08
Batch ID: KWG1205449
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

Primary Review: MAY 24 2012

Secondary Review: 05·24·12

Quantitation Report

Data File:	J:\MS26\DATA\052312\0523F041.D			**Instrument:**	MS26
Acqu Date:	05/23/2012 22:08	**Quant Date:**	05/24/2012 09:08	**Vial:**	24
Run Type:	DMS			**Dilution:**	1.0
Lab ID:	KWG1205231-4 -- P1201921-002DMS			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/21/2012

Analysis Lot:	KWG1205449	**Prep Lot:**	KWG1205231	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
		Prep Date:	05/18/2012		
Prep Ref:	1127191				

Quant Method:	J:\MS26\METHODS\SIM\052312_DX.M			**Calibration ID:**	CAL11557
Title:					
Tune Ref:	J:\MS26\DATA\052312\0523F017.D			**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\052312\0523F037.D			**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.25	0.00?	152	13932	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.17	0.00	0.00	96	4140	38.93	78	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.18		0.00	88	4449m	39.03	19.5		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F041.D Vial: 24
Acq On : 23 May 2012 10:08 pm Operator: KBailey
Sample : P1201921-002DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 09:06:34 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

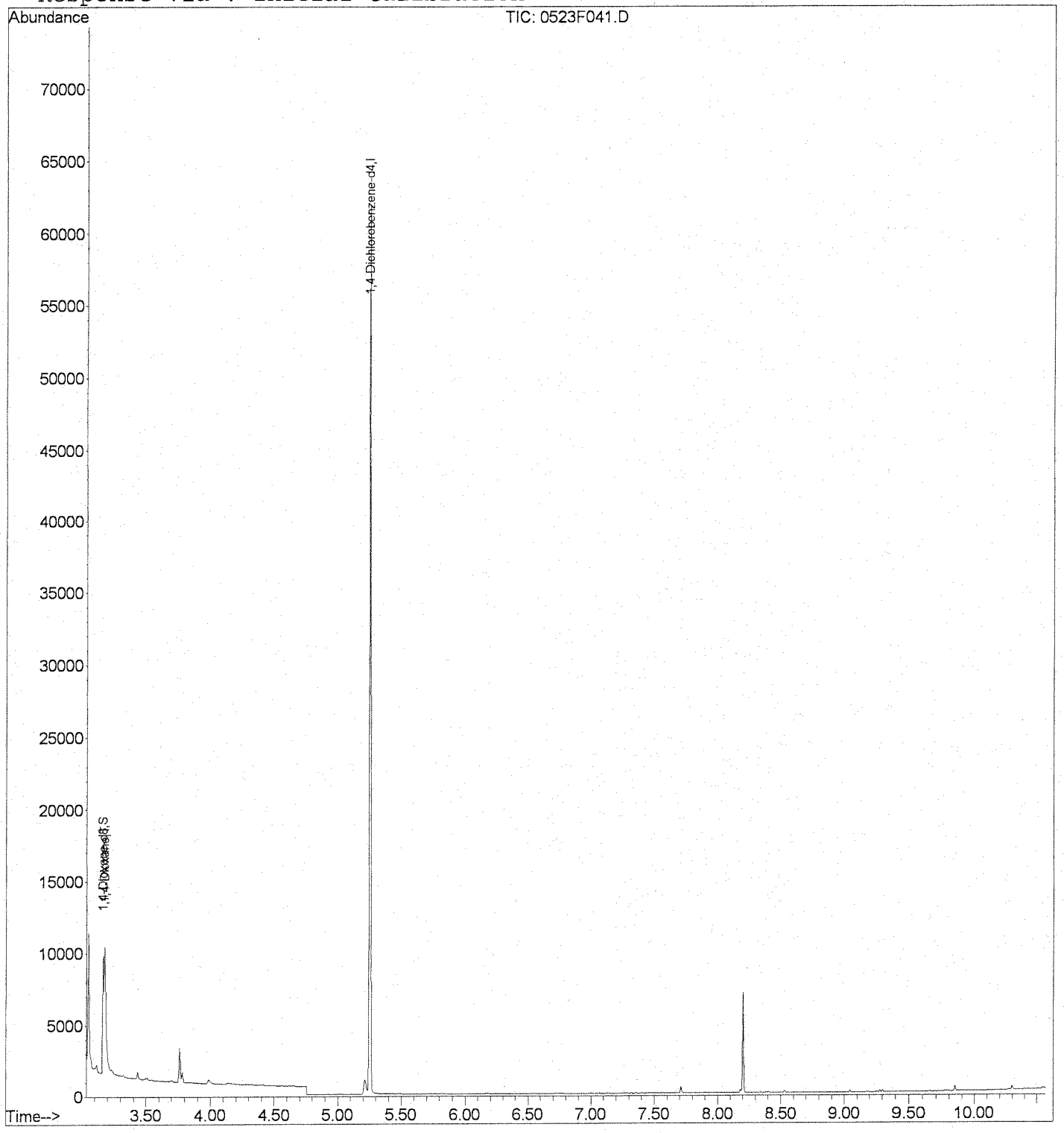
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	13932	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.17	96	4140	38.93	ng/ml	0.01
Spiked Amount 50.000			Recovery = 77.86%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.18	88	4449m	39.03	ng/ml	

(#) = qualifier out of range (m) = manual integration
0523F041.D 052312_DX.M Thu May 24 09:09:56 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F041.D Vial: 24
Acq On : 23 May 2012 10:08 pm Operator: KBailey
Sample : P1201921-002DMS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 9:08 2012 Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration

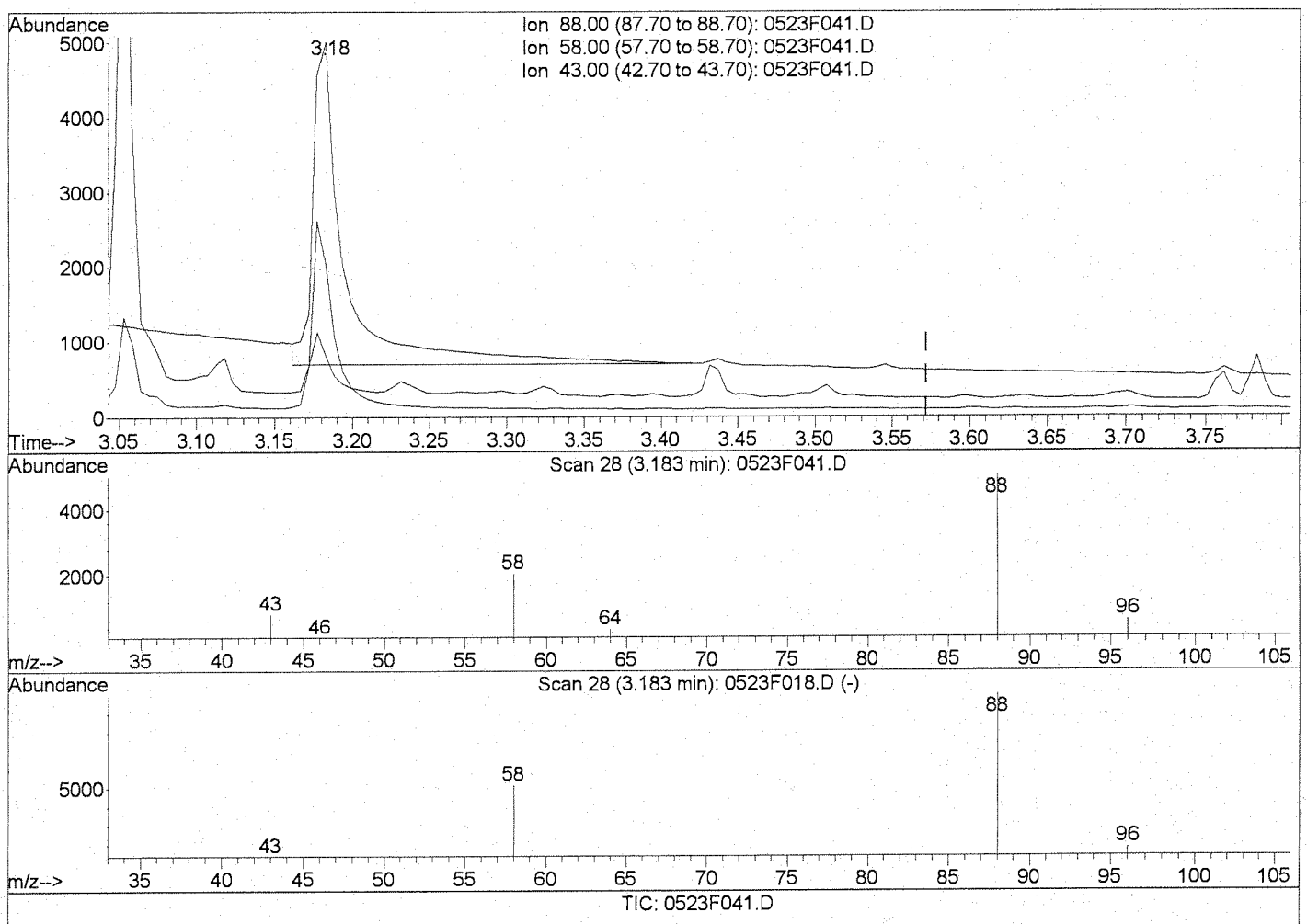


Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F041.D
Acq On : 23 May 2012 10:08 pm
Sample : P1201921-002DMS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 9:06 2012

Vial: 24
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Multiple Level Calibration



TIC: 0523F041.D

(3) 1,4-Dioxane (T)

3.18min 55.19ng/ml

response 6292

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	44.89
43.00	16.10	11.00
0.00	0.00	0.00

Manual Integration:

Before

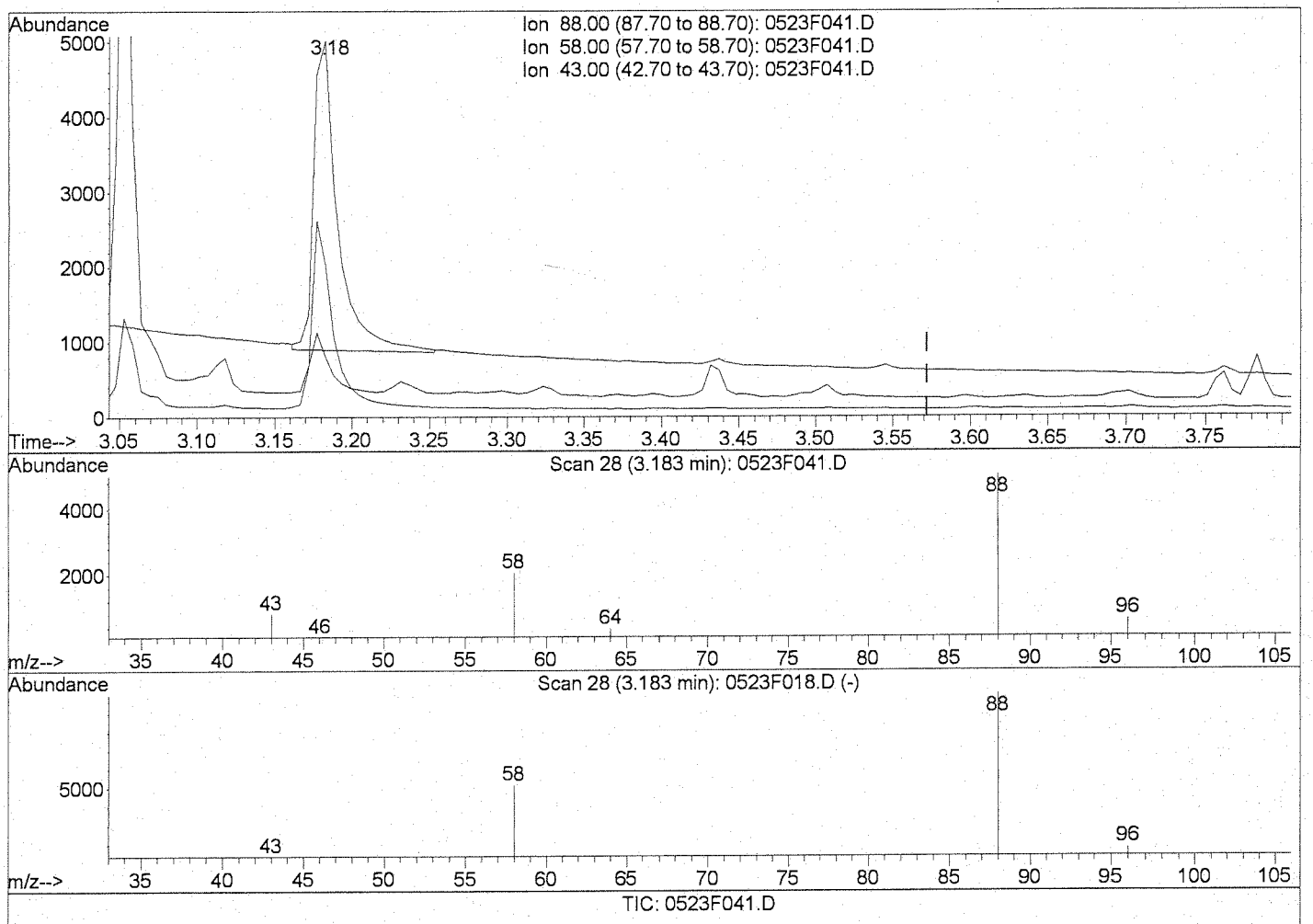
0523F041.D 052312_DX.M Thu May 24 09:08:26 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F041.D
Acq On : 23 May 2012 10:08 pm
Sample : P1201921-002DMS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 9:08 2012

Vial: 24
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Multiple Level Calibration



TIC: 0523F041.D

(3) 1,4-Dioxane (T)

3.18min 39.03ng/ml m

response 4449

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	40.66
43.00	16.10	16.22
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/24/12

0523F041.D 052312_DX.M Thu May 24 09:08:31 2012

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Collected: NA
Date Received: NA

1,4-Dioxane by GC/MS

Sample Name: Lab Control Sample
Lab Code: KWG1205231-5

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**18.6**		1.0	0.16	1	05/18/12	05/23/12	KWG1205231	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	74	48-118	05/23/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\052312\0523F038.D
Lab ID: KWG1205231-5
RunType: LCS
Matrix: WATER

Date Acquired: 05/23/2012 21:11
Date Quantitated: 05/24/2012 09:07
Batch ID: KWG1205449
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

K4441
K4737
P1921

Primary Review: MAY 24 2012

Secondary Review: CA 05·24·12

Printed: 05/24/2012 09:25:23
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS26\DATA\052312\0523F038.D			**Instrument:**	MS26
Acqu Date:	05/23/2012 21:11	**Quant Date:**	05/24/2012 09:07	**Vial:**	21
Run Type:	LCS			**Dilution:**	1.0
Lab ID:	KWG1205231-5			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/21/2012

Analysis Lot:	KWG1205449	**Prep Lot:**	KWG1205231	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
Prep Ref:	1127192	**Prep Date:**	05/18/2012		

Quant Method:	J:\MS26\METHODS\SIM\052312_DX.M			**Calibration ID:**	CAL11557
Title:					
Tune Ref:	J:\MS26\DATA\052312\0523F017.D			**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\052312\0523F037.D			**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.25	0.00?	152	14155	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.17	0.00	0.00	96	3971	36.75	74	48-118	OK

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.18		0.00	88	4311m	37.22	18.6		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F038.D Vial: 21
Acq On : 23 May 2012 9:11 pm Operator: KBailey
Sample : KWG1205231-5 | LCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 09:06:33 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	14155	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.17	96	3971	36.75	ng/ml	0.01
Spiked Amount 50.000			Recovery = 73.50%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.18	88	4311m	37.22	ng/ml	

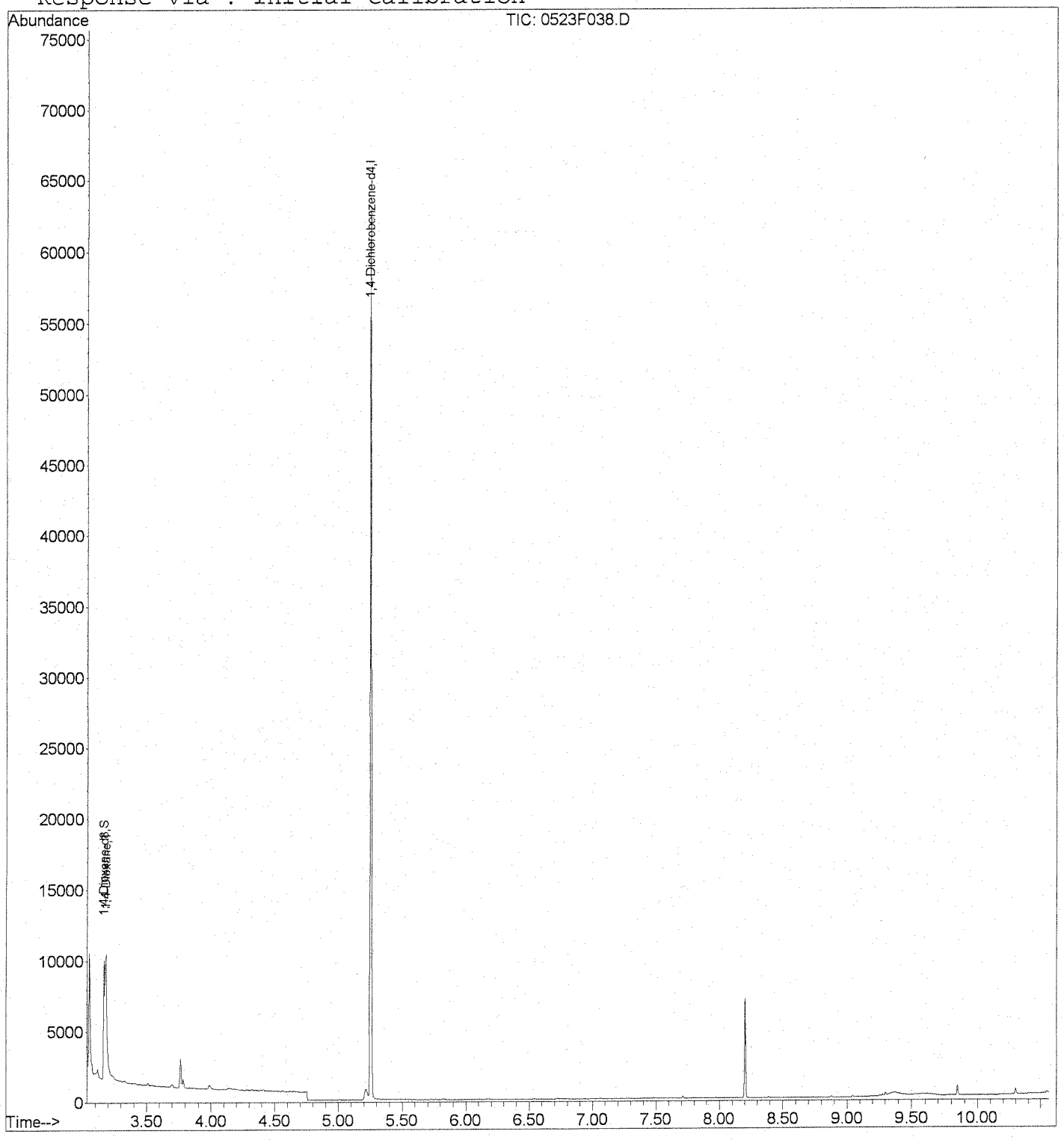
(#) = qualifier out of range (m) = manual integration
0523F038.D 052312_DX.M Thu May 24 09:09:54 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F038.D
Acq On : 23 May 2012 9:11 pm
Sample : KWG1205231-5 | LCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 9:07 2012

Vial: 21
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration

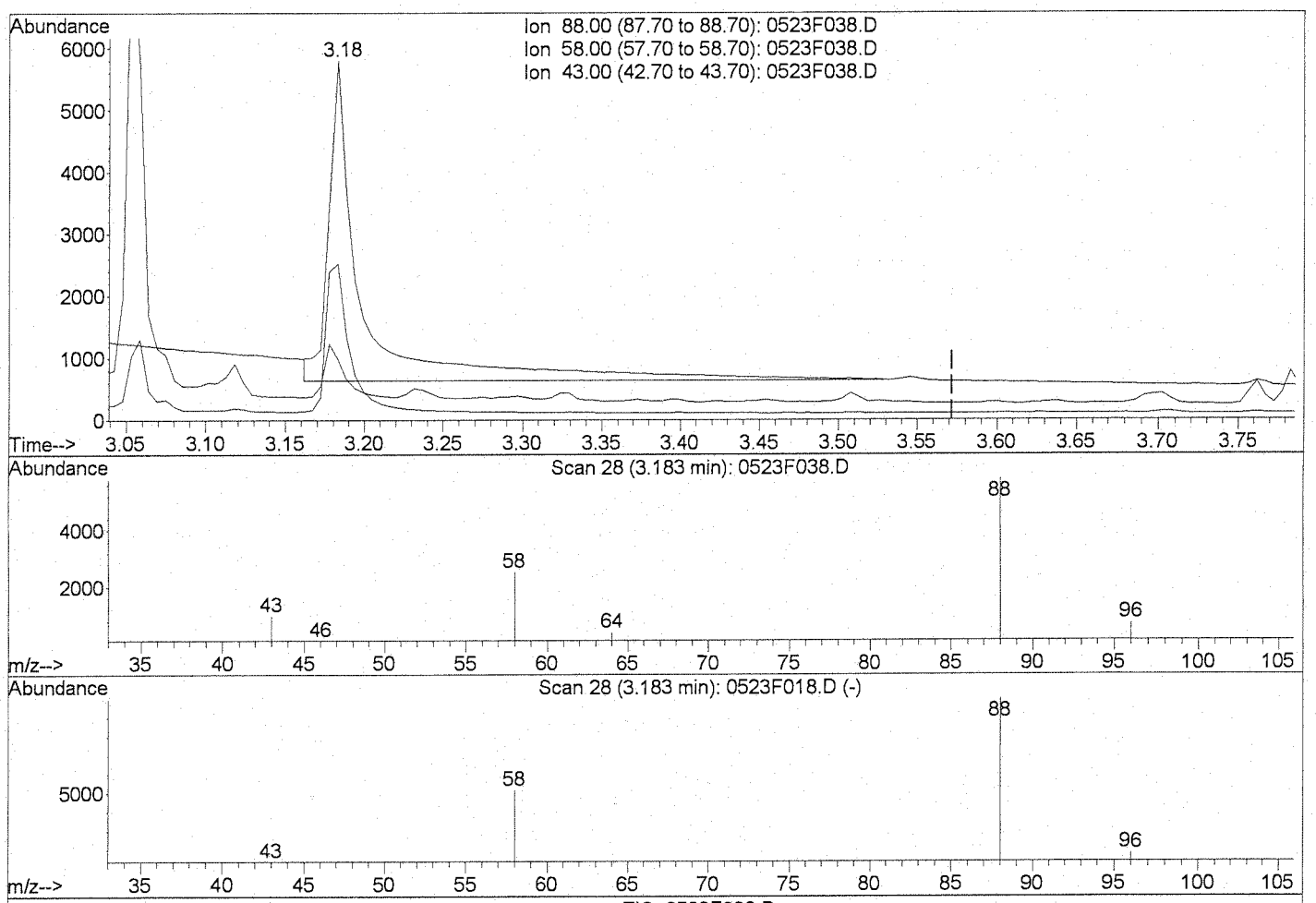


Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F038.D
Acq On : 23 May 2012 9:11 pm
Sample : KWG1205231-5 | LCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 9:06 2012

Vial: 21
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Multiple Level Calibration



TIC: 0523F038.D

(3) 1,4-Dioxane (T)

3.18min 66.94ng/ml

response 7753

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	46.74
43.00	16.10	13.18
0.00	0.00	0.00

Manual Integration:

Before

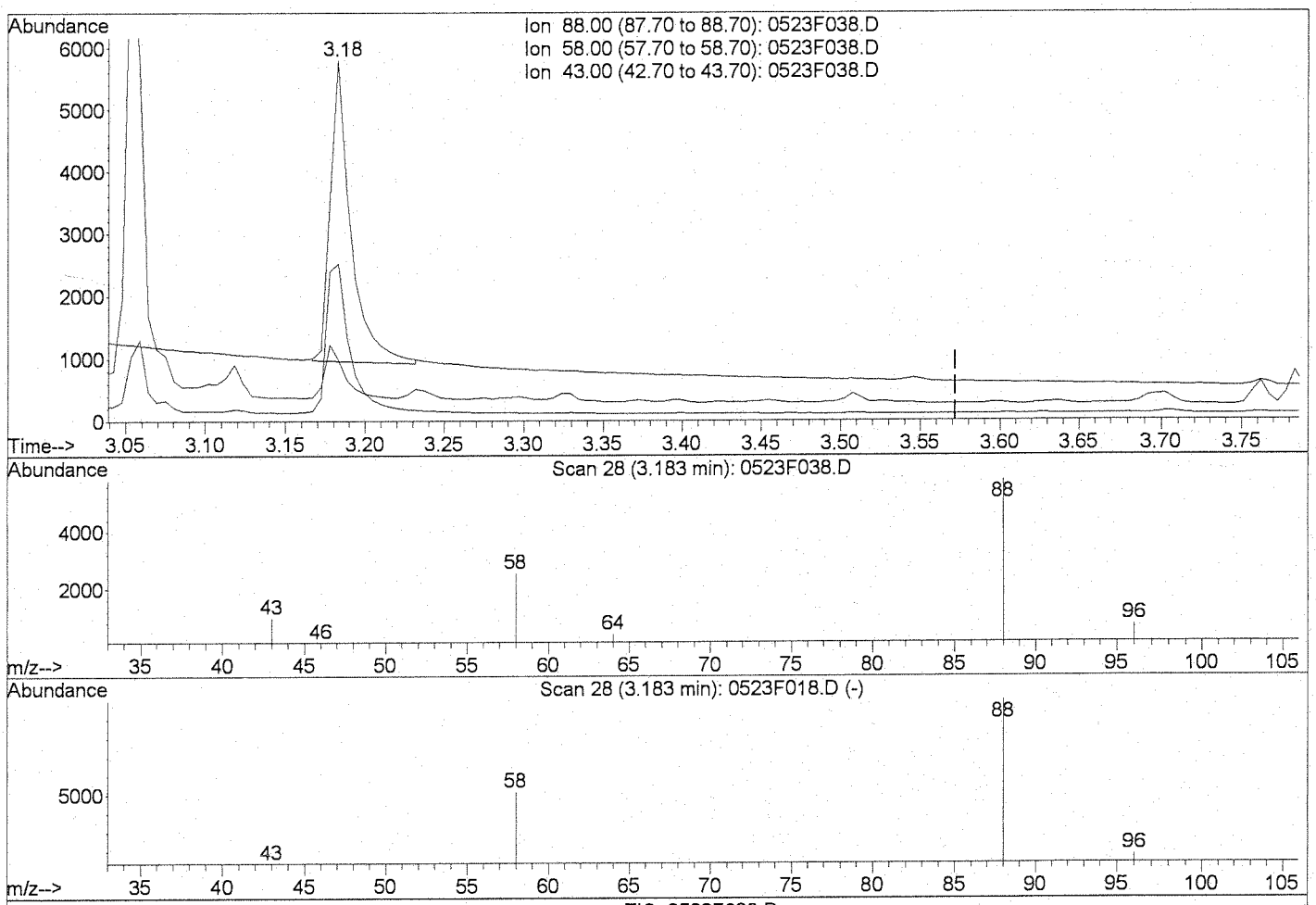
0523F038.D 052312_DX.M Thu May 24 09:07:51 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F038.D
Acq On : 23 May 2012 9:11 pm
Sample : KWG1205231-5 | LCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 9:07 2012

Vial: 21
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Multiple Level Calibration



TIC: 0523F038.D

(3) 1,4-Dioxane (T)

3.18min 37.22ng/ml m

response 4311

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	43.46
43.00	16.10	16.91
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/24/12

0523F038.D 052312_DX.M Thu May 24 09:07:56 2012

Client: Battelle
Project: JPL GW Mon 2Q12/100006114
Sample Matrix: Water

Service Request: P1201921
Date Collected: NA
Date Received: NA

1,4-Dioxane by GC/MS

Sample Name: Duplicate Lab Control Sample
Lab Code: KWG1205231-6

Extraction Method: EPA 3510C
Analysis Method: 8270D SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,4-Dioxane	**19.2**		1.0	0.16	1	05/18/12	05/23/12	KWG1205231	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Dioxane-d8	68	48-118	05/23/12	Acceptable

Comments:

Exception Report

Data File: J:\MS26\DATA\052312\0523F039.D
Lab ID: KWG1205231-6
RunType: DLCS
Matrix: WATER

Date Acquired: 05/23/2012 21:30
Date Quantitated: 05/24/2012 09:08
Batch ID: KWG1205449
Analysis Method: 8270D SIM
MethodJoinID: MJ402

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
Analytical Holding Time	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Calibration Verification Pass/Fail	NA	NA	NA	x	
Continuing Calibration Recovery	NA	NA	NA	x	
Continuing Calibration Minimum RF	NA	NA	NA	x	
Continuing Calibration SPCC/CCC	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Surrogates	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Relative Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Std MRL Unsupported by ICAL	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	
Overdiluted Analysis	NA	NA	NA	x	

K4411
K4737
P1921

Primary Review: MAY 24 2012

Secondary Review: 05.24.12

Printed: 05/24/2012 09:25:26
u:\Stealth\Crystal.rpt\except2.rpt

Quantitation Report

Data File:	J:\MS26\DATA\052312\0523F039.D			**Instrument:**	MS26
Acqu Date:	05/23/2012 21:30	**Quant Date:**	05/24/2012 09:08	**Vial:**	22
Run Type:	DLCS			**Dilution:**	1.0
Lab ID:	KWG1205231-6			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-Dioxa	**Collect Date:**		**Receive Date:**	05/21/2012

Analysis Lot:	KWG1205449	**Prep Lot:**	KWG1205231	**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**	EPA 3510C		
		Prep Date:	05/18/2012		
Prep Ref:	1127193				

Quant Method:	J:\MS26\METHODS\SIM\052312_DX.M	**Calibration ID:**	CAL11557
Title:			
Tune Ref:	J:\MS26\DATA\052312\0523F017.D	**Method ID:**	MJ402
MB Ref:	J:\MS26\DATA\052312\0523F037.D	**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.25	0.00?	152	13461	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits		Rpt?
1	1,4-Dioxane-d8	3.16	-0.01	0.00	96	3477	33.84	68	48-118	OK	

Target Compounds

Final Conc. Units: ug/L

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.17	-0.01	0.00	88	4237m	38.47	19.2		

Prep Amount:	100 ml	**Dilution:**	1.0
Prep Final Vol:	50 ml	**Unit Factor:**	1

Final Concentration = ((Soln Conc x Prep Final Vol x Dilution) / Prep Amount) x Unit Factor

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F039.D Vial: 22
Acq On : 23 May 2012 9:30 pm Operator: KBailey
Sample : KWG1205231-6 | DLCS Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 09:06:33 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	13461	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.16	96	3477	33.84	ng/ml	0.00
Spiked Amount 50.000			Recovery =	67.68%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.17	88	4237m	38.47	ng/ml	

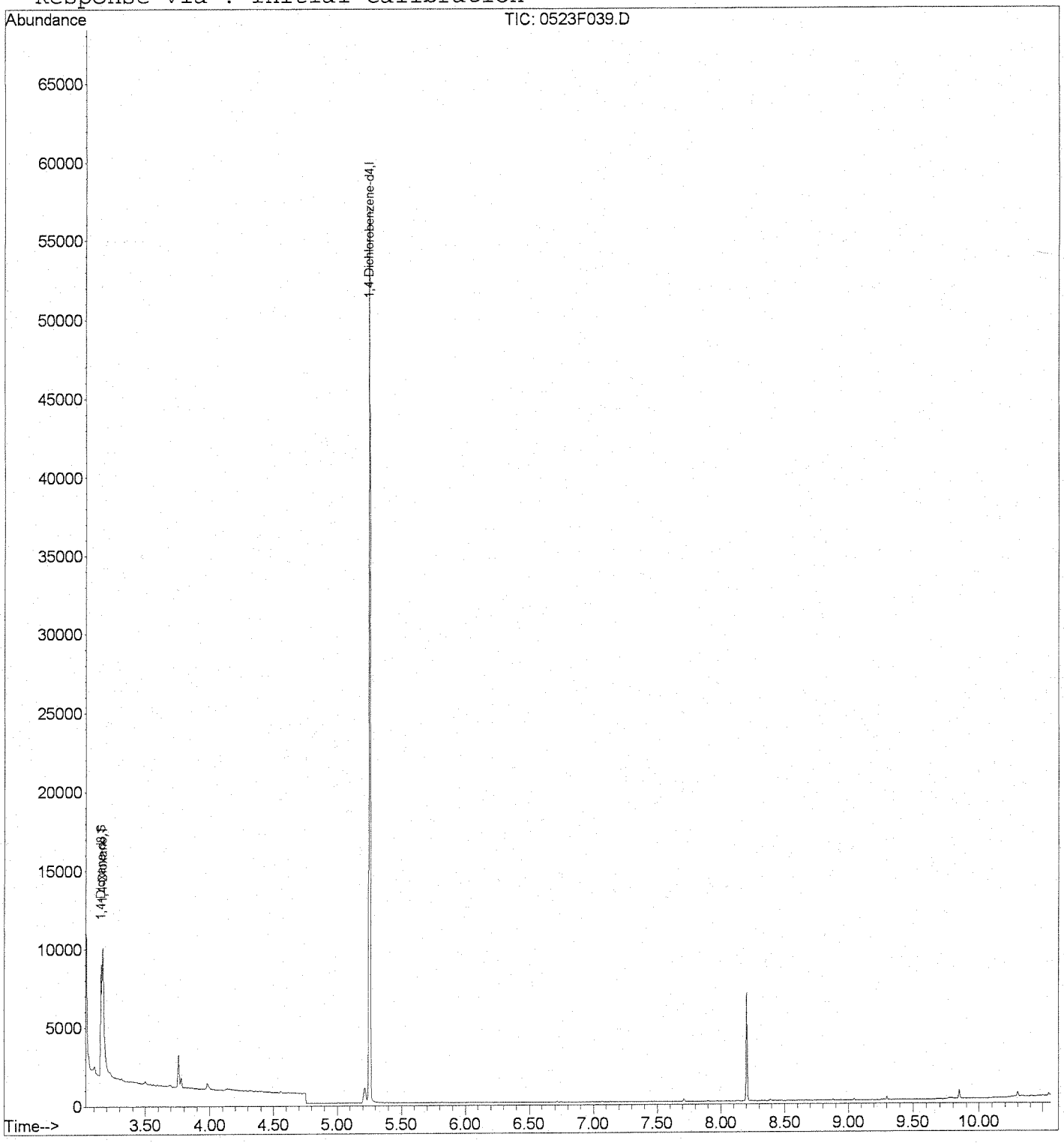
(#) = qualifier out of range (m) = manual integration
0523F039.D 052312_DX.M Thu May 24 09:09:55 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F039.D
Acq On : 23 May 2012 9:30 pm
Sample : KWG1205231-6 | DLCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 9:08 2012

Vial: 22
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration

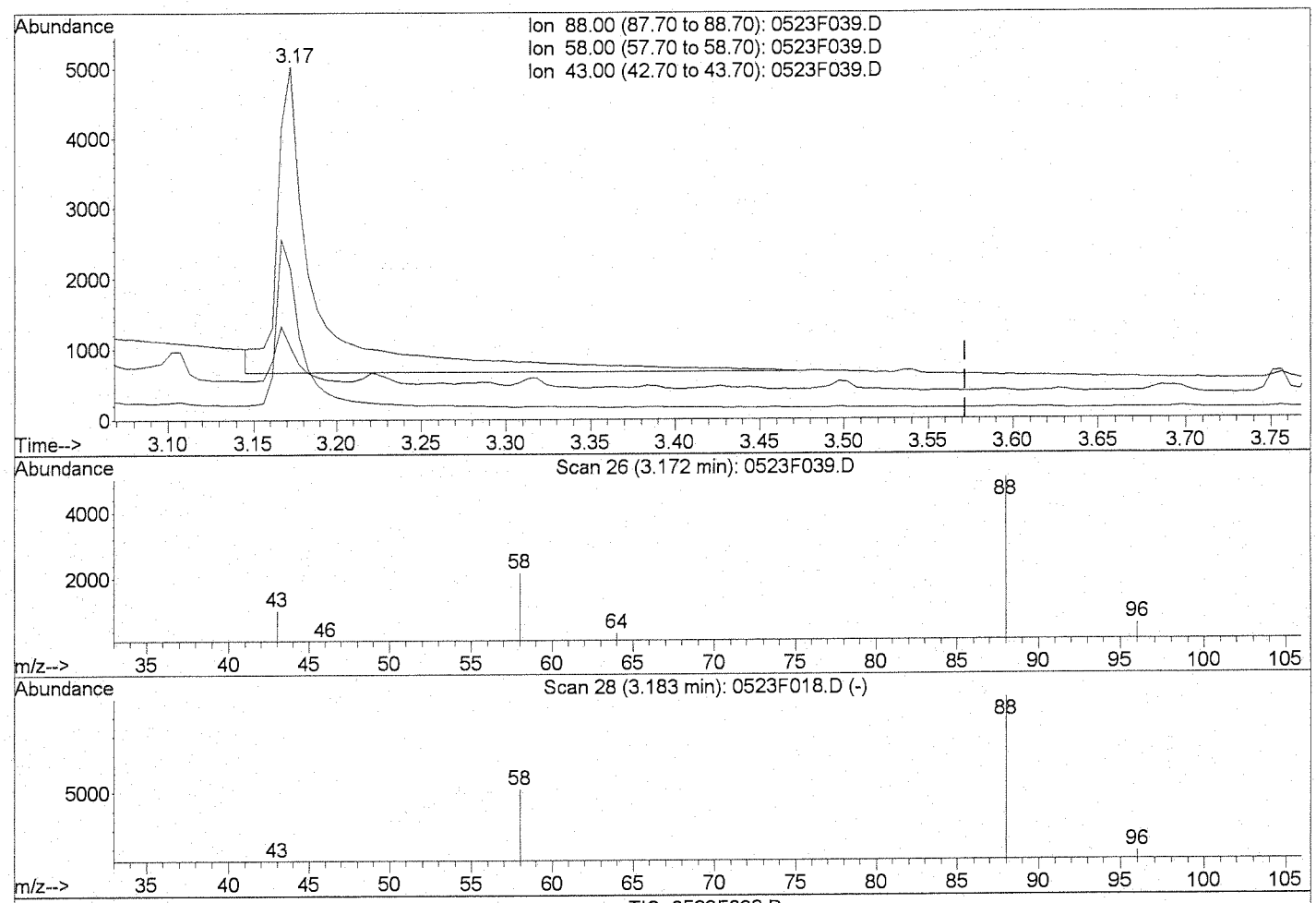


Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F039.D
Acq On : 23 May 2012 9:30 pm
Sample : KWG1205231-6 | DLCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 9:06 2012

Vial: 22
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Multiple Level Calibration



TIC: 0523F039.D

(3) 1,4-Dioxane (T)

3.17min 64.89ng/ml

response 7147

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	45.65
43.00	16.10	14.16
0.00	0.00	0.00

Manual Integration:

Before

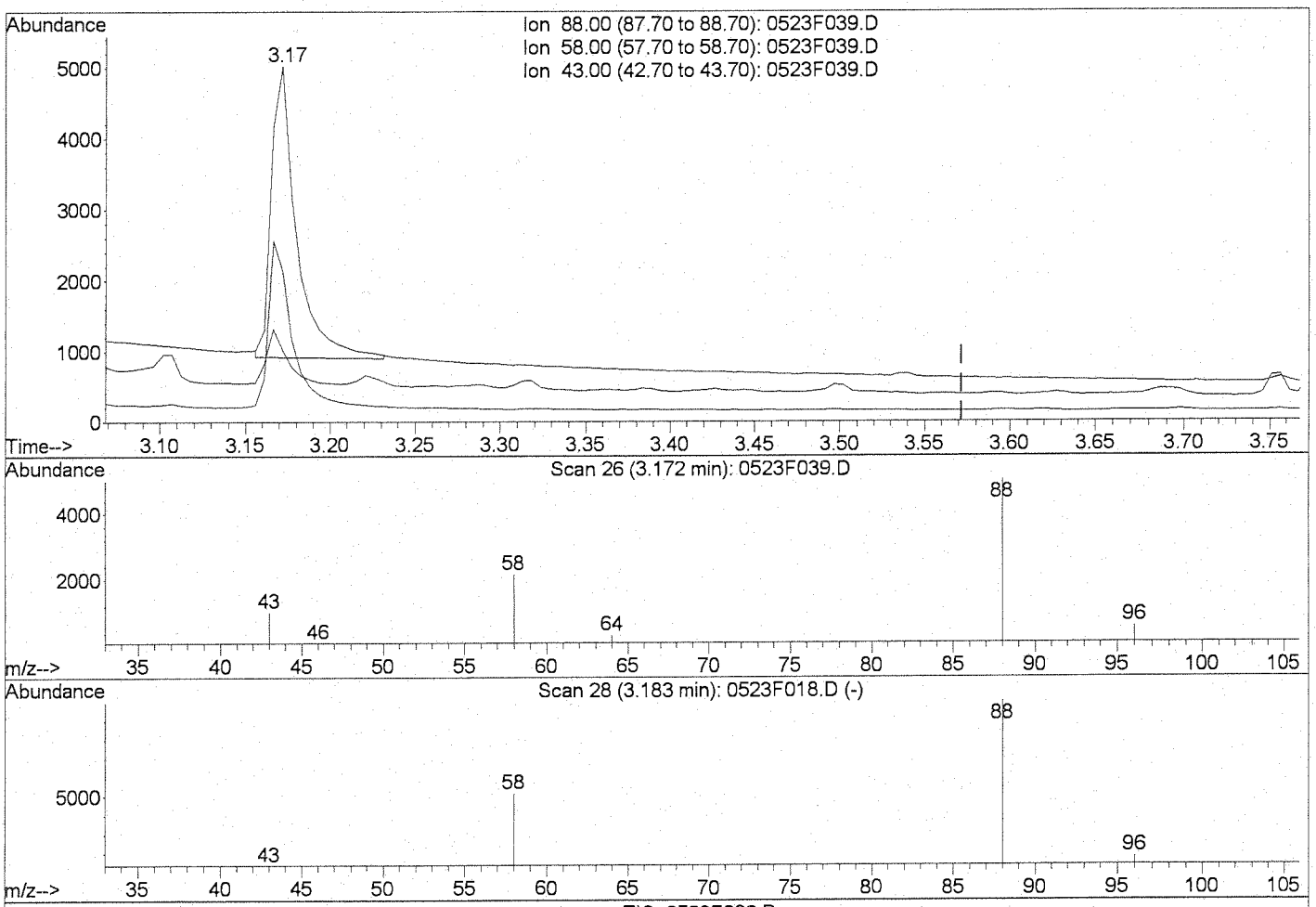
0523F039.D 052312_DX.M Thu May 24 09:08:03 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F039.D
Acq On : 23 May 2012 9:30 pm
Sample : KWG1205231-6 | DLCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 24 9:08 2012

Vial: 22
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Multiple Level Calibration



TIC: 0523F039.D

(3) 1,4-Dioxane (T)

3.17min 38.47ng/ml m

response 4237

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	42.73
43.00	16.10	20.57
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/24/12

0523F039.D 052312_DX.M Thu May 24 09:08:08 2012

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Standards Data

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012
Time Analyzed: 14:29

Tune Summary
1,4-Dioxane by GC/MS

File ID: J:\MS26\DATA\052312\0523F017.D
Instrument ID: MS26
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1205449

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	17.8	56202	PASS
68	69	0	2	1.4	1026	PASS
69	198	0	100	23.8	75256	PASS
70	69	0	2	0.5	357	PASS
127	198	10	80	42.3	133701	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	59.7	315946	PASS
199	198	5	9	6.8	21623	PASS
275	198	10	60	28.9	91160	PASS
365	442	1	50	2.2	11651	PASS
441	443	0	100	77.4	79622	PASS
442	442	100	100	100.0	528829	PASS
443	442	15	24	19.5	102920	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1205449-2	J:\MS26\DATA\052312\0523F018.D	05/23/2012	14:48	
Method Blank	KWG1205231-7	J:\MS26\DATA\052312\0523F037.D	05/23/2012	20:52	
Lab Control Sample	KWG1205231-5	J:\MS26\DATA\052312\0523F038.D	05/23/2012	21:11	
Duplicate Lab Control Sample	KWG1205231-6	J:\MS26\DATA\052312\0523F039.D	05/23/2012	21:30	
MW-17-4MS	KWG1205231-3	J:\MS26\DATA\052312\0523F040.D	05/23/2012	21:49	
MW-17-4DMS	KWG1205231-4	J:\MS26\DATA\052312\0523F041.D	05/23/2012	22:08	
MW-17-4	P1201921-002	J:\MS26\DATA\052312\0523F042.D	05/23/2012	22:27	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Exception Report

Data File: J:\MS26\DATA\052312\0523F017.D
Lab ID: KWG1205449-1
RunType: TUNE
Matrix: WATER

Date Acquired: 05/23/2012 14:29
Date Quantitated:
Batch ID: KWG1205449
Analysis Method: DFTPP
ListJoinID: LJ1965

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Ion Ratio	NA	NA	NA	x	

Primary Review: MAY 2 3 2012

Secondary Review: CM 05.24.12

Quantitation Report

Data File:	J:\MS26\DATA\052312\0523F017.D			**Instrument:**	MS26
Acqu Date:	05/23/2012 14:29	**Quant Date:**		**Vial:**	1
Run Type:	TUNE			**Dilution:**	1.0
Lab ID:	KWG1205449-1			**Soln Conc. Units:**	

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-DIOXA	**Collect Date:**		**Receive Date:**	05/23/2012

Analysis Lot:	KWG1205449	**Prep Lot:**		**Report Group:**	
Analysis Method:	DFTPP	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS26\METHODS\SIM\A_DFTPP.M			**Calibration ID:**	CAL11557
Title:				**Report List ID:**	LJ1965
Tune Ref:				**Method ID:**	MJ190
MB Ref:				**Quant based on Report List**	

Tune Results

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	17.8	56202	Pass
68	69	0	2	1.4	1026	Pass
69	198	0	100	23.8	75256	Pass
70	69	0	2	0.5	357	Pass
127	198	10	80	42.3	133701	Pass
197	198	0	2	0.0	0	Pass
198	442	30	100	59.7	315946	Pass
199	198	5	9	6.8	21623	Pass
275	198	10	60	28.9	91160	Pass
365	442	1	50	2.2	11651	Pass
441	443	0.01	100	77.4	79622	Pass
442	442	100	100	100.0	528829	Pass
443	442	15	24	19.5	102920	Pass

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

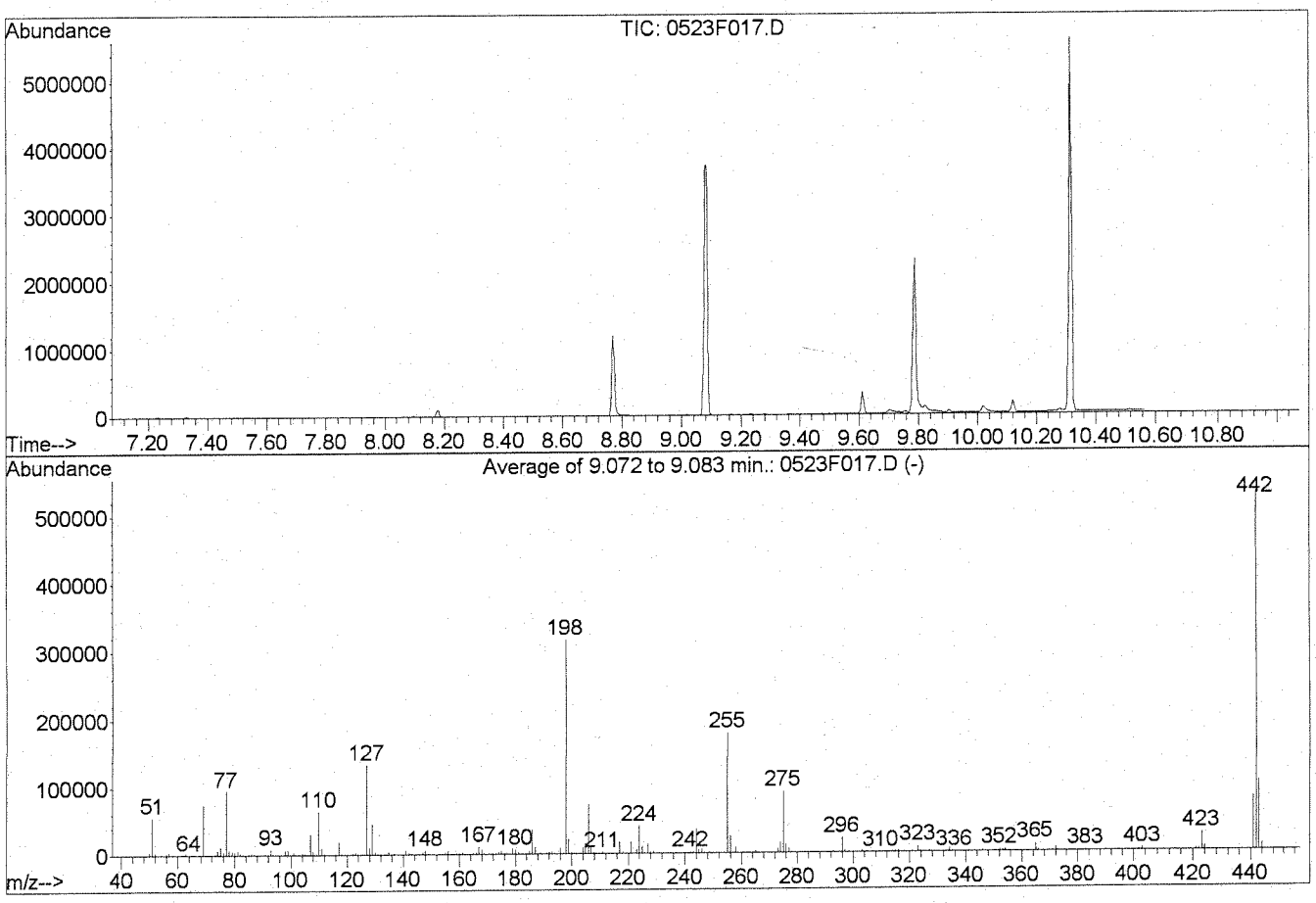
D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

DFTPP

Data File : J:\MS26\DATA\052312\0523F017.D
Acq On : 23 May 2012 2:29 pm
Sample : 3.0ug/mL DFTPP | SVM38-66A
Misc :
MS Integration Params: rteint.p
Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix

Vial: 1
Operator: KBailey
Inst : MS26
Multiplr: 1.00



AutoFind: Scans 1046, 1047, 1048; Background Corrected with Scan 1042

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	17.8	56202	PASS
68	69	0.00	2	1.4	1026	PASS
69	198	0.00	100	23.8	75256	PASS
70	69	0.00	2	0.5	357	PASS
127	198	10	80	42.3	133701	PASS
197	198	0.00	2	0.0	0	PASS
198	442	30	100	59.7	315946	PASS
199	198	5	9	6.8	21623	PASS
275	198	10	60	28.9	91160	PASS
365	442	1	50	2.2	11651	PASS
441	443	0.01	100	77.4	79622	PASS
442	442	30	100	100.0	528829	PASS
443	442	15	24	19.5	102920	PASS

0523F017.D A_DFTPP.M Wed May 23 17:02:37 2012

Average of 9.072 to 9.083 min.: 0523F017.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
50.00	3344	64.00	397	78.00	6683	88.95	139
51.00	56202	65.00	1488	79.00	5133	91.00	1363
52.00	3019	66.00	54	80.00	4122	92.00	1464
53.00	75	67.95	1026	81.00	6248	93.00	9224
54.95	306	69.00	75256	81.95	1522	93.90	714
55.95	1729	70.00	357	83.00	1693	95.00	215
57.00	4290	73.00	580	83.95	332	95.90	497
58.00	106	74.00	6940	85.00	1446	97.00	154
61.00	726	75.00	11964	86.00	1683	98.00	6821
62.00	859	76.00	4017	87.00	929	99.00	6688
63.00	2546	77.00	95080	87.90	379	99.95	586

Average of 9.072 to 9.083 min.: 0523F017.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
101.00	4056	112.00	1047	123.90	1361	135.00	3595
101.90	189	113.00	325	124.95	1451	136.00	1442
103.00	1211	114.85	126	126.00	283	137.00	1966
104.00	2308	116.00	1595	127.00	133701	137.80	439
105.00	2181	117.00	19153	128.00	9996	138.00	133
105.95	689	118.00	1541	129.00	45720	138.90	196
107.00	30241	118.95	275	130.00	4022	139.95	463
108.00	5039	120.00	389	130.95	766	141.00	5386
109.00	780	120.90	119	131.95	363	142.00	1830
110.00	64610	122.00	1794	132.90	275	142.95	1301
111.00	9180	123.00	3054	133.95	1177	144.00	341

Average of 9.072 to 9.083 min.: 0523F017.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
144.90	299	155.00	3344	166.00	1726	176.95	2169
146.00	892	156.00	5143	167.00	11601	177.90	660
147.00	2813	157.00	1088	168.00	7132	178.90	8802
148.00	5653	157.95	1067	169.00	1132	180.00	6690
148.95	1470	159.00	819	170.00	335	181.00	3099
149.95	396	159.95	1752	171.00	506	182.00	490
151.05	772	161.00	2827	171.90	980	182.80	164
151.70	286	161.95	821	173.00	1381	183.00	136
152.10	137	162.95	206	174.00	2546	183.90	670
152.95	1755	163.90	292	175.00	4910	185.00	4388
153.95	1412	164.90	2010	176.00	1567	186.00	36882

Average of 9.072 to 9.083 min.: 0523F017.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
187.00	10336	198.90	21623	211.00	2679	225.00	10433
187.95	1059	199.95	1589	213.00	144	226.00	1025
188.90	1859	201.45	1466	214.80	57	227.00	14419
189.90	316	203.00	1621	215.00	542	228.00	1992
190.95	1086	204.00	9291	216.00	1367	228.95	3447
191.95	2874	205.00	16311	216.90	17781	230.00	413
193.00	3377	206.00	72965	218.00	2278	231.00	1559
194.00	717	207.00	9619	218.95	181	231.90	223
195.00	408	207.95	1959	221.00	16320	232.90	281
196.00	8859	208.95	580	223.00	4345	233.95	908
197.90	315946	210.30	652	224.00	41201	235.00	1112

Average of 9.072 to 9.083 min.: 0523F017.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
235.90	710	246.00	5421	256.95	2086	269.85	145
236.95	1407	246.90	1250	258.00	8538	270.95	302
237.95	223	247.95	249	258.95	1424	271.95	385
238.90	585	248.95	1289	259.90	274	273.00	5768
239.90	450	249.90	241	260.95	317	274.00	14942
240.80	60	250.95	243	262.90	50	275.00	91160
240.95	795	252.00	266	263.90	273	276.00	12464
242.00	2238	252.90	593	265.00	3337	277.00	6017
243.00	2472	253.90	778	265.80	65	277.80	68
244.00	36668	255.00	177842	265.95	509	277.95	1010
245.00	4957	256.00	26374	267.80	50	278.90	216

Average of 9.072 to 9.083 min.: 0523F017.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
280.90	110	292.95	1625	307.90	289	323.00	9141
281.90	187	293.90	445	308.85	236	324.00	1684
282.90	685	294.95	424	309.90	325	324.90	152
283.95	473	296.00	21827	312.90	265	325.85	186
285.00	1197	297.00	3095	313.95	1150	326.90	1626
285.95	217	297.95	196	314.95	2554	327.90	840
288.80	132	300.90	309	316.00	1587	328.95	133
289.00	131	302.00	382	316.95	279	331.90	593
289.90	226	303.00	2756	319.85	111	332.95	774
290.90	139	304.00	703	320.95	820	334.00	5749
291.95	345	304.90	56	321.95	396	334.95	1488

Average of 9.072 to 9.083 min.: 0523F017.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
335.95	141	355.00	561	382.90	1542	403.95	1362
338.90	89	359.00	214	383.90	412	404.90	222
339.90	143	364.90	11651	384.90	67	409.90	85
340.95	1138	365.90	1959	389.95	790	414.95	197
341.95	304	366.90	140	390.95	586	420.95	3563
345.90	2050	369.90	307	391.90	476	421.95	3273
346.90	370	370.95	797	396.90	53	423.00	26388
351.00	144	372.00	5752	400.90	371	424.00	5833
352.00	2813	373.00	1395	401.90	2493	424.95	563
353.00	2124	373.95	155	402.80	93	441.00	79622
354.00	3107	376.95	143	403.00	3682	442.00	528829

Average of 9.072 to 9.083 min.: 0523F017.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
443.00	102920						
444.00	9568						
445.00	531						

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Calibration Date: 05/23/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11557
Instrument ID: MS26

Column: MS

Level ID	File ID
A	J:\MS26\DATA\052312\0523F005.D
B	J:\MS26\DATA\052312\0523F006.D
C	J:\MS26\DATA\052312\0523F007.D
D	J:\MS26\DATA\052312\0523F008.D
E	J:\MS26\DATA\052312\0523F009.D
F	J:\MS26\DATA\052312\0523F010.D
G	J:\MS26\DATA\052312\0523F011.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
1,4-Dioxane	A	2.0	0.456	B	4.0	0.385	C	10	0.379	D	20	0.400	E	50	0.395
	F	100	0.431	G	200	0.418									
1,4-Dioxane-d8	A	2.0	0.392	B	4.0	0.360	C	10	0.344	D	20	0.385	E	50	0.373
	F	100	0.407	G	200	0.410									

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Calibration Date: 05/23/2012

Initial Calibration Summary
1,4-Dioxane by GC/MS

Calibration ID: CAL11557
Instrument ID: MS26

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
1,4-Dioxane	MS	AverageRF	% RSD	6.7		≤ 20	0.409		0.01
1,4-Dioxane-d8	SURR	AverageRF	% RSD	6.4		≤ 20	0.382		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Calibration Date: 05/23/2012
Date Analyzed: 05/23/2012

Second Source Calibration Verification
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL11557
Units: ng/ml

File ID: J:\MS26\DATA\052312\0523F012.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	20	0.409	0.419	2	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Injection Log

Directory: J:\MS26\DATA\052312

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0523F001.d	1.	PR > NR		23 May 2012 08:3
2	1	0523F002.d	1.	PR		23 May 2012 08:5
3	2	0523F003.d	1.	3.0ug/mL DFTPP | SVM38-66A		23 May 2012 09:1
4	3	0523F004.d	1.	IB		23 May 2012 09:3
5	4	0523F005.d	1.	2.0ng/mL ICAL 1,4-Dioxane | SVM38-88T		23 May 2012 09:5
6	5	0523F006.d	1.	4.0ng/mL ICAL 1,4-Dioxane | SVM38-88U		23 May 2012 10:1
7	6	0523F007.d	1.	10ng/mL ICAL 1,4-Dioxane | SVM38-88V		23 May 2012 10:3
8	7	0523F008.d	1.	20ng/mL ICAL 1,4-Dioxane | SVM38-88W		23 May 2012 10:5
9	8	0523F009.d	1.	50ng/mL ICAL 1,4-Dioxane | SVM38-88X		23 May 2012 11:1
10	9	0523F010.d	1.	100ng/mL ICAL 1,4-Dioxane | SVM38-88Y		23 May 2012 11:2
11	10	0523F011.d	1.	200ng/mL ICAL 1,4-Dioxane | SVM38-88Z		23 May 2012 11:4
12	11	0523F012.d	1.	20ng/mL ICV 1,4-Dioxane | SVM38-29B		23 May 2012 12:0

CAL11557

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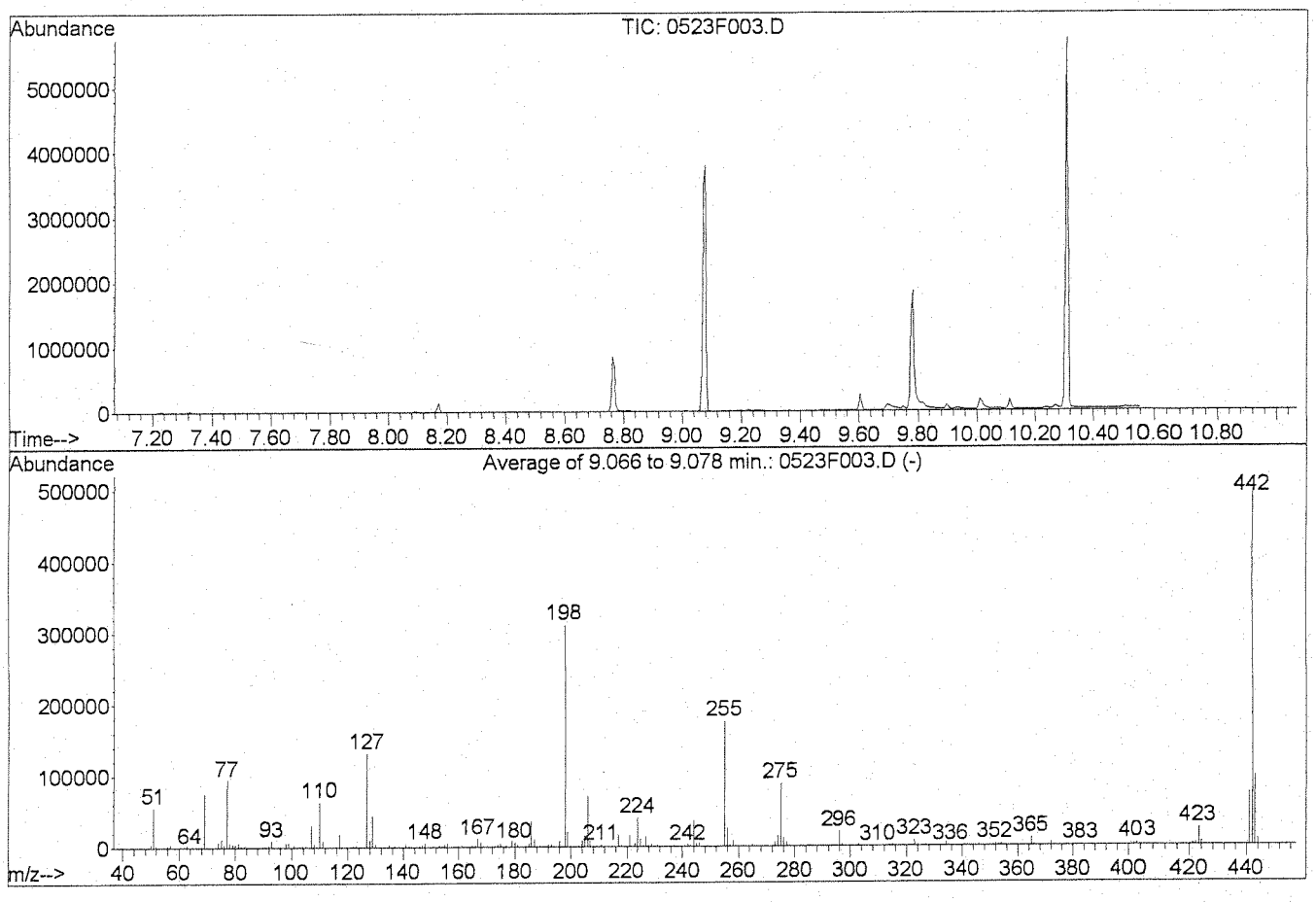
DFTPP

Data File : J:\MS26\DATA\052312\0523F003.D
Acq On : 23 May 2012 9:15 am
Sample : 3.0ug/mL DFTPP | SVM38-66A
Misc :
MS Integration Params: rteint.p
Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix

Vial: 2
Operator: KBailey
Inst : MS26
Multiplr: 1.00



AutoFind: Scans 1045, 1046, 1047; Background Corrected with Scan 1041

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	17.9	55704	PASS
68	69	0.00	2	1.4	1016	PASS
69	198	0.00	100	24.0	74773	PASS
70	69	0.00	2	0.6	427	PASS
127	198	10	80	42.3	131968	PASS
197	198	0.00	2	0.0	0	PASS
198	442	30	100	62.8	311834	PASS
199	198	5	9	6.7	21004	PASS
275	198	10	60	28.2	88052	PASS
365	442	1	50	2.2	11076	PASS
441	443	0.01	100	76.3	73856	PASS
442	442	30	100	100.0	496589	PASS
443	442	15	24	19.5	96810	PASS

0523F003.D A_DFTPP.M Wed May 23 12:10:54 2012

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Average of 9.066 to 9.078 min.: 0523F003.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
50.00	3638	63.95	351	77.00	94520	87.95	357
51.00	55704	65.00	1496	78.00	6405	88.90	69
52.00	2878	66.90	55	79.00	4938	91.00	1392
53.00	83	68.00	1016	80.00	4006	92.00	1535
55.00	351	69.00	74773	81.00	6075	93.00	9046
56.00	1738	70.00	427	82.00	1569	93.90	645
57.00	4151	71.00	51	83.00	1626	94.90	166
58.00	169	72.90	455	83.90	152	96.00	651
60.95	741	74.00	6960	84.95	1572	97.00	195
62.00	941	75.00	11641	85.90	1572	98.00	6487
63.00	2484	76.00	3953	87.00	842	99.00	6168

Average of 9.066 to 9.078 min.: 0523F003.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
99.95	566	111.00	9203	123.00	3013	133.95	1101
101.00	3857	112.00	1060	124.00	1315	135.00	3619
101.90	165	112.90	347	124.95	1333	135.95	1412
103.00	1282	114.95	114	126.00	267	137.00	1998
103.95	2251	116.00	1513	127.00	131968	137.95	379
105.00	2082	117.00	18406	128.00	9612	138.90	213
106.00	691	118.00	1460	129.00	45149	139.90	452
107.00	30197	118.95	200	130.00	3700	141.00	5206
108.00	5043	120.00	420	131.00	756	142.00	1810
109.00	751	121.00	88	131.95	417	142.95	1282
110.00	63733	121.90	1844	132.85	253	144.00	334

Average of 9.066 to 9.078 min.: 0523F003.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
144.90	284	156.00	5236	166.00	1693	177.00	2176
146.00	944	156.90	686	167.00	11520	177.95	661
147.00	2716	157.10	368	168.00	6212	178.90	8733
147.95	5682	157.90	1009	168.95	1135	180.00	6260
149.00	1360	158.95	825	170.00	360	181.00	3150
150.00	362	159.95	1740	170.85	453	181.95	415
151.05	719	161.00	2812	171.95	1006	182.90	257
151.90	55	161.90	792	173.00	1400	183.90	658
153.00	1705	162.95	217	174.00	2411	185.00	4290
153.95	1389	163.90	351	175.00	4840	186.00	36024
155.00	3262	165.00	1949	176.00	1530	187.00	10162

Average of 9.066 to 9.078 min.: 0523F003.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
188.00	1042	200.00	1527	211.00	2635	226.00	969
188.95	1841	201.45	1662	213.00	164	227.00	13982
189.95	262	202.90	1577	214.95	618	228.00	1995
191.00	995	204.00	9045	215.90	1300	229.00	3198
192.00	2889	205.00	16136	216.90	17237	229.90	409
193.00	3271	206.00	71741	218.00	2218	231.00	1529
193.95	709	207.00	9235	218.95	193	231.90	245
194.95	446	208.00	2117	221.00	15862	232.95	244
196.00	9005	208.90	604	222.95	4155	233.90	951
197.90	311834	210.10	94	224.00	40601	235.00	1064
198.95	21004	210.30	559	225.00	10269	235.95	639

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Average of 9.066 to 9.078 min.: 0523F003.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
236.80	89	246.95	1144	258.00	8463	272.95	5836
237.00	1315	247.85	263	258.95	1351	274.00	14859
237.90	200	248.95	1274	259.90	264	275.00	88052
238.90	535	249.95	211	260.90	299	276.00	12010
239.95	403	250.95	241	263.90	276	277.00	5891
240.90	870	251.90	235	264.95	3270	277.95	1145
242.00	2200	252.90	547	265.90	521	278.95	174
243.00	2380	254.00	718	268.00	52	280.95	44
244.00	36389	255.00	175056	269.90	173	281.90	194
245.00	4748	256.00	25840	270.90	281	283.00	761
246.00	5362	257.00	1909	271.90	403	284.00	441

Average of 9.066 to 9.078 min.: 0523F003.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
285.00	1235	297.90	175	314.90	2399	327.95	801
285.90	223	300.90	266	315.95	1458	328.90	144
288.90	239	301.90	347	316.95	274	332.00	568
289.95	171	303.00	2680	320.00	55	332.95	776
290.90	131	303.95	701	320.95	800	334.00	5669
291.95	309	305.00	54	321.90	365	335.00	1420
292.90	1576	307.90	301	323.00	8681	335.95	149
293.95	398	308.95	229	324.00	1566	338.90	76
294.90	357	309.95	322	324.90	157	339.90	87
296.00	20834	312.95	196	325.85	166	340.95	1060
297.00	2863	314.00	1173	326.90	1529	341.90	298

Average of 9.066 to 9.078 min.: 0523F003.D
3.0ug/mL DFTPP | SVM38-66A
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
345.90	2002	366.90	73	390.95	556	421.80	70
346.95	356	369.90	304	391.95	429	422.00	3012
349.80	52	370.95	787	400.90	364	423.00	24776
350.95	147	372.00	5517	401.80	56	424.00	5301
351.95	2801	373.00	1360	401.95	2303	425.00	520
353.00	1870	373.95	147	402.95	3660	441.00	73856
354.00	3040	376.90	149	403.90	1233	442.00	496589
355.00	514	382.90	1471	404.90	199	443.00	96810
358.90	241	383.90	426	409.90	73	444.00	9167
364.90	11076	385.00	84	414.90	191	445.00	575
365.90	1762	389.95	827	420.95	3383		

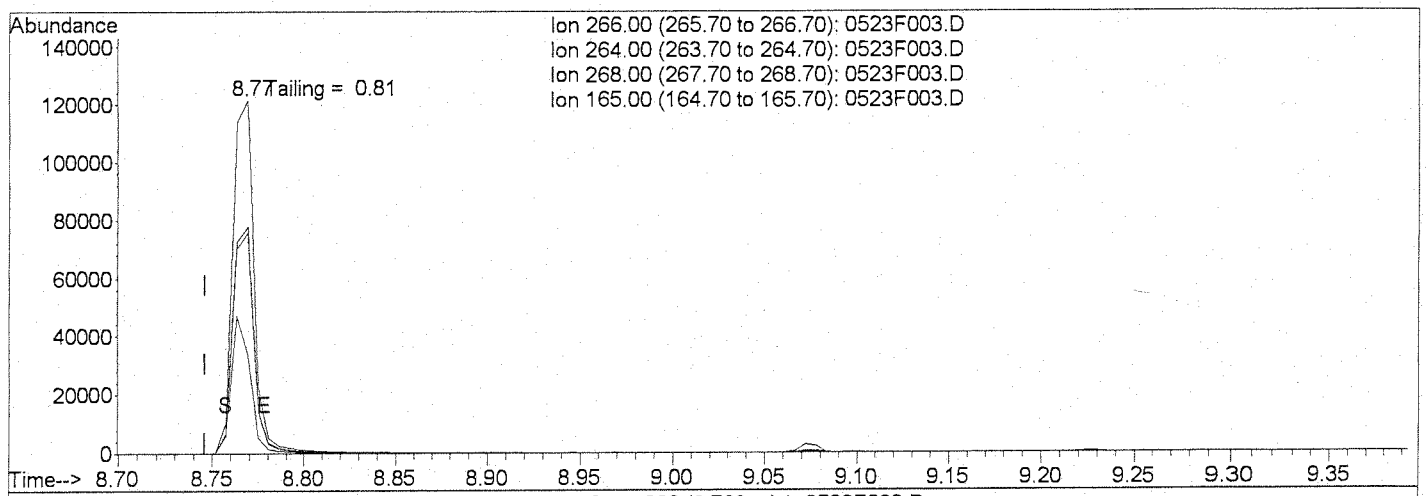
MAY 23 2012

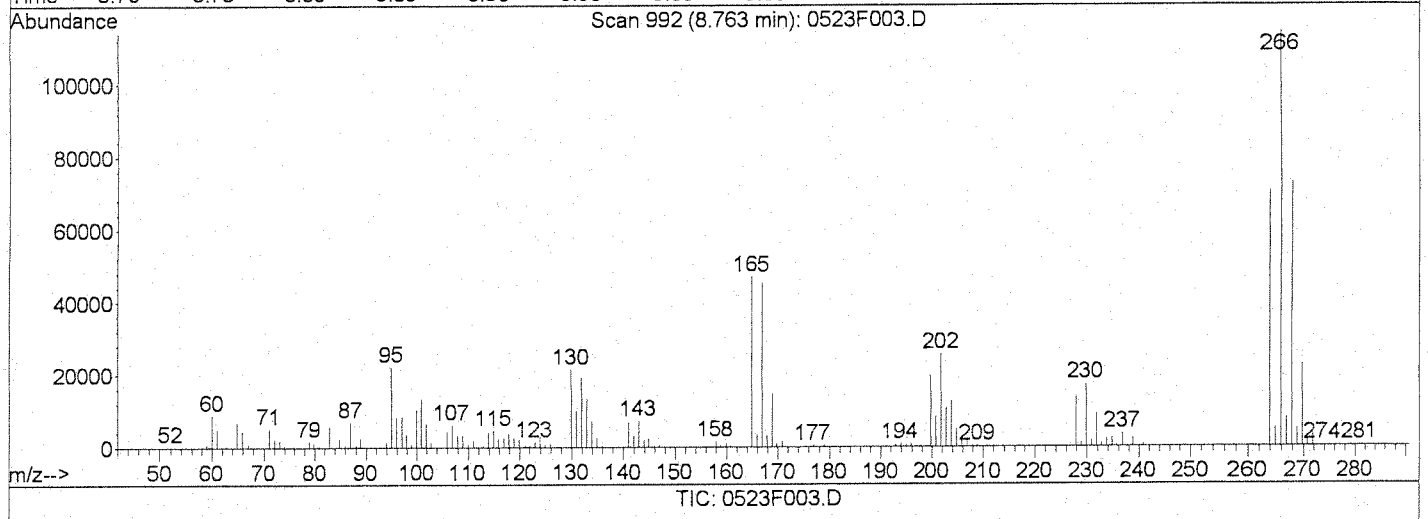
Quantitation Report

Data File : J:\MS26\DATA\052312\0523F003.D
Acq On : 23 May 2012 9:15 am
Sample : 3.0ug/mL DFTPP | SVM38-66A
Misc :
MS Integration Params: rteint.p

Vial: 2
Operator: KBailey
Inst : MS26
Multiplr: 1.00

Method : J:\MS26\METHODS\SIM\A_DFTPP.M (RTE Integrator)
Title : dftpp tune mix
Last Update : Tue Nov 22 15:57:47 2011
Response via : Initial Calibration





TIC: 0523F003.D

(1) Pentachlorophenol

Exp R.T. 9.25min

response 0

Ion	Exp%	Act%
266.00	100	100
264.00	0.00	61.52
268.00	0.00	63.67
165.00	0.00	41.15

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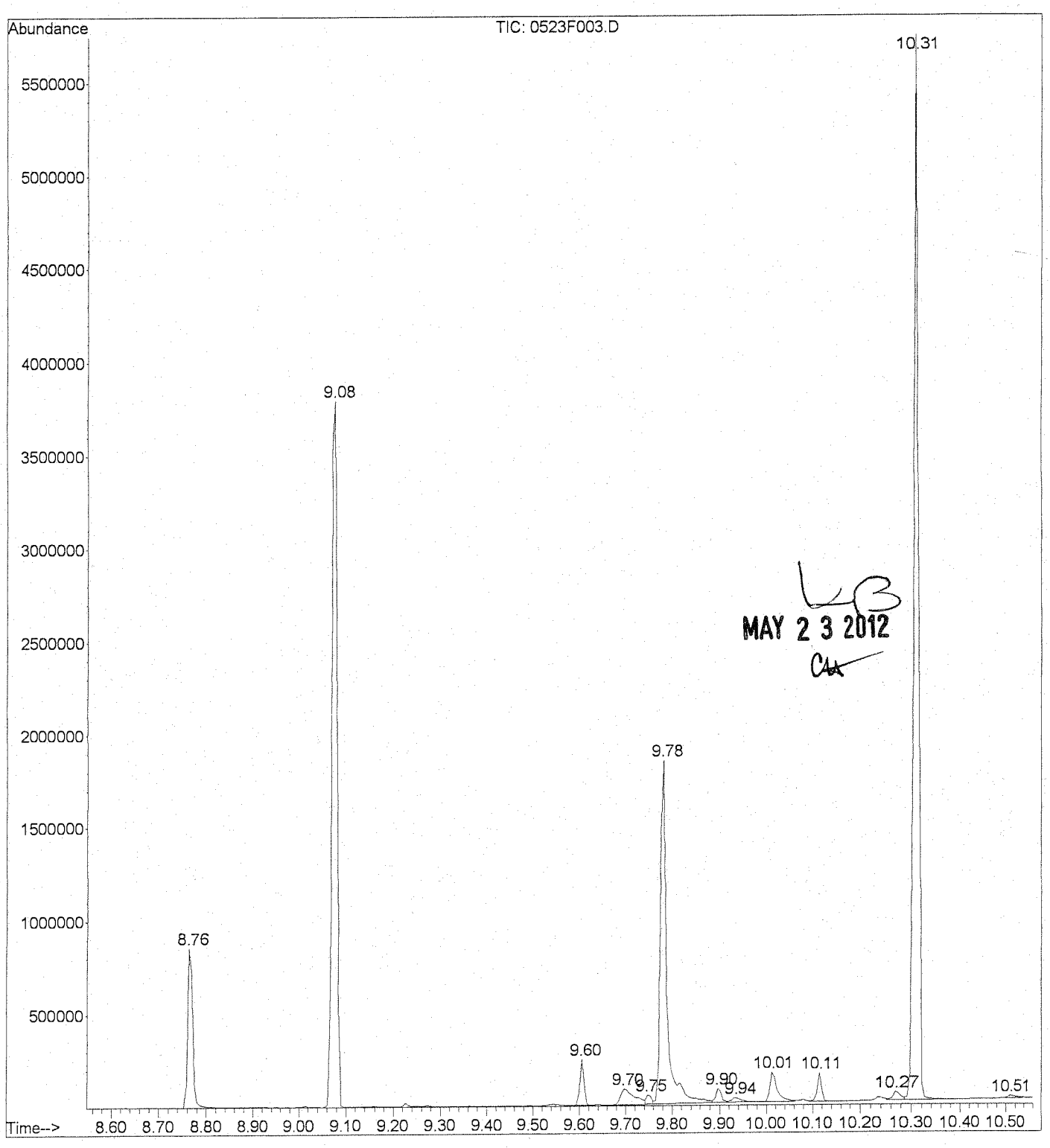
0523F003.D A_DFTPP.M Wed May 23 12:11:09 2012

File : J:\MS26\DATA\052312\0523F003.D
Operator : KBailey
Acquired : 23 May 2012 9:15 am using AcqMethod TUNE14DX
Instrument : MS26
Sample Name: 3.0ug/mL DFTPP | SVM38-66A
Misc Info :
Vial Number: 2



1	3.728	rVB	0.046		35903	3.705	3.751
2	8.174	rBV	0.063		91906	8.145	8.208
3	8.763	rBV	0.120		652625	8.735	8.855
4	9.078	rBV	0.074		2887562	9.049	9.124
5	9.604	rBV	0.046		149990	9.581	9.627
6	9.696	rBV	0.074		182318	9.667	9.742
7	9.747	rVV	0.017		36980	9.742	9.759
8	9.782	rVV	0.126		1781199	9.759	9.885
9	9.896	rVV	0.034	DDE	60900	9.885	9.919
10	9.936	rVB	0.063		34397	9.919	9.982
11	10.011	rBV	0.074		179938	9.988	10.062
12	10.113	rVB	0.052	DDD	98945	10.091	10.142
13	10.268	rVV	0.034		49285	10.251	10.285
14	10.308	rVB	0.103	DDT	3567294	10.285	10.388
15	10.508	rBV	0.040		21570	10.497	10.537

Breakdown = 4.37.

LB

MAY 23 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F004.D Vial: 3
Acq On : 23 May 2012 9:35 am Operator: KBailey
Sample : IB Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 12:09:52 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	11834	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	0.00	96	0	0.00	ng/ml	
Spiked Amount 50.000			Recovery =	0.00%		

Target Compounds Qvalue

MAY 23 2012

(#) = qualifier out of range (m) = manual integration
0523F004.D 052312_DX.M Wed May 23 12:10:30 2012 Page 1

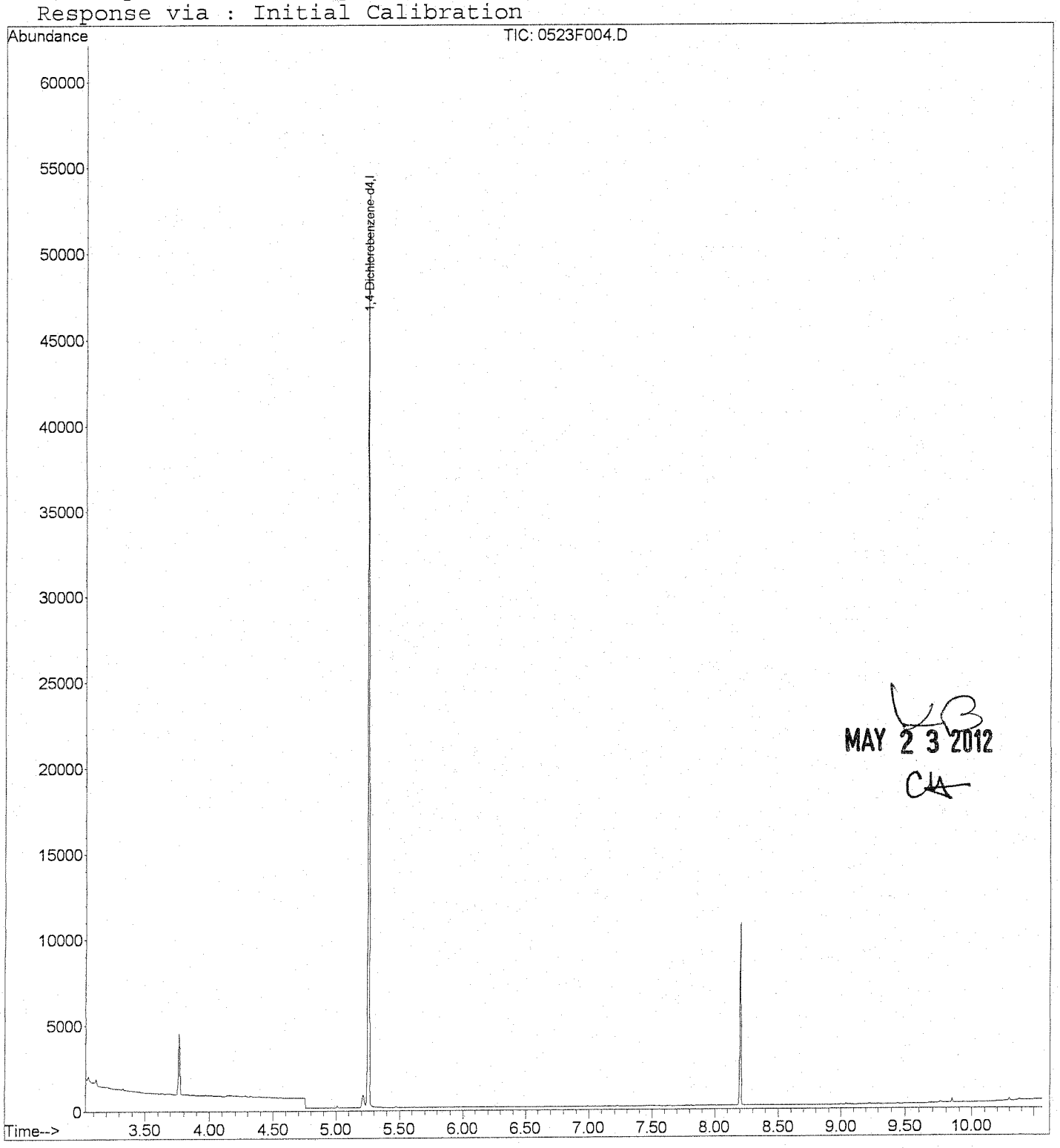
Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F004.D
Acq On : 23 May 2012 9:35 am
Sample : IB
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 23 12:09 2012

Vial: 3
Operator: KBailey
Inst : MS26
Multiplr: 1.00

Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration



MAY 23 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F005.D Vial: 4
Acq On : 23 May 2012 9:54 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM38-88T Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:40:02 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	13002	50.00	ng/ml	-0.03
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.19	96	204	2.06	ng/ml	-0.04
Spiked Amount 50.000			Recovery =	4.12%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.20	88	237m	2.40	ng/ml	

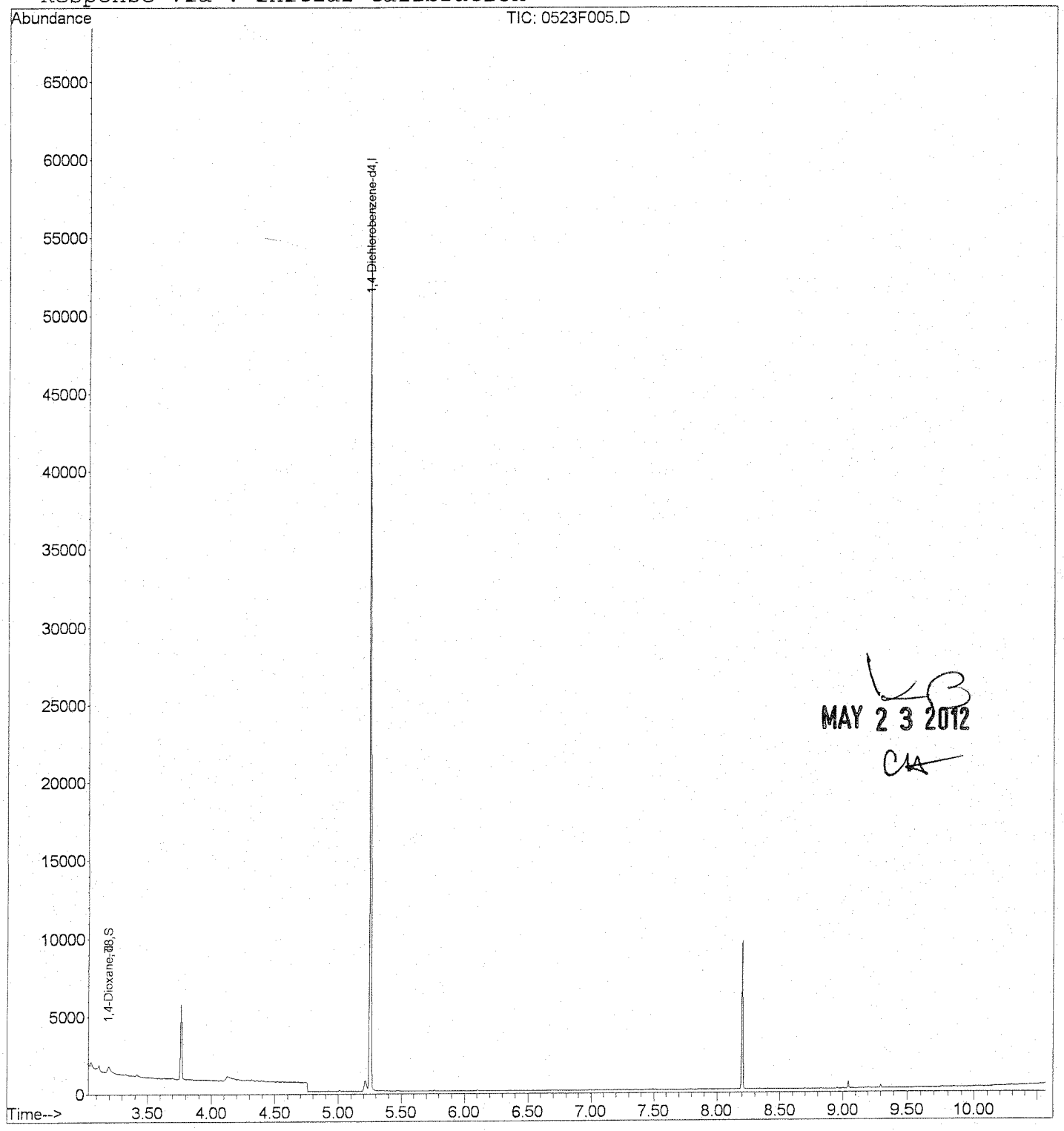
MAY 23 2012

(#) = qualifier out of range (m) = manual integration
0523F005.D 052312_DX.M Wed May 23 12:10:31 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F005.D Vial: 4
Acq On : 23 May 2012 9:54 am Operator: KBailey
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM38-88T Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:40 2012 Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration



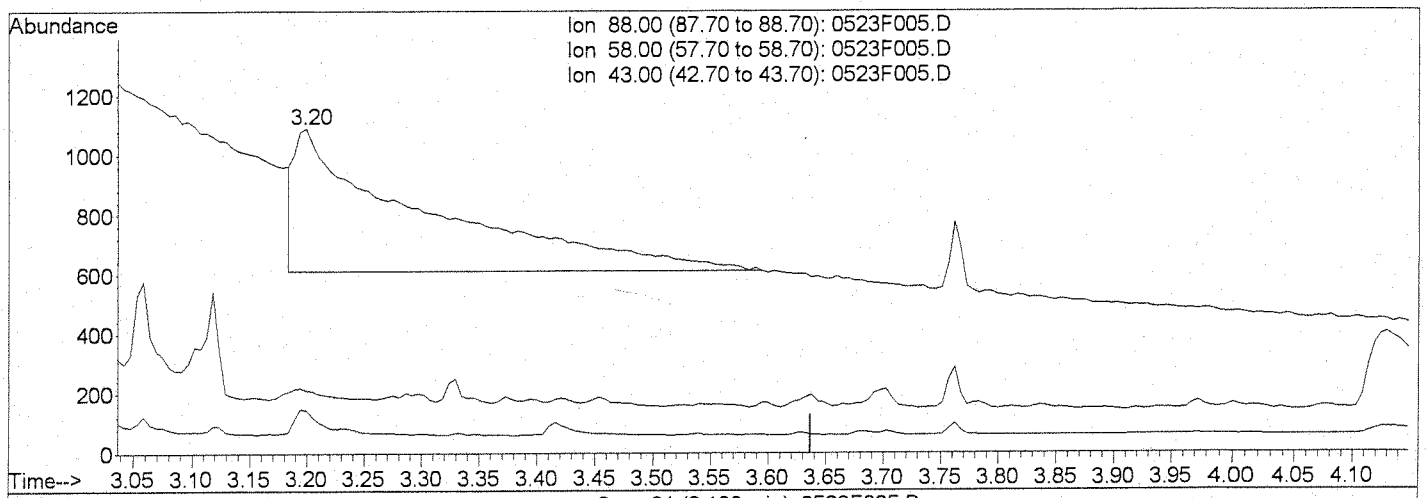
MAY 2 3 2012

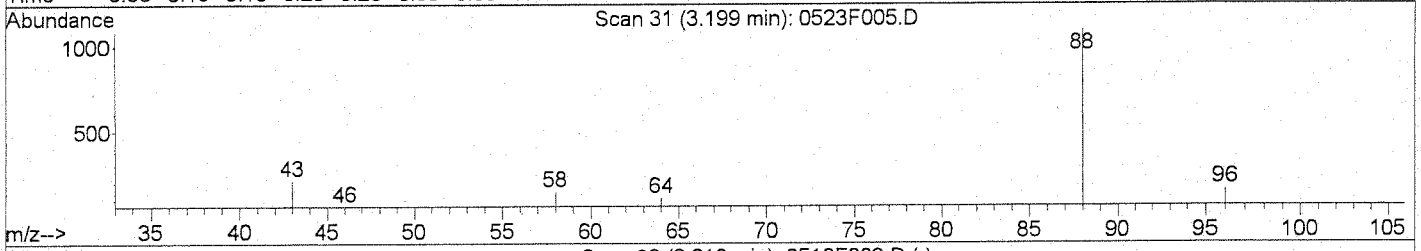
Quantitation Report (Qedit)

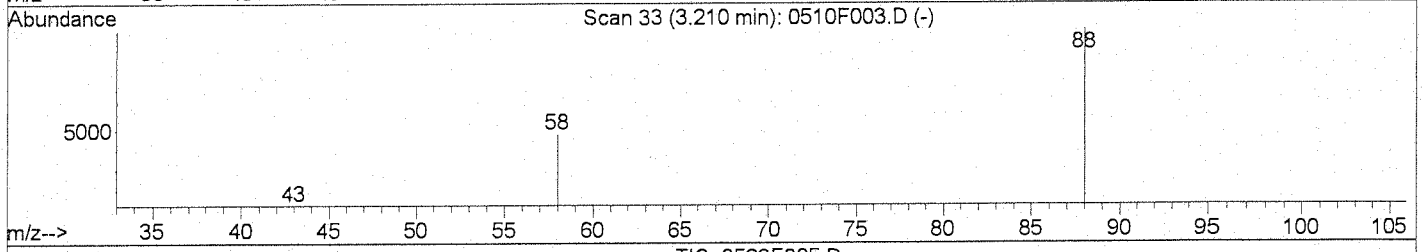
Data File : J:\MS26\DATA\052312\0523F005.D
Acq On : 23 May 2012 9:54 am
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM38-88T
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 23 11:40 2012

Vial: 4
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0523F005.D

(3) 1,4-Dioxane (T)

3.20min 37.41ng/ml

response 3689

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	17.57
43.00	15.90	9.00
0.00	0.00	0.00

Manual Integration:

Before

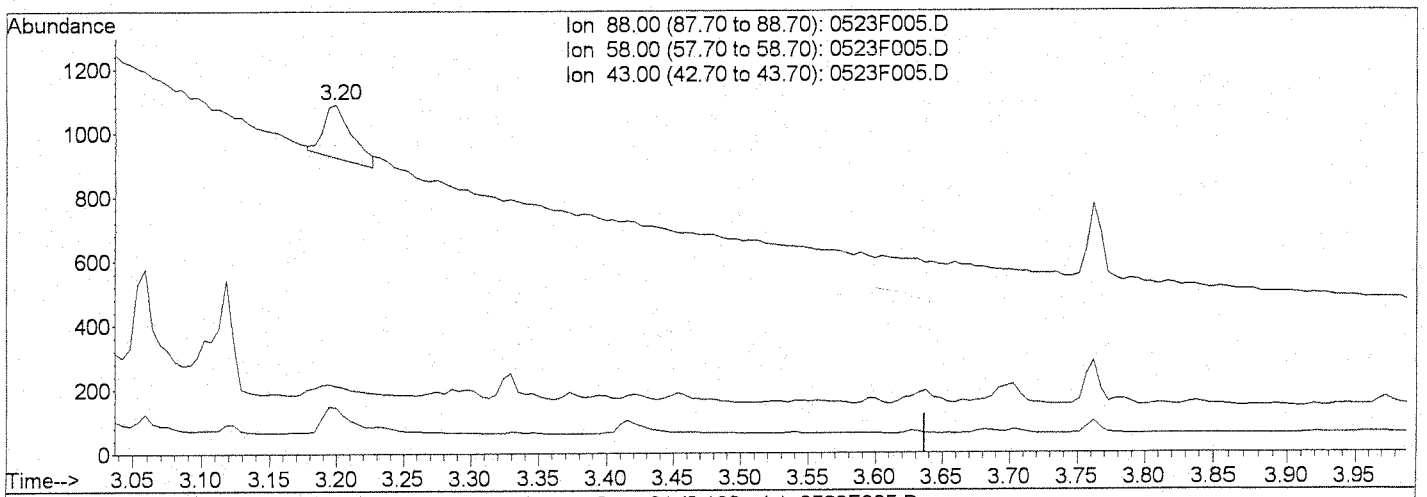
0523F005.D 052312_DX.M Wed May 23 11:40:24 2012

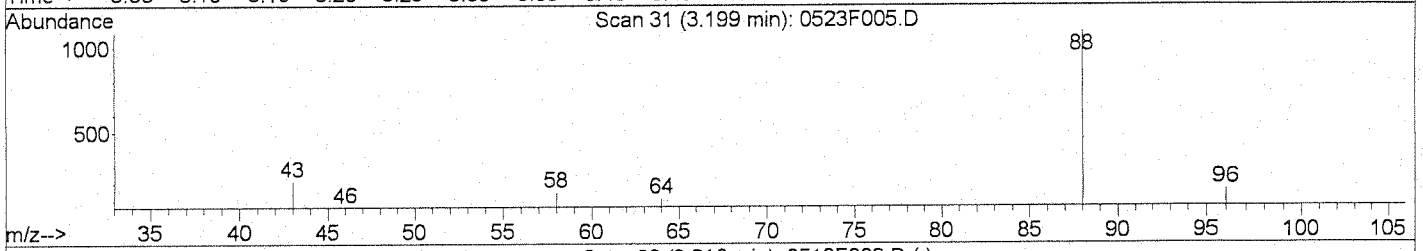
Quantitation Report (Qedit)

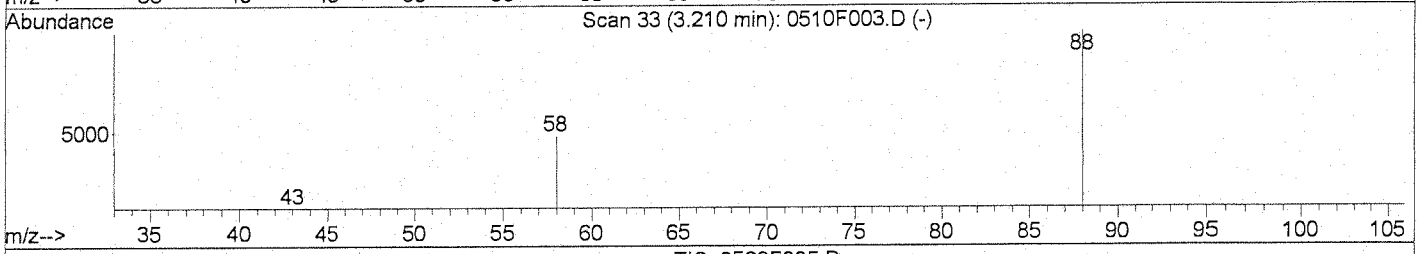
Data File : J:\MS26\DATA\052312\0523F005.D
Acq On : 23 May 2012 9:54 am
Sample : 2.0ng/mL ICAL 1,4-Dioxane | SVM38-88T
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 23 11:40 2012

Vial: 4
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0523F005.D

(3) 1,4-Dioxane (T)

3.20min 2.40ng/ml m

response 237

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	13.38
43.00	15.90	19.43
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/23/12

0523F005.D 052312_DX.M Wed May 23 11:41:01 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F006.D Vial: 5
Acq On : 23 May 2012 10:13 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM38-88U Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:40:02 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	13272	50.00	ng/ml	-0.03
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.18	96	382	3.78	ng/ml	-0.05
Spiked Amount 50.000			Recovery =	7.56%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.19	88	409m	4.06	ng/ml	

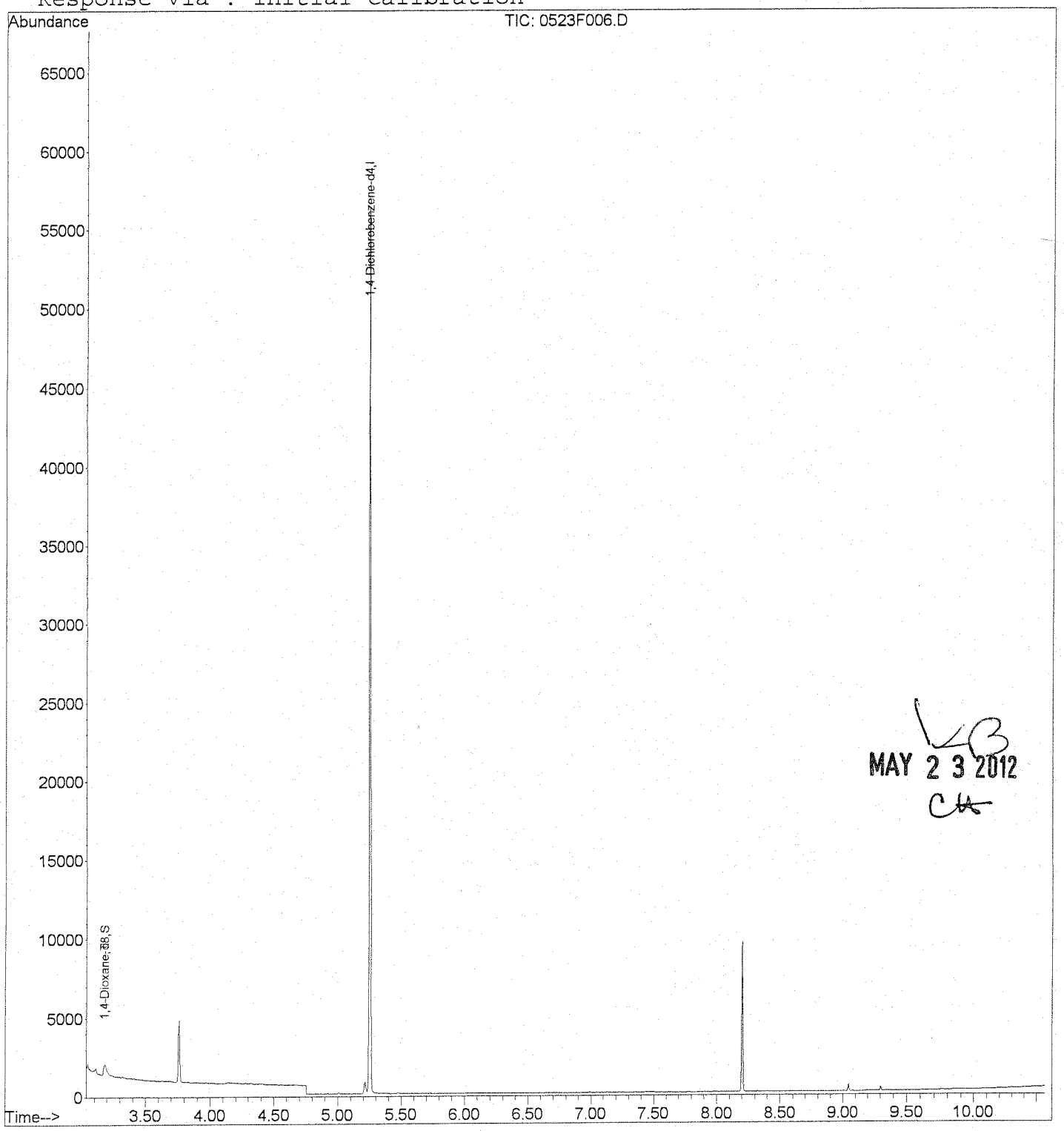
MAY 23 2012

(#) = qualifier out of range (m) = manual integration
0523F006.D 052312_DX.M Wed May 23 12:10:31 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F006.D Vial: 5
Acq On : 23 May 2012 10:13 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM38-88U Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:41 2012 Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration



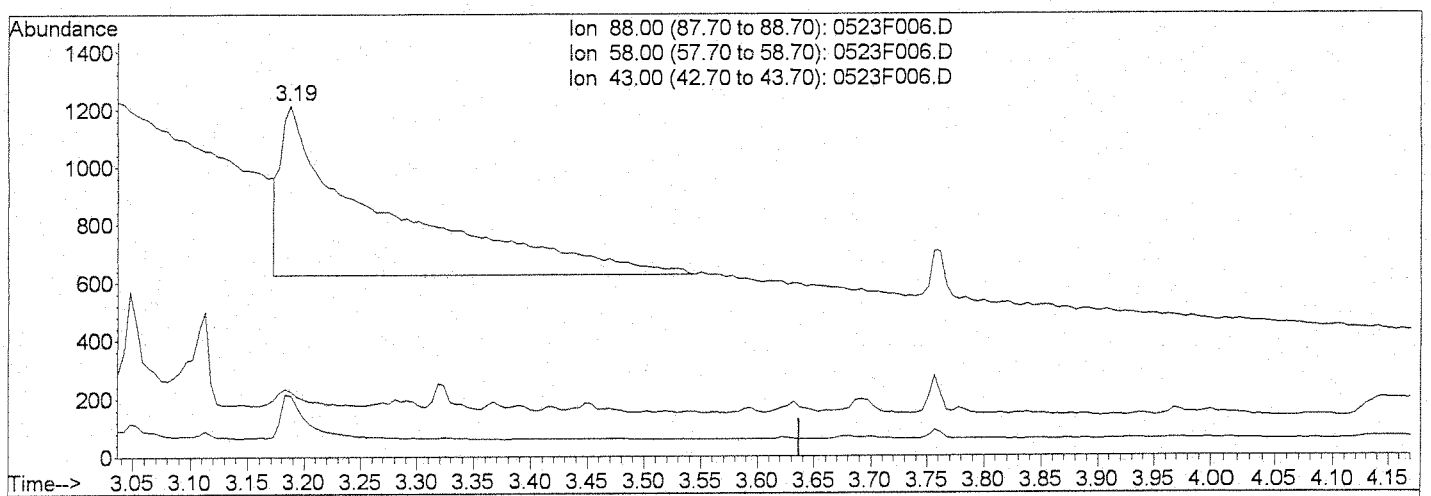
MAY 2 3 2012

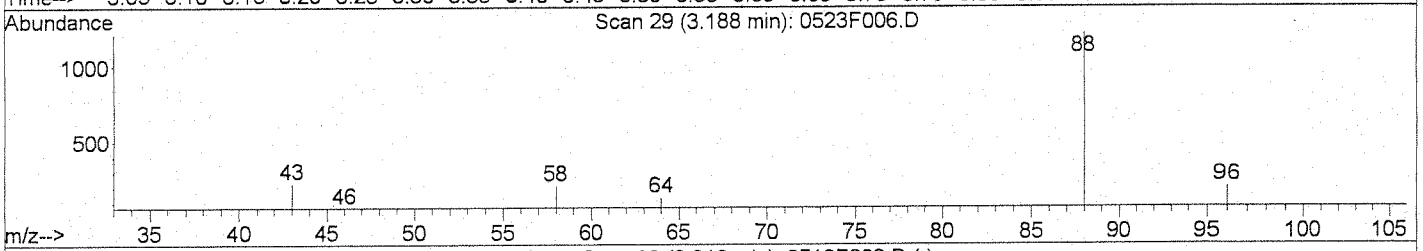
Quantitation Report (Qedit)

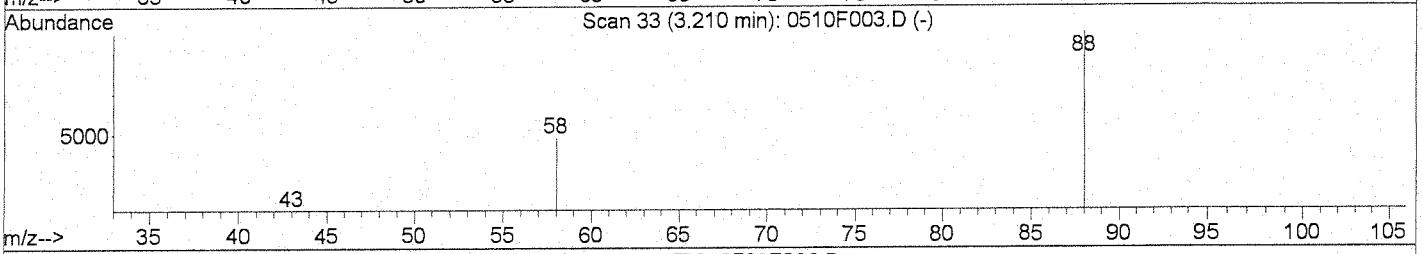
Data File : J:\MS26\DATA\052312\0523F006.D
Acq On : 23 May 2012 10:13 am
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM38-88U
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 23 11:40 2012

Vial: 5
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0523F006.D

(3) 1,4-Dioxane (T)

3.19min 35.59ng/ml

response 3582

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	25.81
43.00	15.90	12.05
0.00	0.00	0.00

Manual Integration:

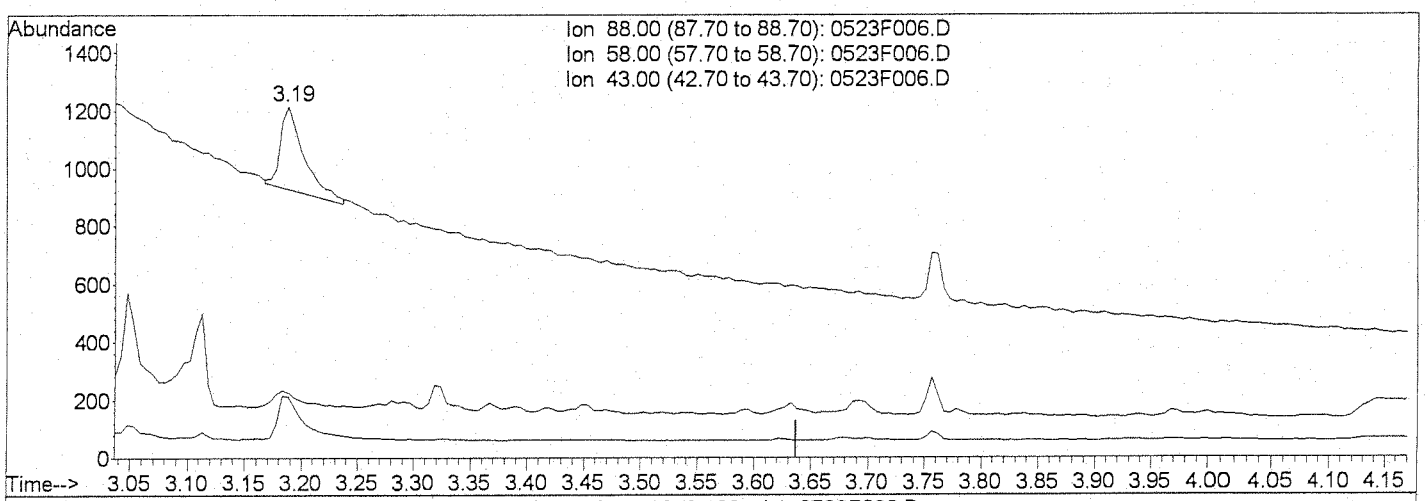
Before

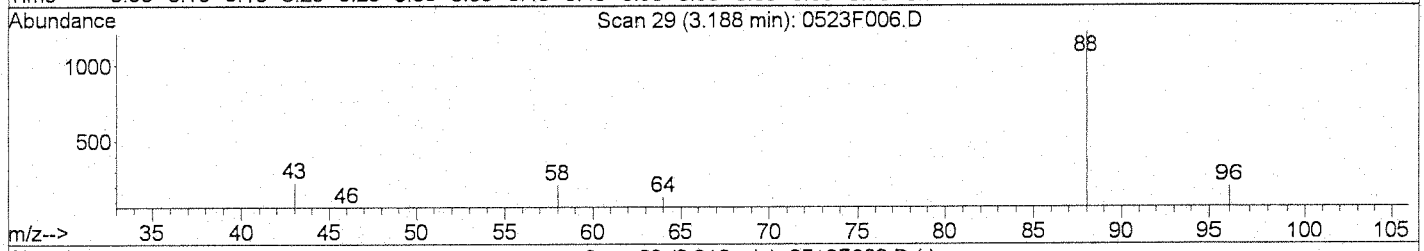
0523F006.D 052312_DX.M Wed May 23 11:41:12 2012

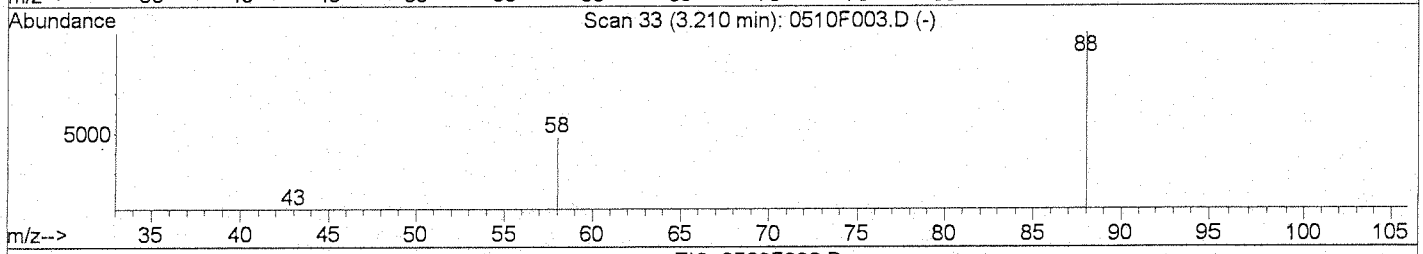
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F006.D Vial: 5
Acq On : 23 May 2012 10:13 am Operator: KBailey
Sample : 4.0ng/mL ICAL 1,4-Dioxane | SVM38-88U Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:41 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0523F006.D

(3) 1,4-Dioxane (T)

3.19min 4.06ng/ml m

response 409

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	17.45
43.00	15.90	18.60
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/23/12

0523F006.D 052312_DX.M Wed May 23 11:41:19 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F007.D Vial: 6
Acq On : 23 May 2012 10:32 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM38-88V Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:40:02 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	12974	50.00	ng/ml	-0.03
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.17	96	893	9.05	ng/ml	-0.05
Spiked Amount 50.000			Recovery = 18.10%			
Target Compounds						Qvalue
3) 1,4-Dioxane	3.19	88	984m	10.00	ng/ml	

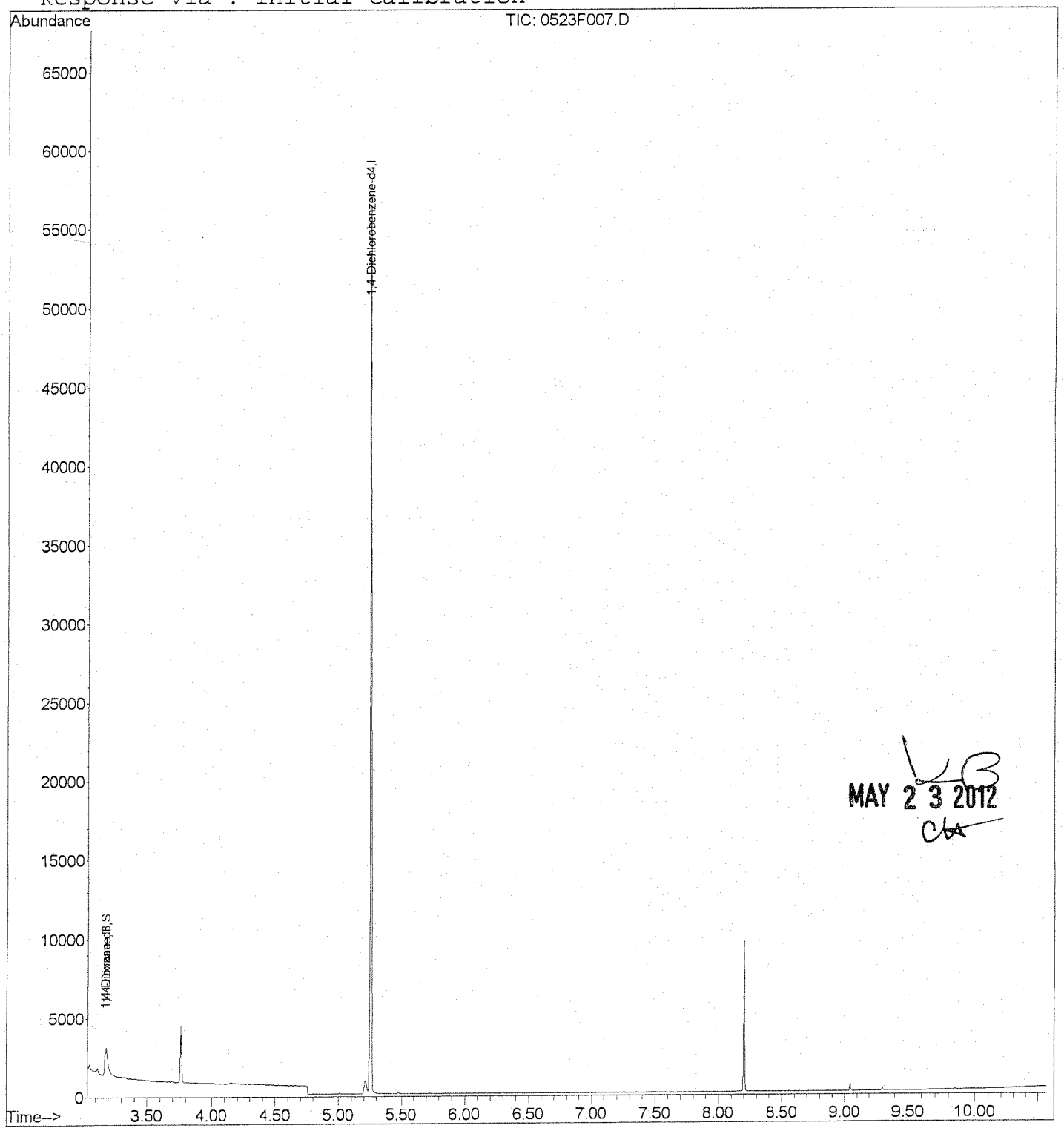
MAY 23 2012

(#) = qualifier out of range (m) = manual integration
0523F007.D 052312_DX.M Wed May 23 12:10:31 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F007.D Vial: 6
Acq On : 23 May 2012 10:32 am Operator: KBailey
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM38-88V Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:41 2012 Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration



MAY 23 2012

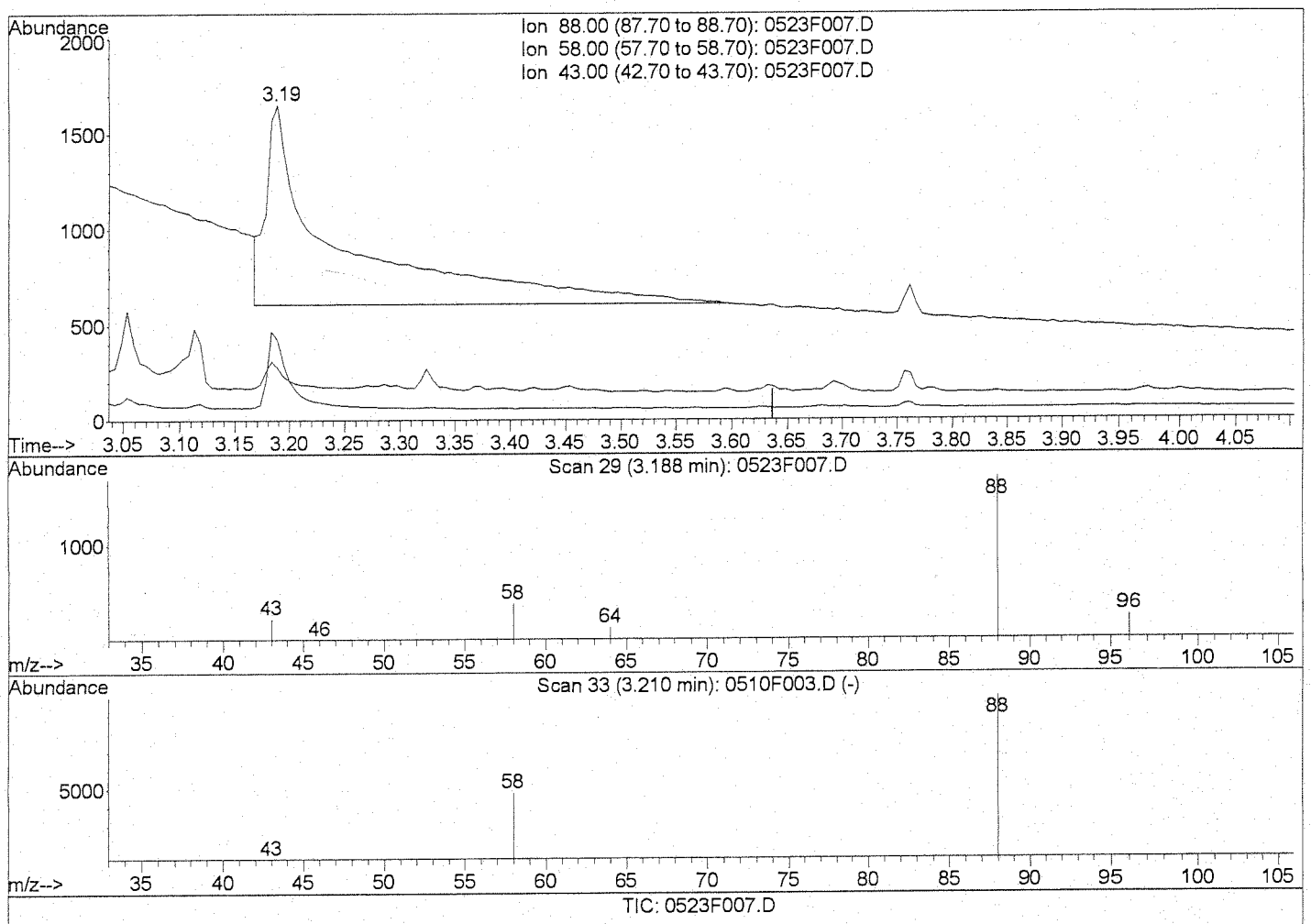
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F007.D
Acq On : 23 May 2012 10:32 am
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM38-88V
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 23 11:40 2012

Vial: 6
Operator: KBailey
Inst : MS26
Multiplr: 1.00

Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration



TIC: 0523F007.D

(3) 1,4-Dioxane (T)

3.19min 49.25ng/ml

response 4846

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	35.00
43.00	15.90	11.03
0.00	0.00	0.00

Manual Integration:

Before

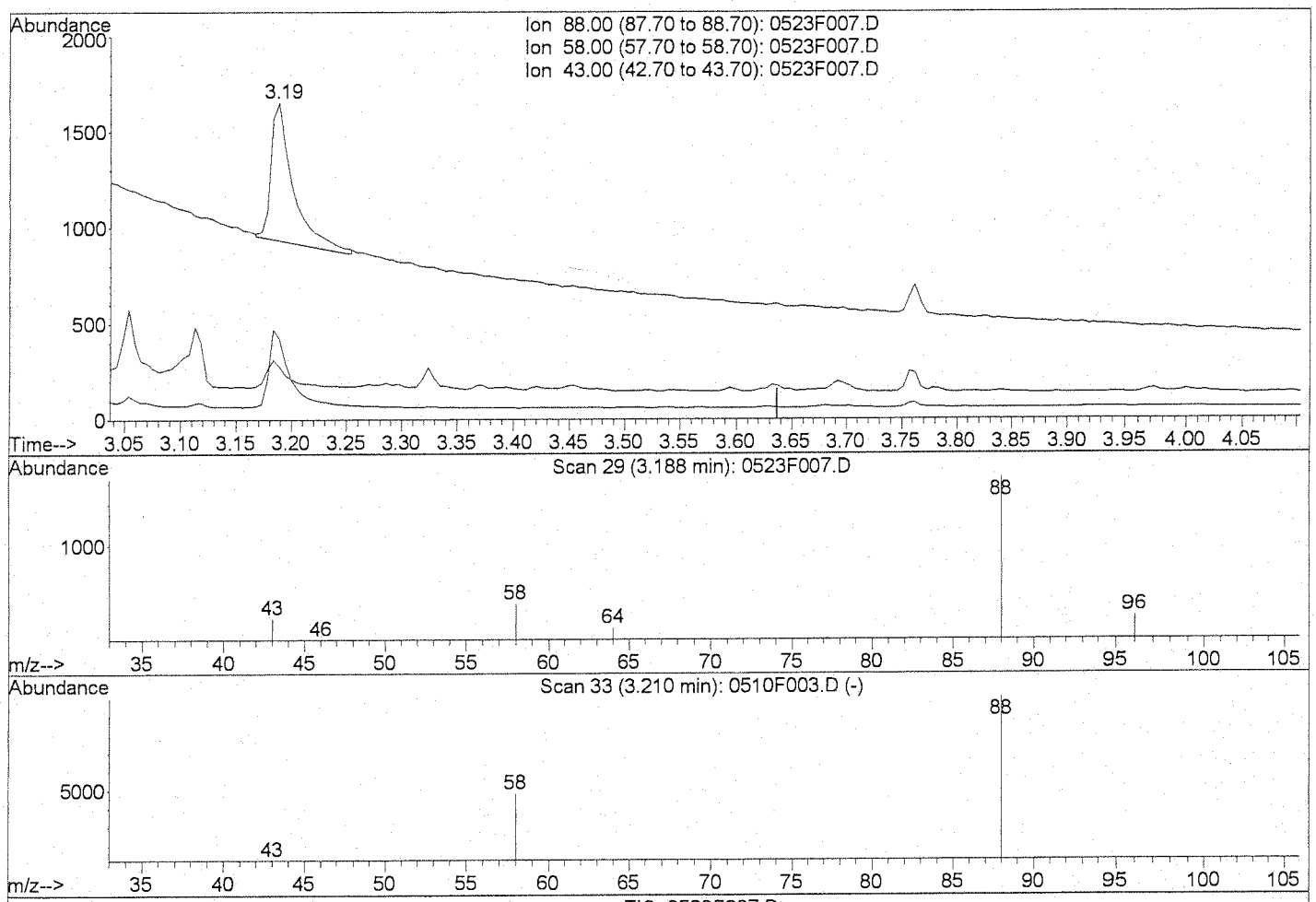
0523F007.D 052312_DX.M Wed May 23 11:41:30 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F007.D
Acq On : 23 May 2012 10:32 am
Sample : 10ng/mL ICAL 1,4-Dioxane | SVM38-88V
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 23 11:41 2012

Vial: 6
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration



TIC: 0523F007.D

(3) 1,4-Dioxane (T)

3.19min 10.00ng/ml m

response 984

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	25.67
43.00	15.90	16.83
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/23/12

CA LB

0523F007.D 052312_DX.M Wed May 23 11:41:35 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F008.D Vial: 7
Acq On : 23 May 2012 10:51 am Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM38-88W Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:40:02 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	12824	50.00	ng/ml	-0.03
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.16	96	1974	20.24	ng/ml	-0.07
Spiked Amount 50.000			Recovery =	40.48%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.17	88	2051m	21.09	ng/ml	

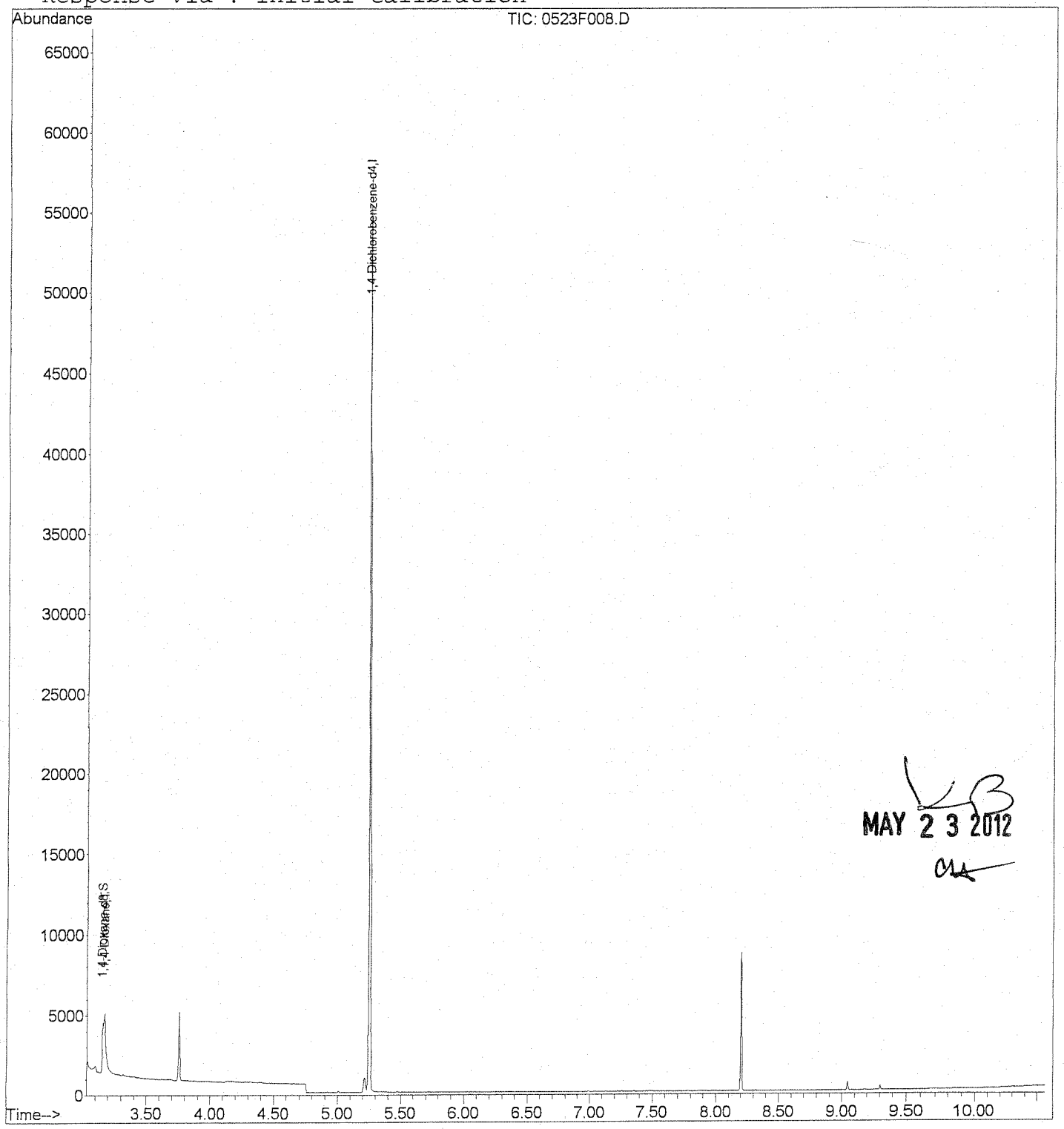
MAY 23 2012

(#) = qualifier out of range (m) = manual integration
0523F008.D 052312_DX.M Wed May 23 12:10:32 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F008.D Vial: 7
Acq On : 23 May 2012 10:51 am Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM38-88W Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:41 2012 Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration

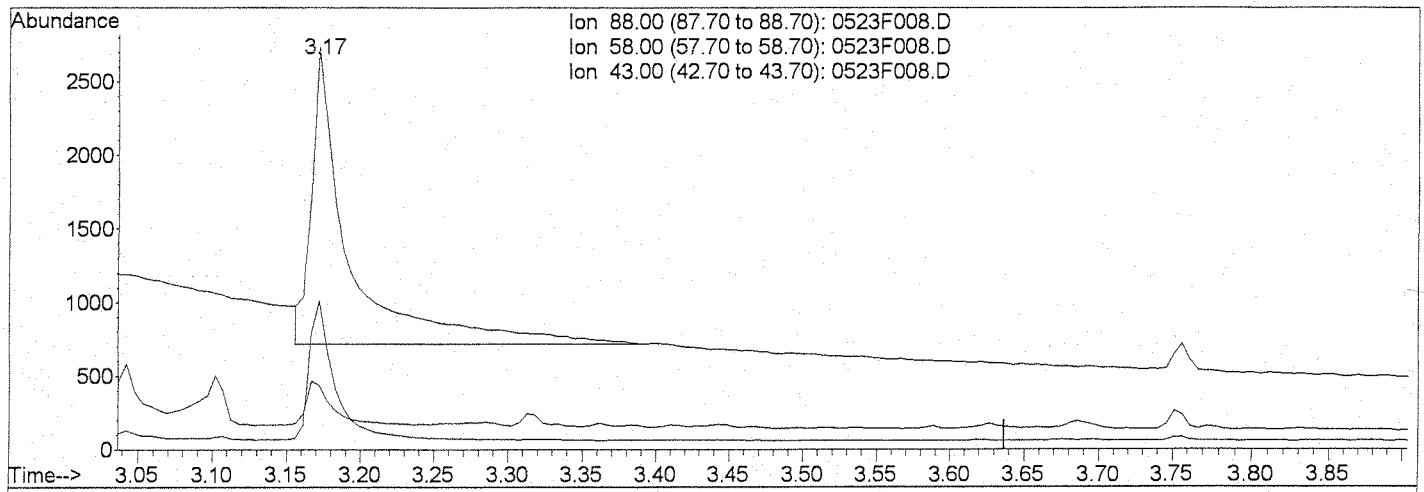


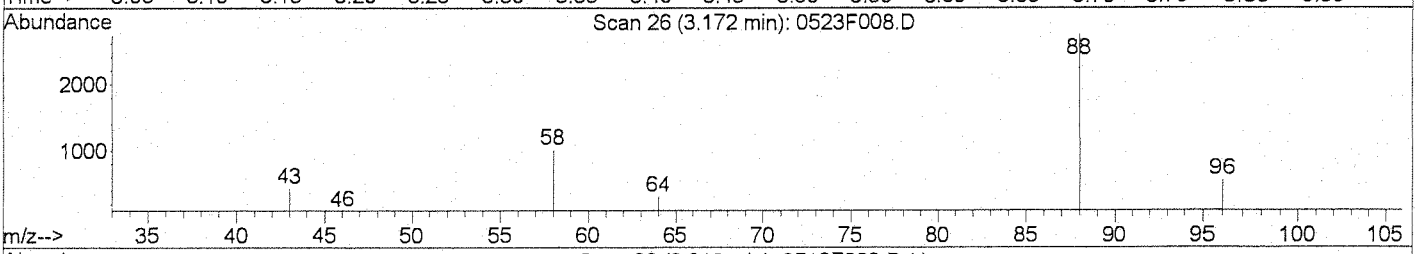
MAY 23 2012

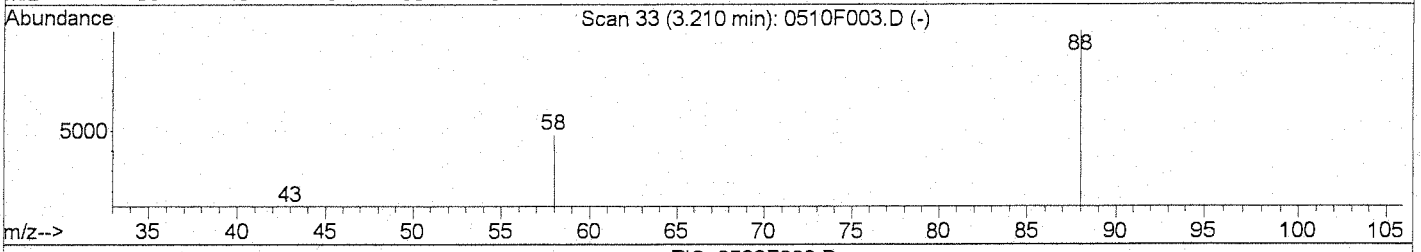
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F008.D Vial: 7
Acq On : 23 May 2012 10:51 am Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM38-88W Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:40 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0523F008.D

(3) 1,4-Dioxane (T)

3.17min 37.04ng/ml

response 3602

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	47.10#
43.00	15.90	14.13
0.00	0.00	0.00

Manual Integration:

Before

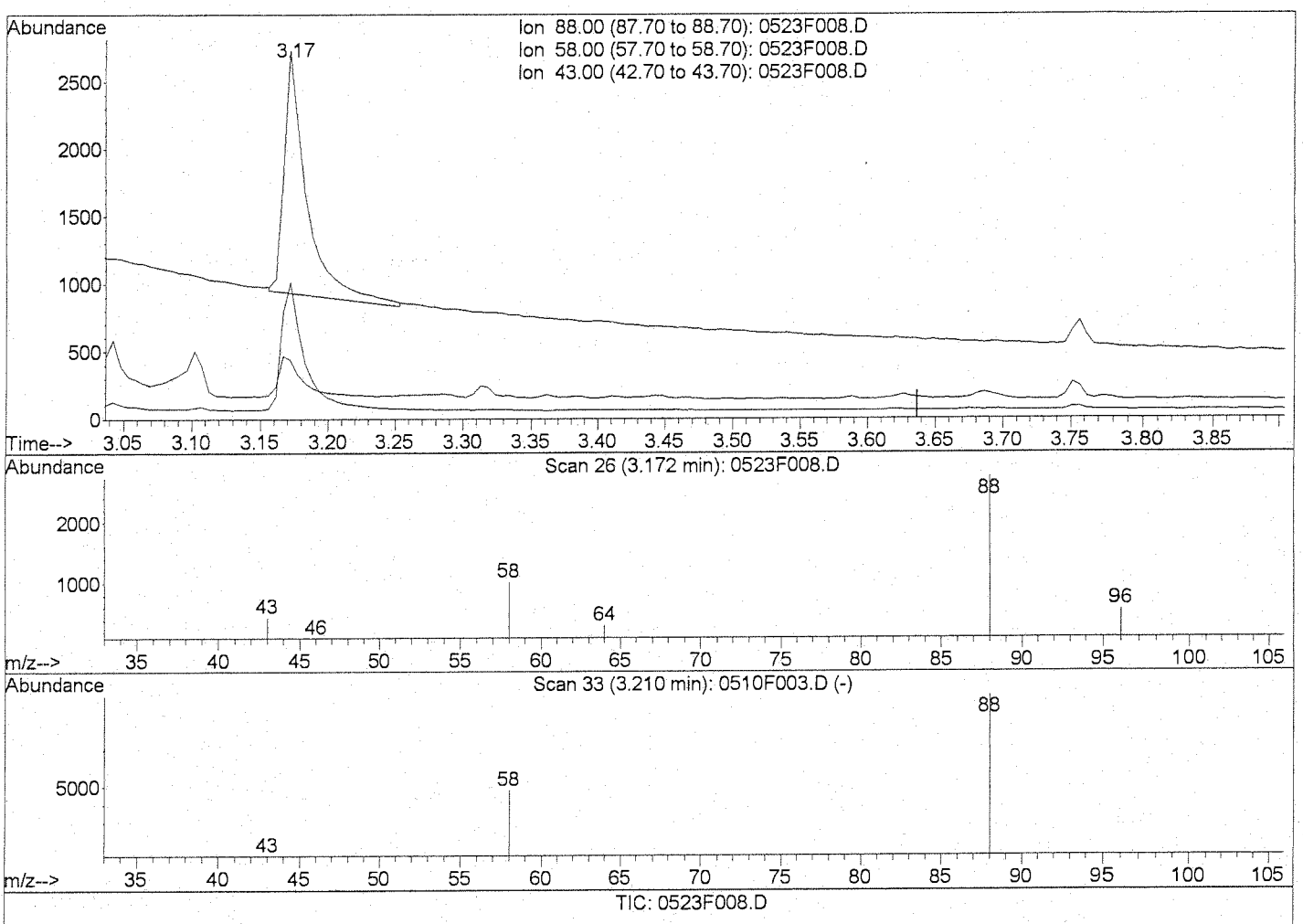
0523F008.D 052312_DX.M Wed May 23 11:41:45 2012

25736288

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F008.D Vial: 7
Acq On : 23 May 2012 10:51 am Operator: KBailey
Sample : 20ng/mL ICAL 1,4-Dioxane | SVM38-88W Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:41 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration



TIC: 0523F008.D

(3) 1,4-Dioxane (T)

3.17min 21.09ng/ml m

response 2051

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	37.04#
43.00	15.90	16.05
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/23/12

0523F008.D 052312_DX.M Wed May 23 11:41:55 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F009.D Vial: 8
Acq On : 23 May 2012 11:10 am Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM38-88X Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:40:03 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	12671	50.00	ng/ml	-0.03
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.16	96	4727	49.06	ng/ml	-0.07
Spiked Amount 50.000			Recovery =	98.12%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.17	88	5009m	52.13	ng/ml	

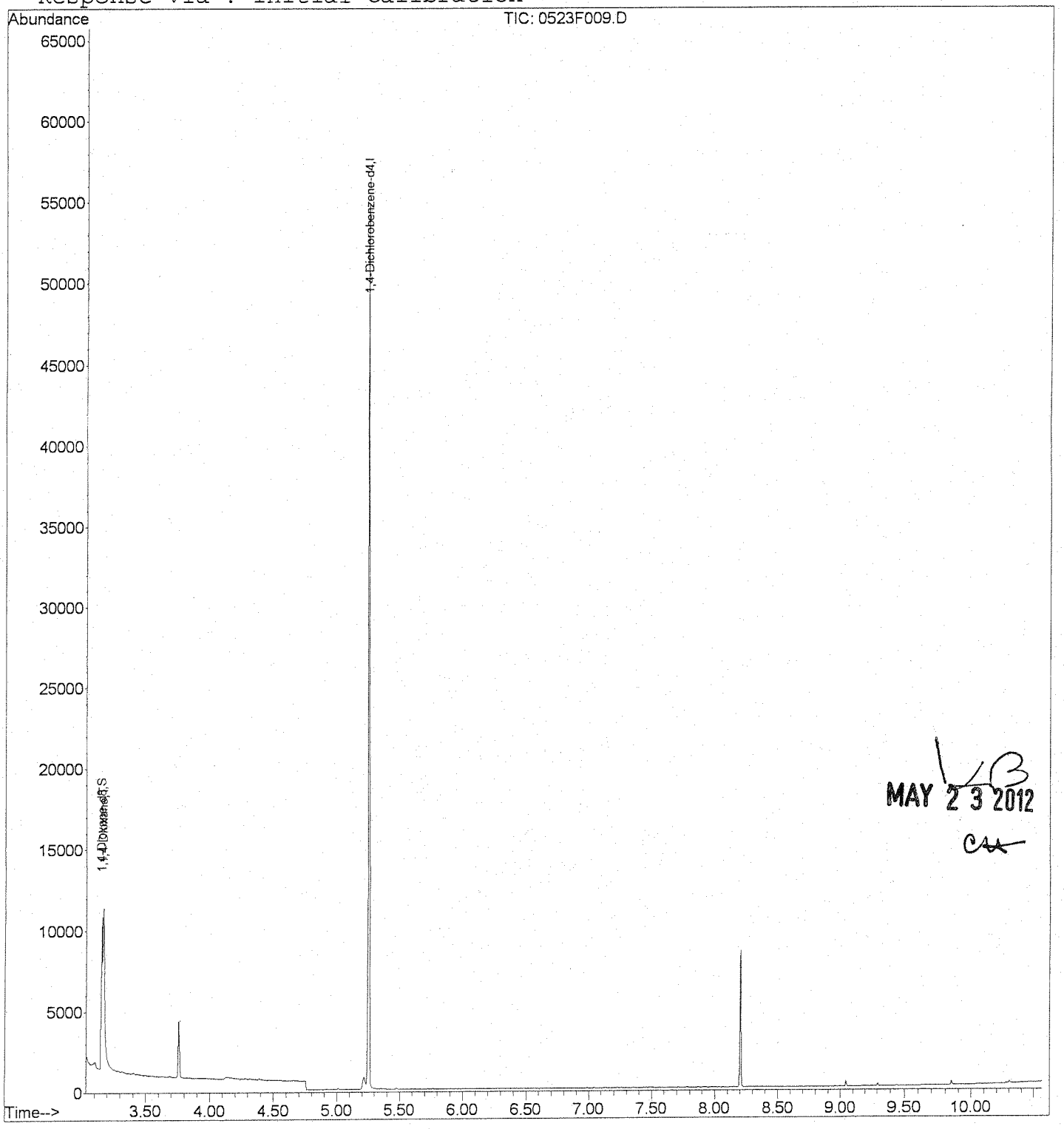
MAY 23 2012

(#) = qualifier out of range (m) = manual integration
0523F009.D 052312_DX.M Wed May 23 12:10:32 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F009.D Vial: 8
Acq On : 23 May 2012 11:10 am Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM38-88X Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:42 2012 Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration

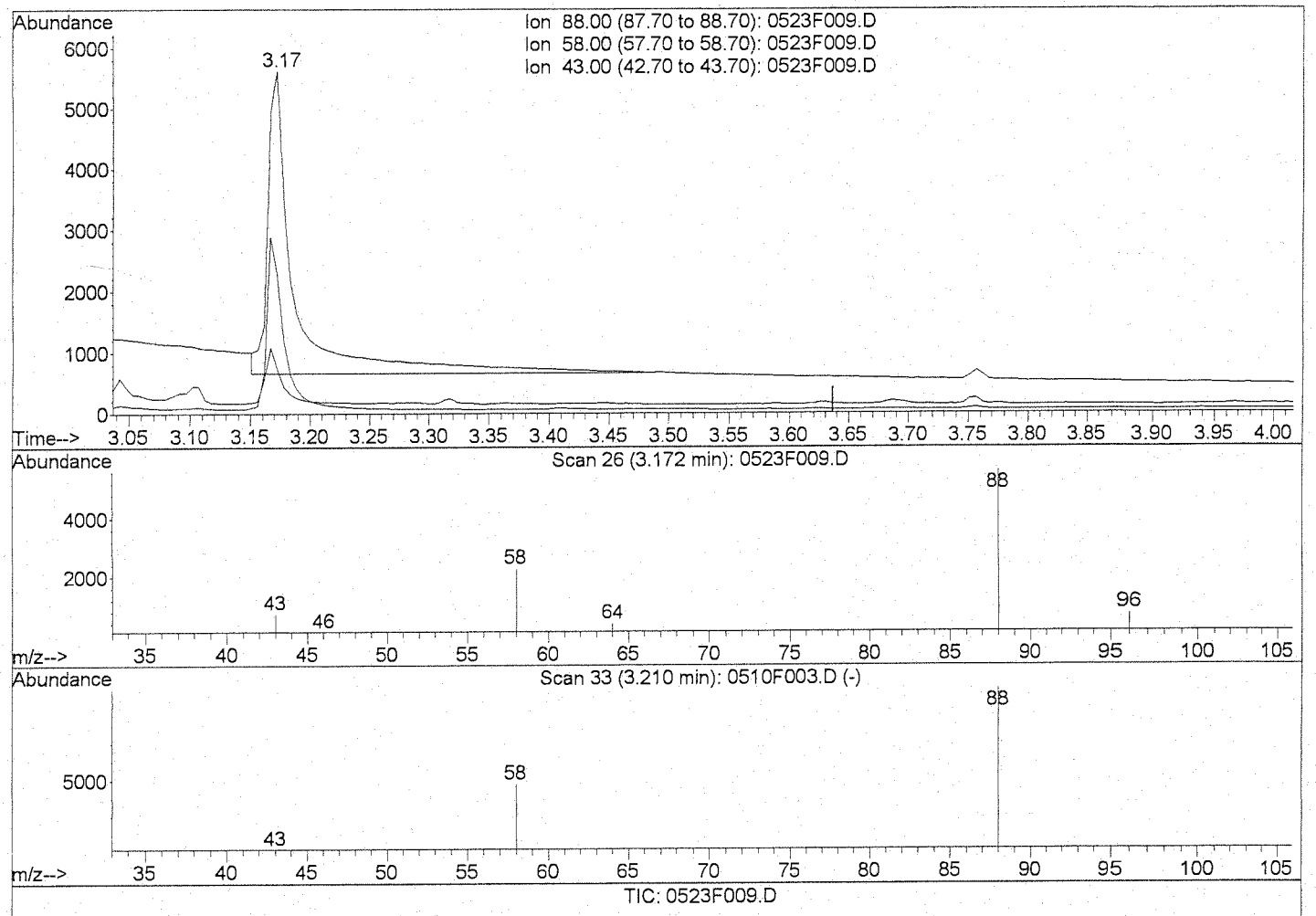


MAY 23 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F009.D Vial: 8
Acq On : 23 May 2012 11:10 am Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM38-88X Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:40 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration



TIC: 0523F009.D

(3) 1,4-Dioxane (T)

3.17min 82.15ng/ml

response 7894

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	44.63#
43.00	15.90	12.00
0.00	0.00	0.00

Manual Integration:

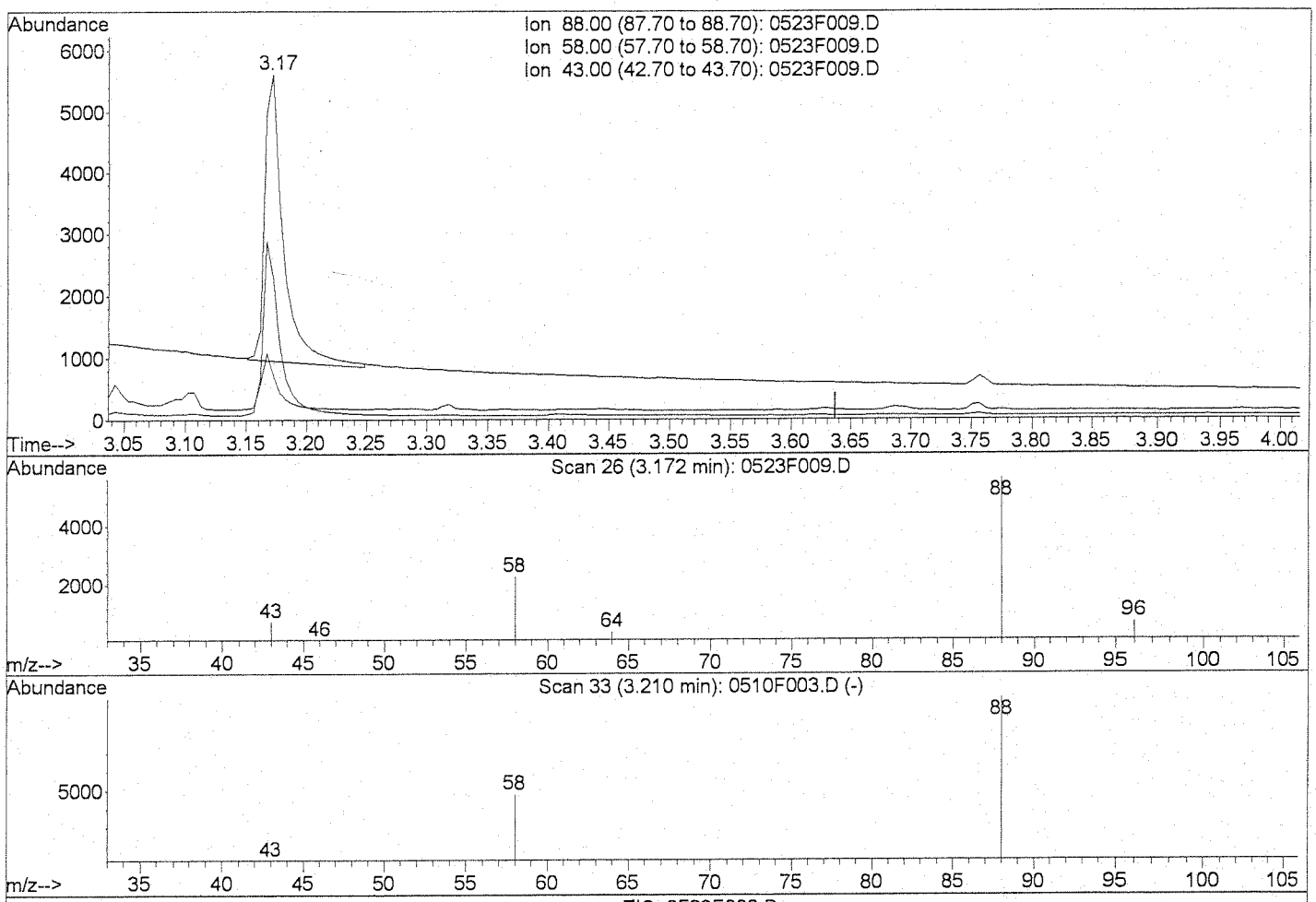
Before

0523F009.D 052312_DX.M Wed May 23 11:42:06 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F009.D Vial: 8
Acq On : 23 May 2012 11:10 am Operator: KBailey
Sample : 50ng/mL ICAL 1,4-Dioxane | SVM38-88X Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:42 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration



TIC: 0523F009.D

(3) 1,4-Dioxane (T)

3.17min 52.13ng/ml m

response 5009

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	40.48#
43.00	15.90	13.14
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/23/12

CM LB

0523F009.D 052312_DX.M Wed May 23 11:42:15 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F010.D Vial: 9
Acq On : 23 May 2012 11:29 am Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM38-88Y Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:42:29 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	13090	50.00	ng/ml	-0.03
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.16	96	10668	107.17	ng/ml	-0.06
Spiked Amount 50.000			Recovery =	214.34%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.18	88	11280m	113.63	ng/ml	

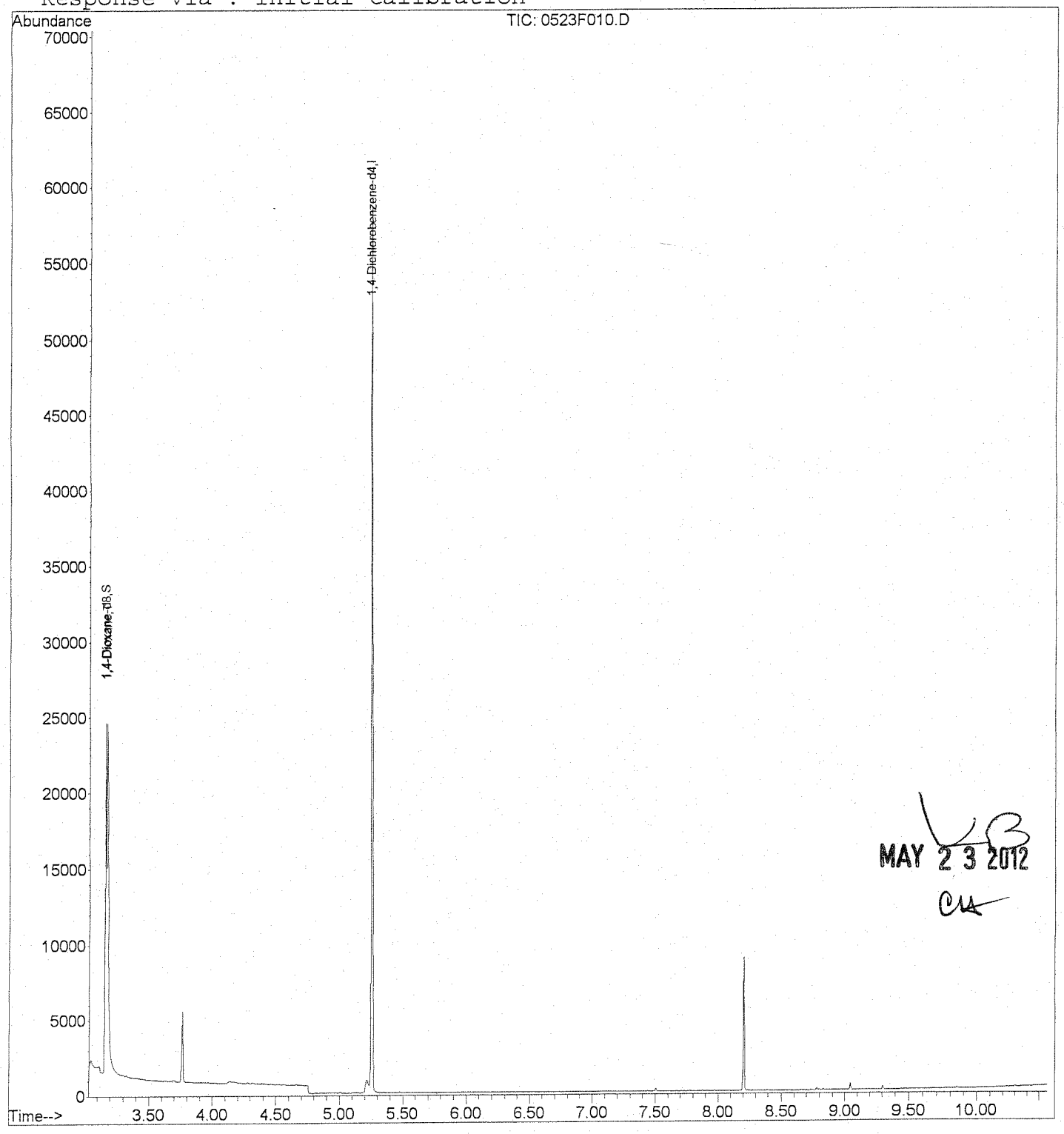
MAY 23 2012

(#) = qualifier out of range (m) = manual integration
0523F010.D 052312_DX.M Wed May 23 12:10:33 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F010.D Vial: 9
Acq On : 23 May 2012 11:29 am Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM38-88Y Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:42 2012 Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration



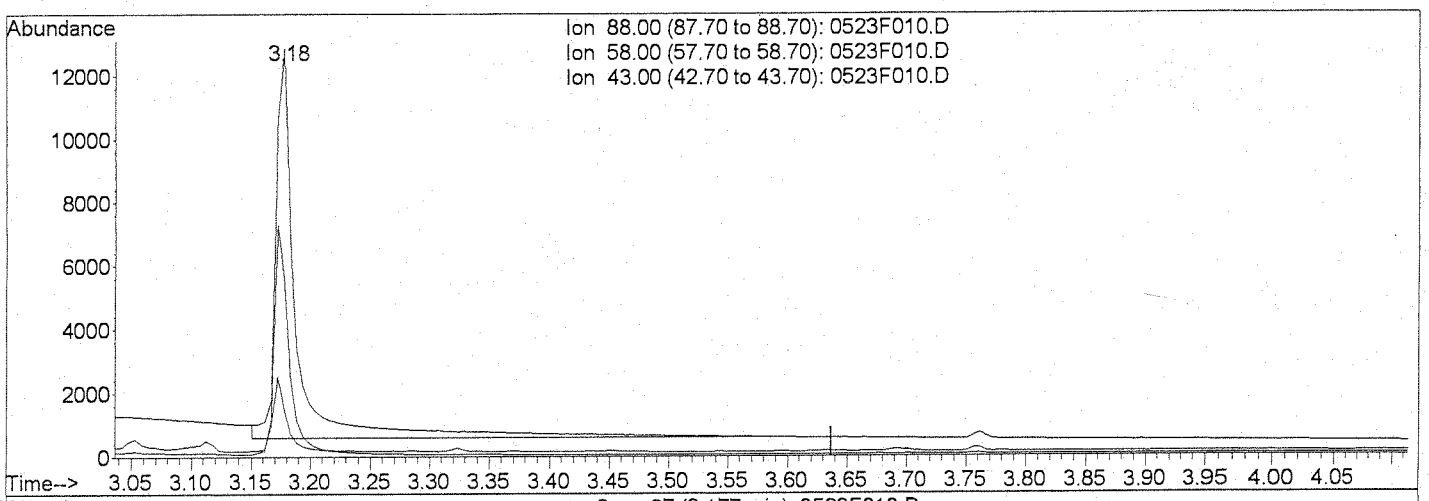
MAY 23 2012

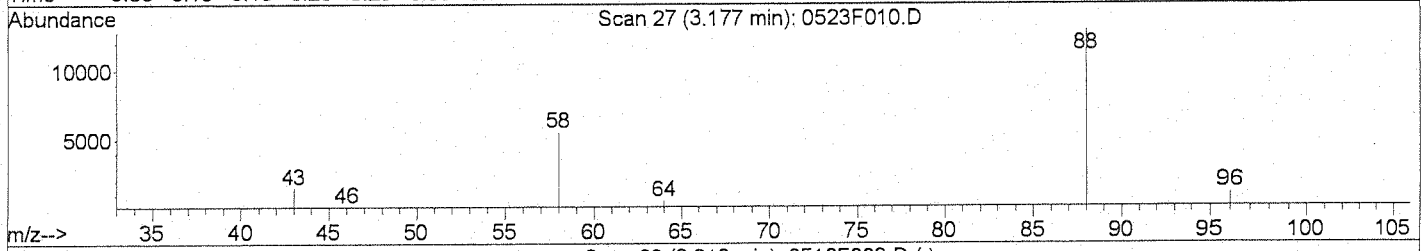
Quantitation Report (Qedit)

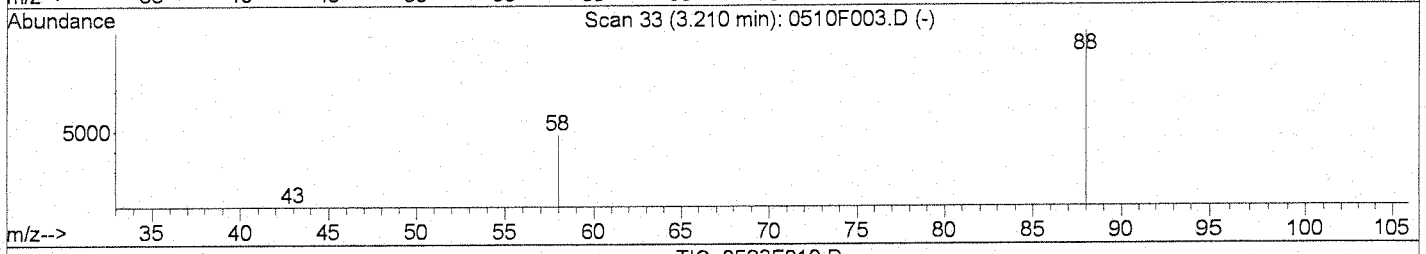
Data File : J:\MS26\DATA\052312\0523F010.D
Acq On : 23 May 2012 11:29 am
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM38-88Y
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 23 11:42 2012

Vial: 9
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration







TIC: 0523F010.D

(3) 1,4-Dioxane (T)

3.18min 156.22ng/ml

response 15508

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	44.31#
43.00	15.90	11.00
0.00	0.00	0.00

Manual Integration:

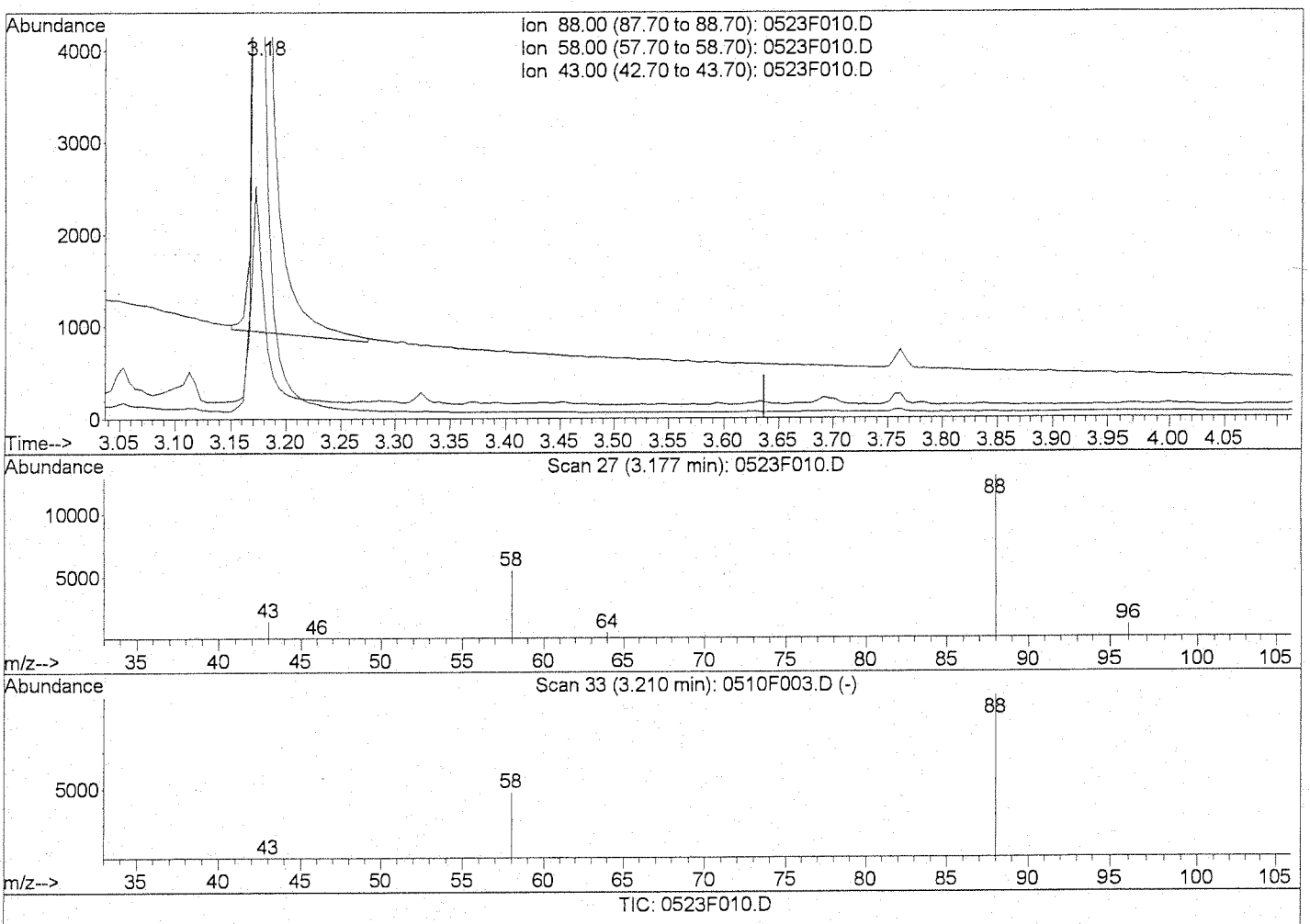
Before

0523F010.D 052312_DX.M Wed May 23 11:42:37 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F010.D Vial: 9
Acq On : 23 May 2012 11:29 am Operator: KBailey
Sample : 100ng/mL ICAL 1,4-Dioxane | SVM38-88Y Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 11:42 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Thu Apr 19 19:40:36 2012
Response via : Multiple Level Calibration



TIC: 0523F010.D

(3) 1,4-Dioxane (T)

3.18min 113.63ng/ml m

response 11280

Ion	Exp%	Act%
88.00	100	100
58.00	15.50	42.71#
43.00	15.90	11.64
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/23/12

CA LB

0523F010.D 052312_DX.M Wed May 23 11:42:45 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F011.D Vial: 10
Acq On : 23 May 2012 11:49 am Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM38-88Z Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 12:08:35 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 11:43:44 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	13091	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.15	96	21480m	217.66	ng/ml	-0.01
Spiked Amount 50.000			Recovery =	435.32%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.16	88	21871m	204.90	ng/ml	

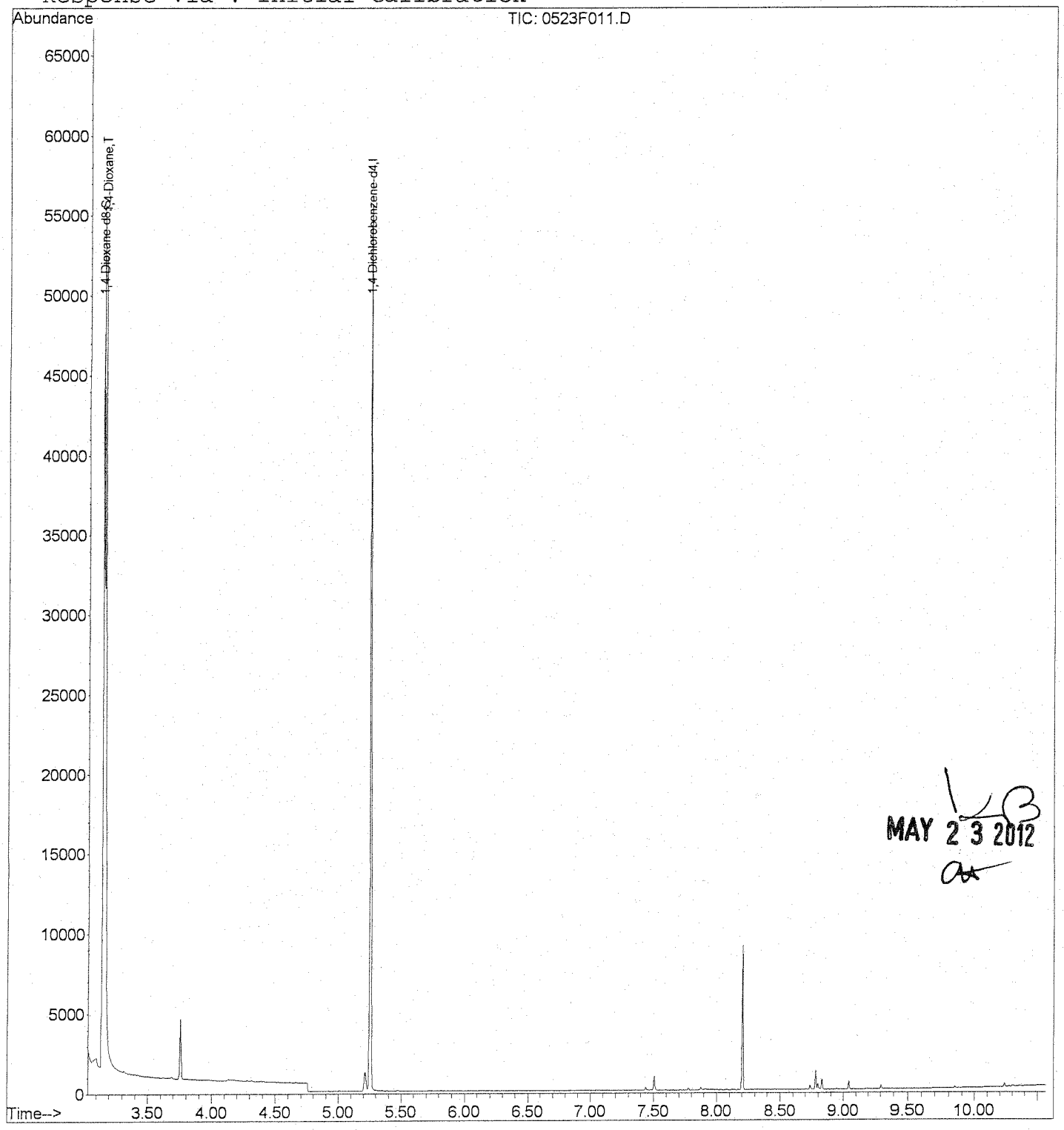
MAY 23 2012

(#) = qualifier out of range (m) = manual integration
0523F011.D 052312_DX.M Wed May 23 12:10:33 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F011.D Vial: 10
Acq On : 23 May 2012 11:49 am Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM38-88Z Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 12:09 2012 Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration

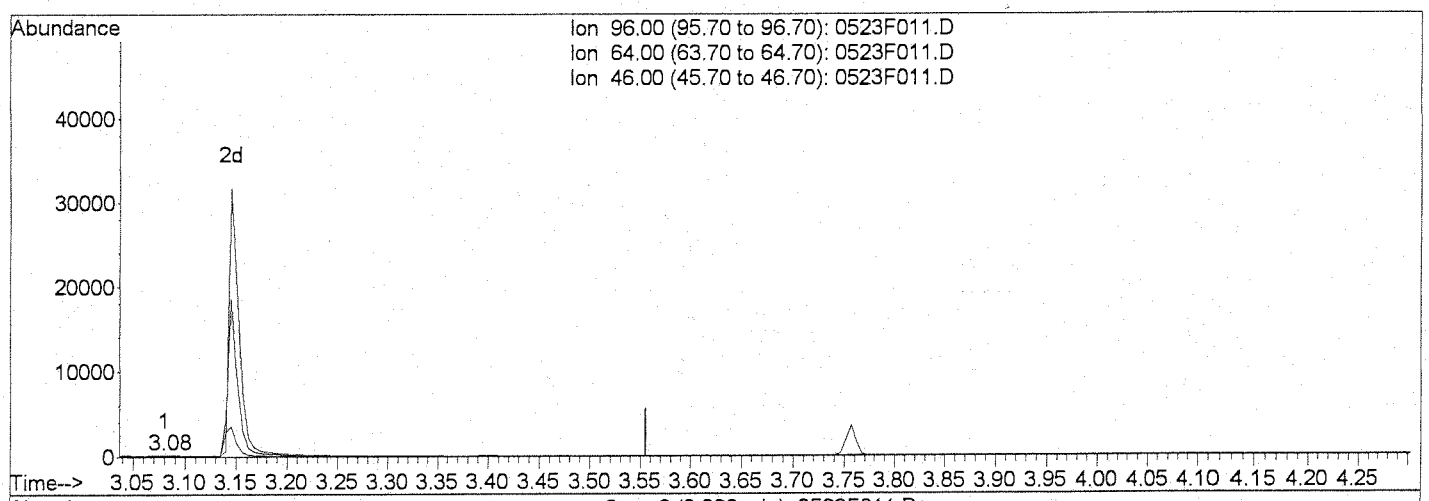


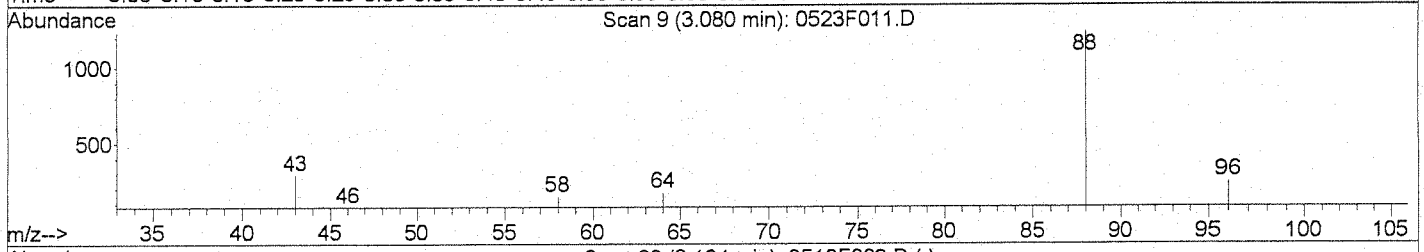
MAY 23 2012

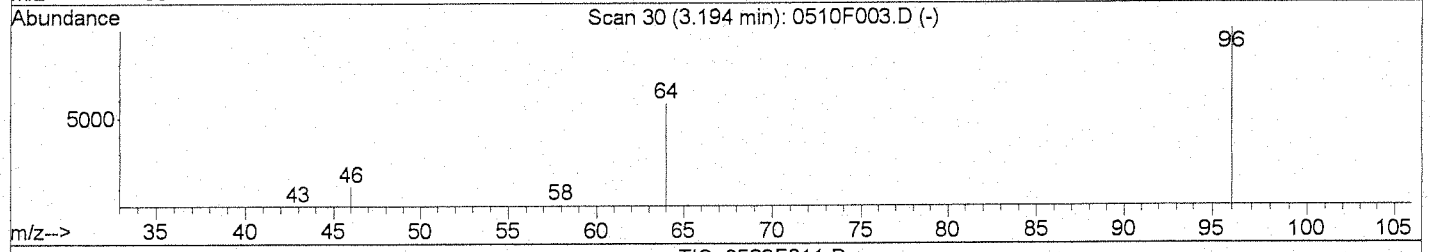
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F011.D Vial: 10
Acq On : 23 May 2012 11:49 am Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM38-88Z Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 12:08 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 11:43:44 2012
Response via : Multiple Level Calibration







TIC: 0523F011.D

(2) 1,4-Dioxane-d8 (S)

3.08min 1.40ng/ml

response 138

Ion	Exp%	Act%
96.00	100	100
64.00	68.10	60.71
46.00	14.90	14.29
0.00	0.00	0.00

Manual Integration:

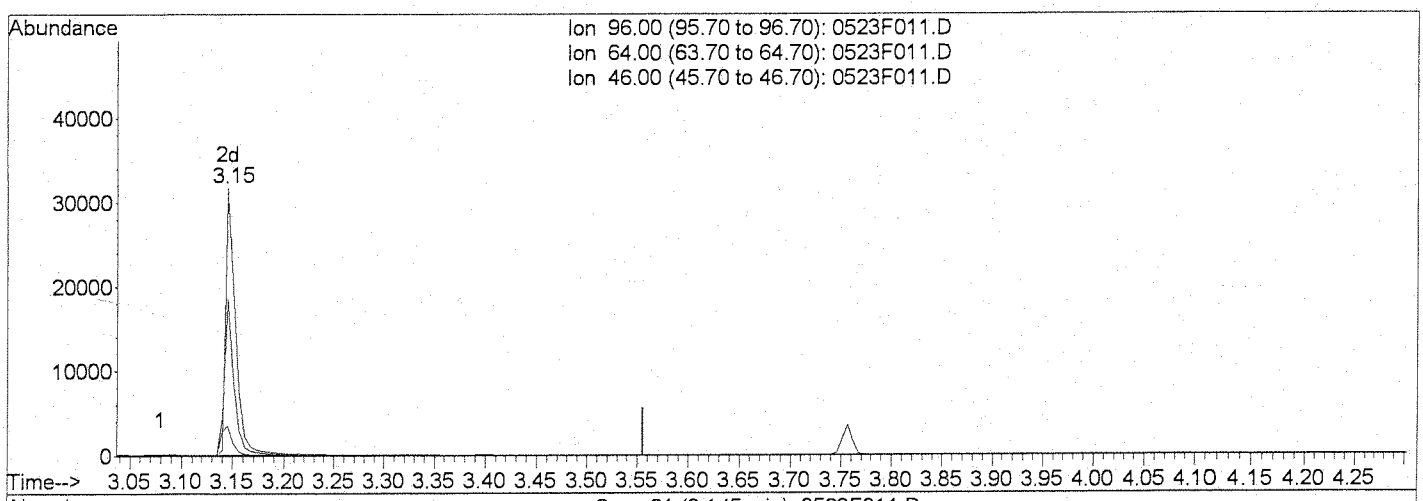
Before

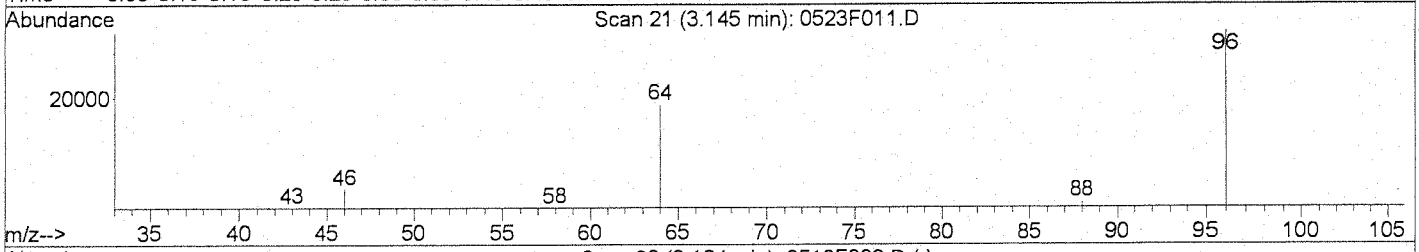
0523F011.D 052312_DX.M Wed May 23 12:08:41 2012

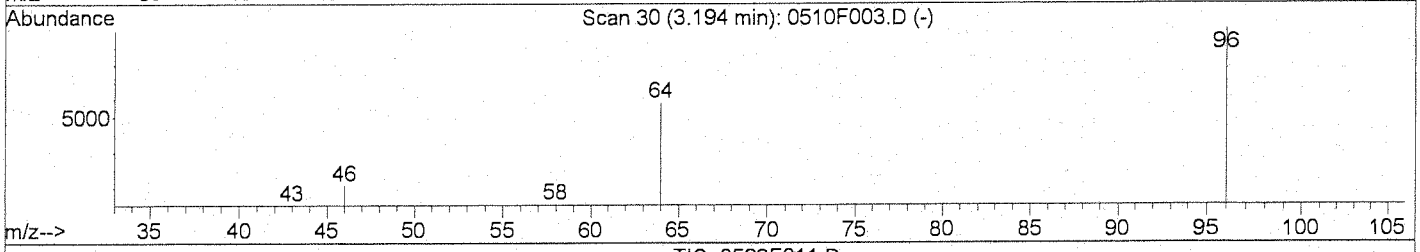
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F011.D Vial: 10
Acq On : 23 May 2012 11:49 am Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM38-88Z Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 12:08 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 11:43:44 2012
Response via : Multiple Level Calibration







TIC: 0523F011.D

(2) 1,4-Dioxane-d8 (S)

3.15min 217.66ng/ml m

response 21480

Ion	Exp%	Act%
96.00	100	100
64.00	68.10	58.53
46.00	14.90	11.28
0.00	0.00	0.00

Manual Integration:

After

WP

05/23/12

CH LAB

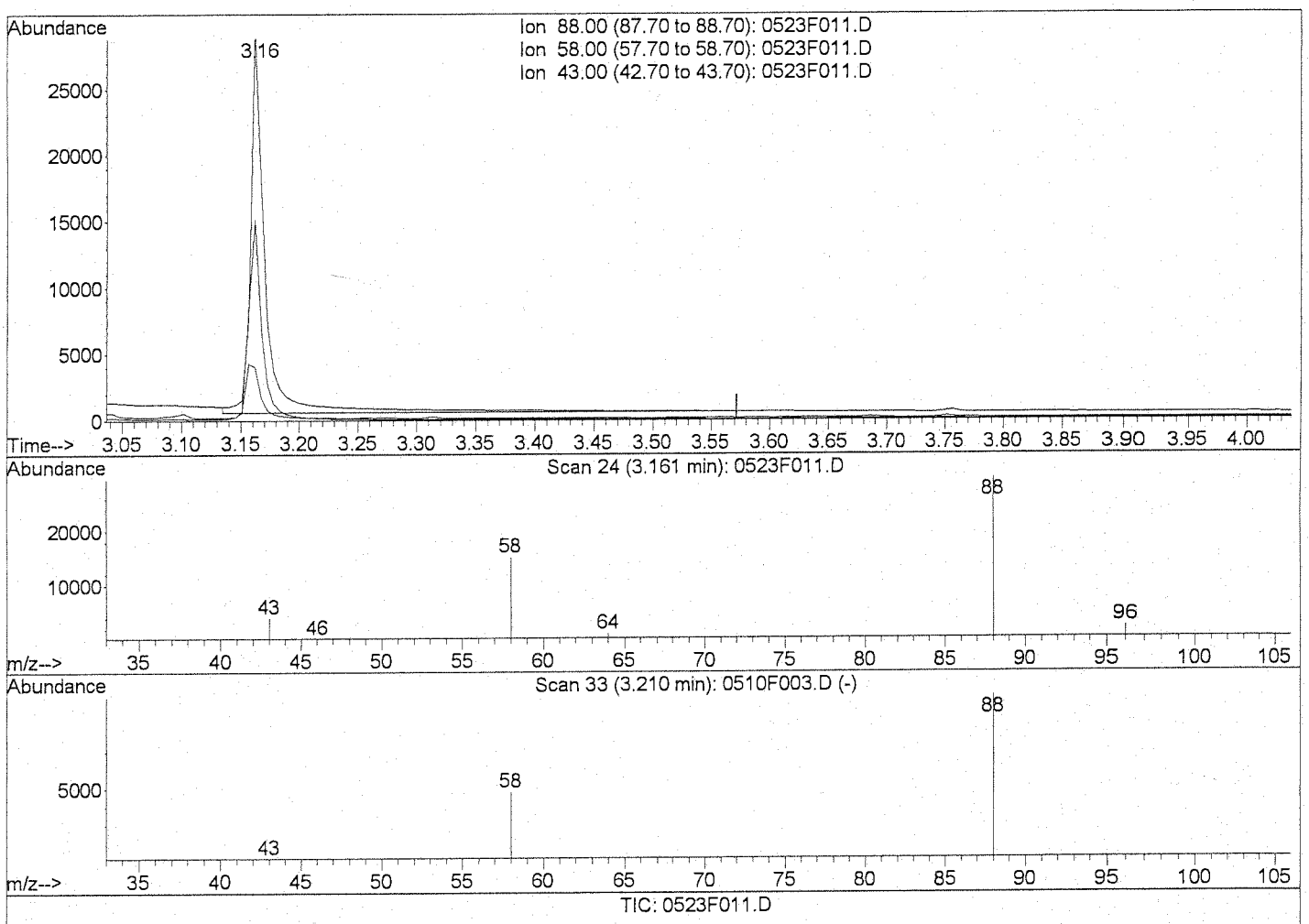
0523F011.D 052312_DX.M Wed May 23 12:08:49 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F011.D
Acq On : 23 May 2012 11:49 am
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM38-88Z
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 23 12:08 2012

Vial: 10
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 11:43:44 2012
Response via : Multiple Level Calibration



TIC: 0523F011.D

(3) 1,4-Dioxane (T)

3.16min 242.09ng/ml

response 25841

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	51.93
43.00	16.10	13.52
0.00	0.00	0.00

Manual Integration:

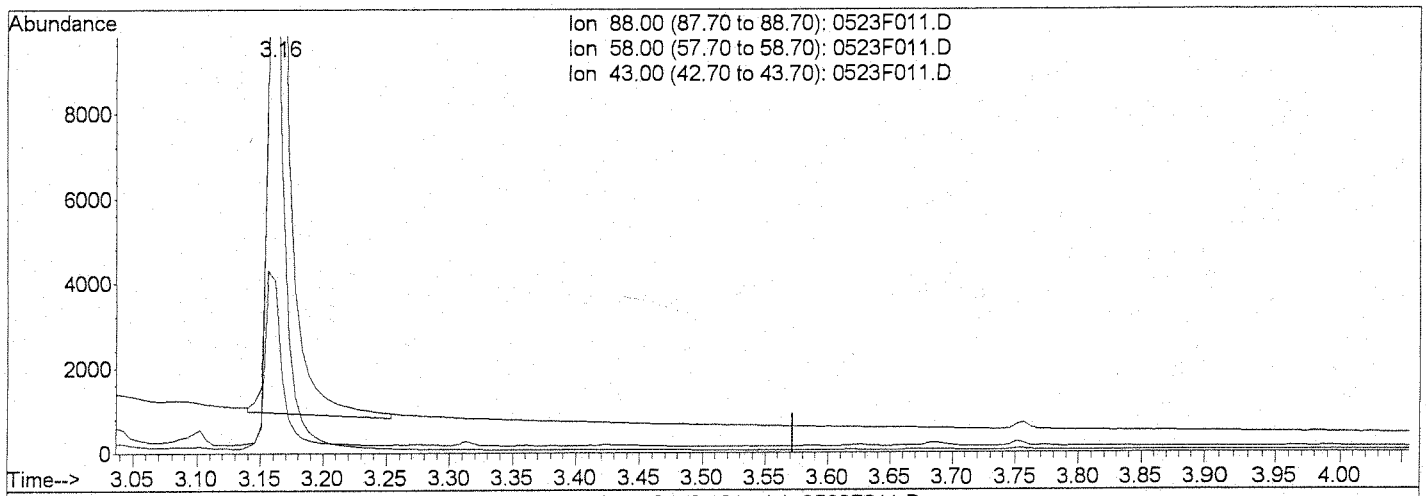
Before

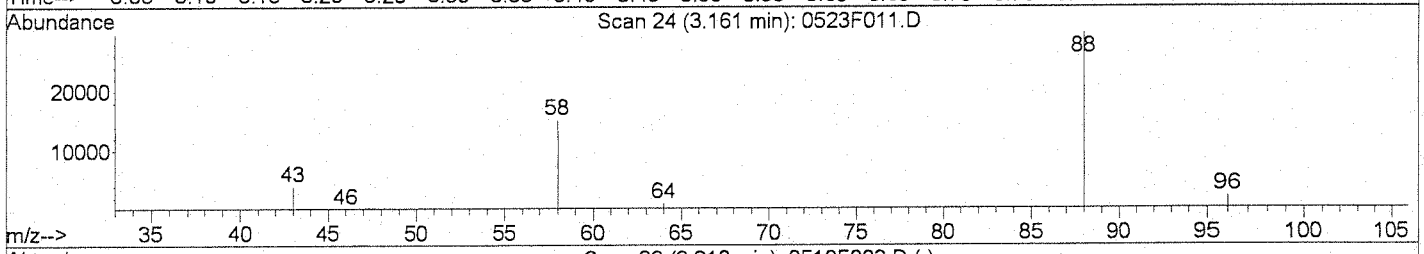
0523F011.D 052312_DX.M Wed May 23 12:08:54 2012

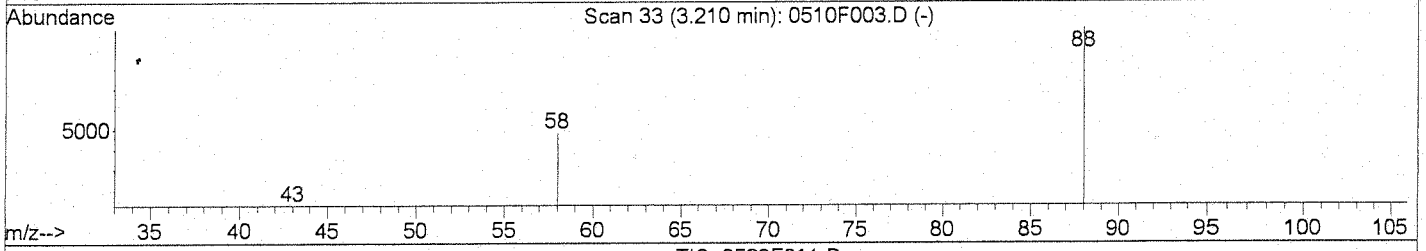
Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F011.D Vial: 10
Acq On : 23 May 2012 11:49 am Operator: KBailey
Sample : 200ng/mL ICAL 1,4-Dioxane | SVM38-88Z Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 12:09 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 11:43:44 2012
Response via : Multiple Level Calibration







TIC: 0523F011.D

(3) 1,4-Dioxane (T)

3.16min 204.90ng/ml m

response 21871

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	51.04
43.00	16.10	13.76
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/23/12

0523F011.D 052312_DX.M Wed May 23 12:09:06 2012

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F012.D Vial: 11
Acq On : 23 May 2012 12:08 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 12:19:19 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	14053	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.17	96	1887	17.59	ng/ml	0.02
Spiked Amount 50.000			Recovery =	35.18%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.18	88	2355m	20.48	ng/ml	

MAY 23 2012

CLA

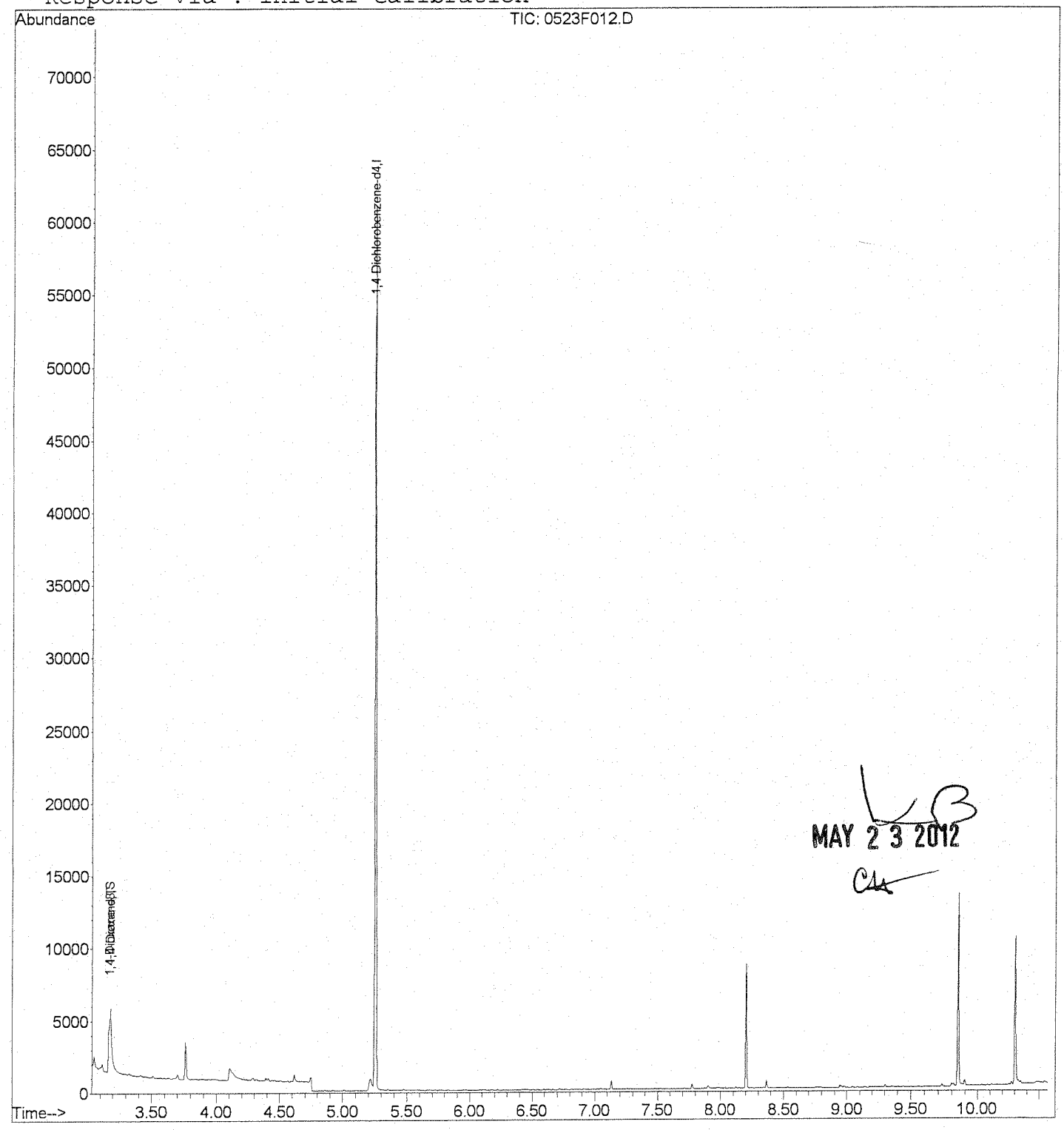
(#) = qualifier out of range (m) = manual integration
0523F012.D 052312_DX.M Wed May 23 12:19:40 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F012.D
Acq On : 23 May 2012 12:08 pm
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 23 12:19 2012

Vial: 11
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration

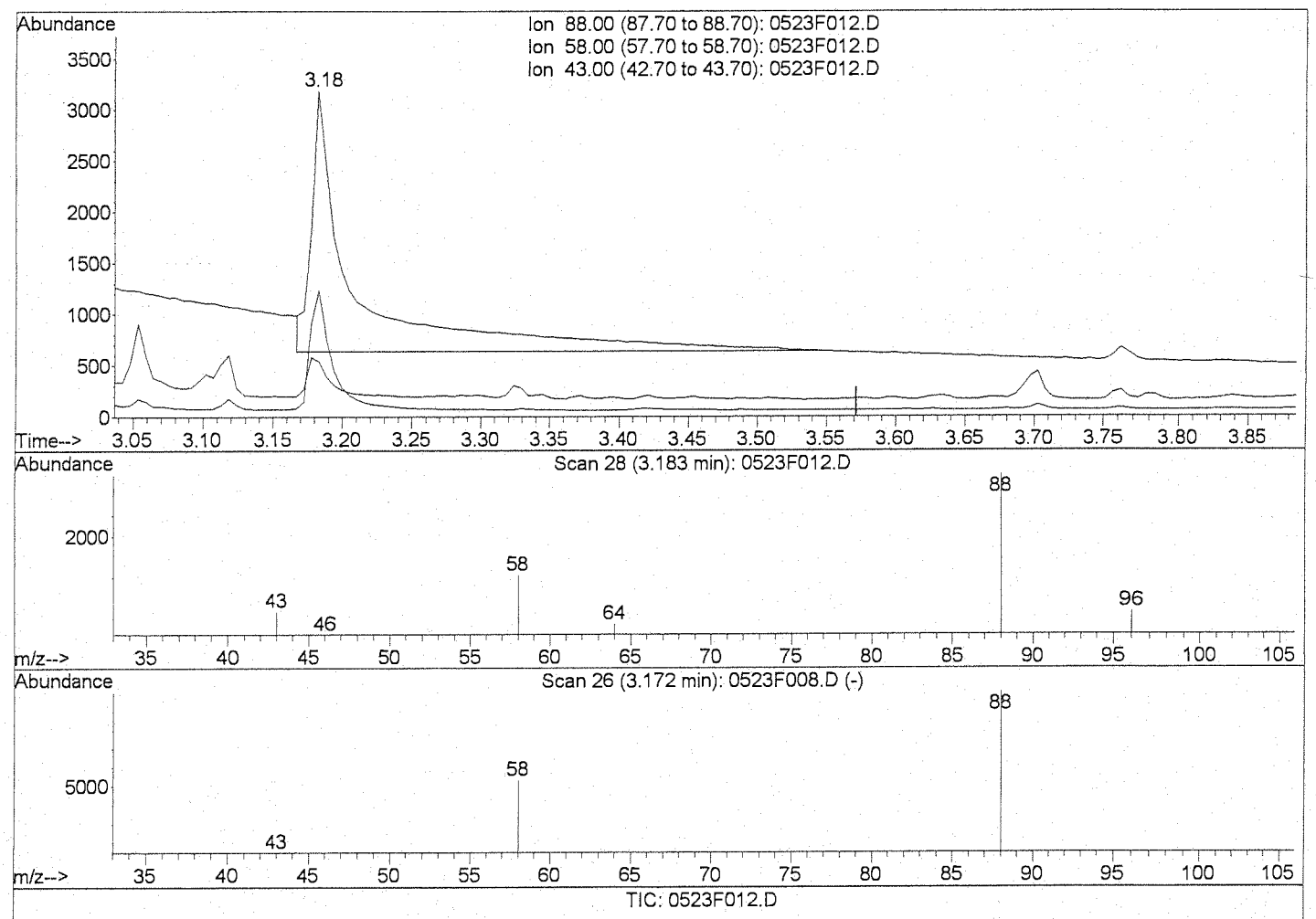


MAY 23 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F012.D Vial: 11
Acq On : 23 May 2012 12:08 pm Operator: KBailey
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 12:19 2012 Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Multiple Level Calibration



TIC: 0523F012.D

(3) 1,4-Dioxane (T)

3.18min 49.01ng/ml

response 5636

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	46.08
43.00	16.10	14.78
0.00	0.00	0.00

Manual Integration:

Before

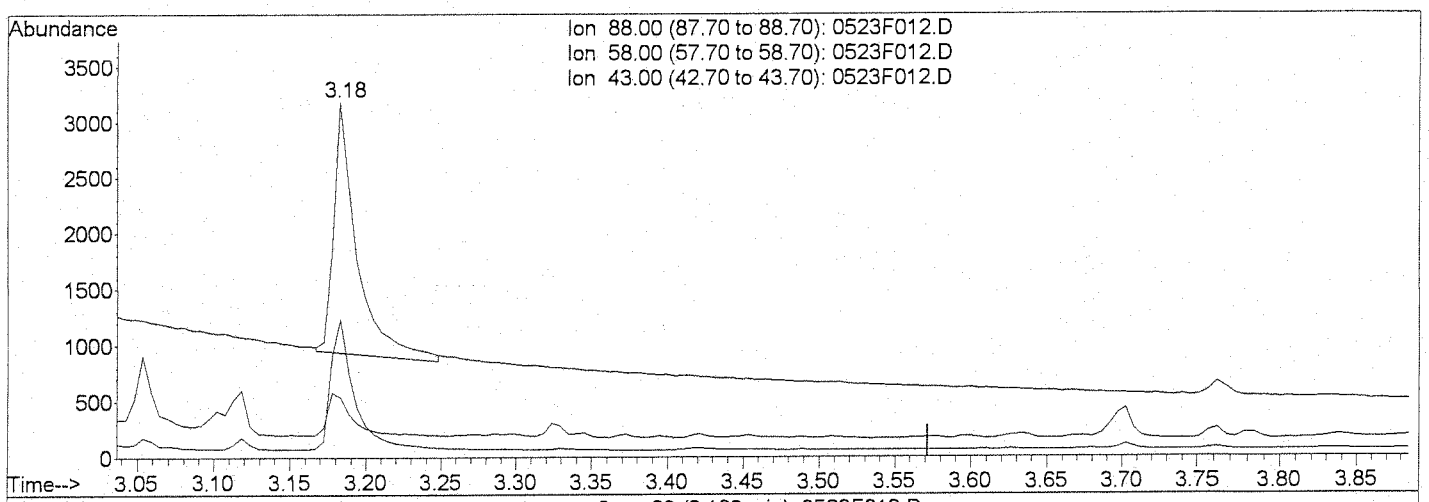
0523F012.D 052312_DX.M Wed May 23 12:19:26 2012

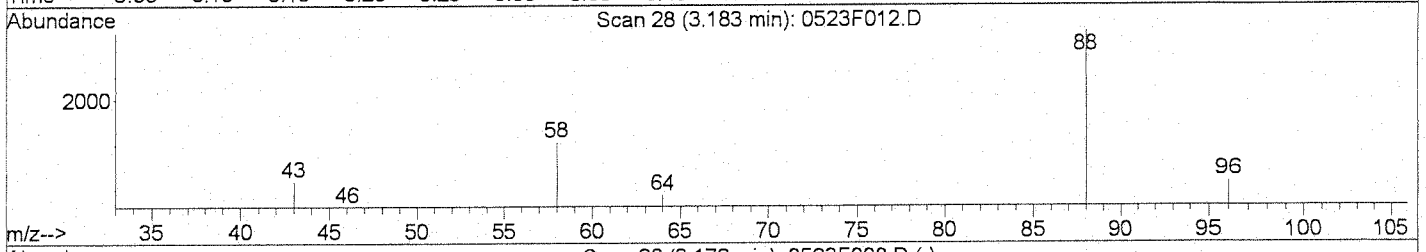
Quantitation Report (Qedit)

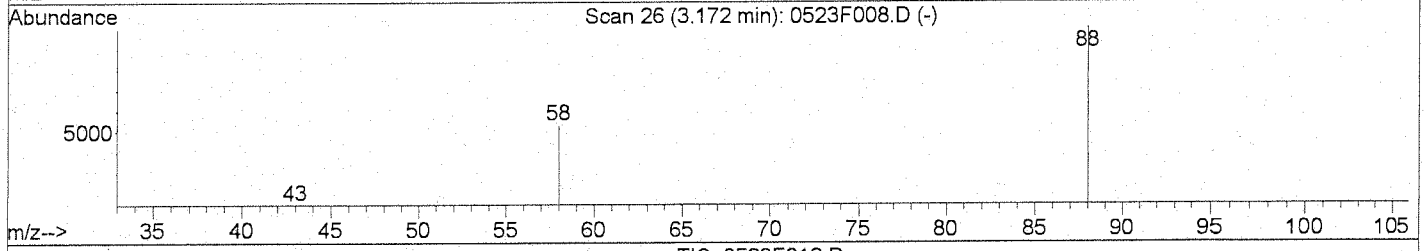
Data File : J:\MS26\DATA\052312\0523F012.D
Acq On : 23 May 2012 12:08 pm
Sample : 20ng/mL ICV 1,4-Dioxane | SVM38-29B
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 23 12:19 2012

Vial: 11
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Multiple Level Calibration







TIC: 0523F012.D

(3) 1,4-Dioxane (T)

3.18min 20.48ng/ml m

response 2355

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	38.77
43.00	16.10	16.97
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/23/12

CA LB

0523F012.D 052312_DX.M Wed May 23 12:19:32 2012

Client: Battelle
Project: JPL GW Mon 2Q12/100006114

Service Request: P1201921
Date Analyzed: 05/23/2012

Continuing Calibration Verification Summary
1,4-Dioxane by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 05/23/2012
Calibration ID: CAL11557
Analysis Lot: KWG1205449
Units: ng/ml

File ID: J:\MS26\DATA\052312\0523F018.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
1,4-Dioxane	20	19	0.01	0.409	0.387	-6	NA	± 20 %	AverageRF
1,4-Dioxane-d8	20	20	0.01	0.382	0.375	-2	NA	± 20 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound ‡ CCC Compound

Exception Report

Data File: J:\MS26\DATA\052312\0523F018.D
Lab ID: KWG1205449-2
RunType: CCV
Matrix: WATER

Date Acquired: 05/23/2012 14:48
Date Quantitated: 05/23/2012 17:03
Batch ID: KWG1205449
Analysis Method: 8270D SIM
MethodJoinID: MJ895

Sample Exceptions

Exception Categories	Result	Low Limit	High Limit	Pass	Fail
Tune Window	NA	NA	NA	x	
ICAL Pass/Fail	NA	NA	NA	x	
ICAL Analyte Recovery	NA	NA	NA	x	
Initial Calibration Minimum RF	NA	NA	NA	x	
Initial Calibration SPCC/CCC	NA	NA	NA	x	
Second Source ICAL Verification	NA	NA	NA	x	
Internal Standards	NA	NA	NA	x	
Analyte Co-elution	NA	NA	NA	x	
Retention Time	NA	NA	NA	x	
Below Lowest ICAL Level	NA	NA	NA	x	
Above Highest ICAL Level	NA	NA	NA	x	
Enviroquant/Stealth Calibration Check	NA	NA	NA	x	

Primary Review: MAY 23 2012

Secondary Review: CH 05-24-12

Quantitation Report

Data File:	J:\MS26\DATA\052312\0523F018.D			**Instrument:**	MS26
Acqu Date:	05/23/2012 14:48	**Quant Date:**	05/23/2012 17:03	**Vial:**	2
Run Type:	CCV			**Dilution:**	1.0
Lab ID:	KWG1205449-2			**Soln Conc. Units:**	ng/ml

Bottle ID:		**Tier:**		**Matrix:**	WATER
Prod Code:	8270D 1,4-DIOXA	**Collect Date:**		**Receive Date:**	05/23/2012

Analysis Lot:	KWG1205449	**Prep Lot:**		**Report Group:**	
Analysis Method:	8270D SIM	**Prep Method:**			
Prep Ref:		**Prep Date:**			

Quant Method:	J:\MS26\METHODS\SIM\052312_DX.M			**Calibration ID:**	CAL11557
Title:					
Tune Ref:	J:\MS26\DATA\052312\0523F017.D			**Method ID:**	MJ895
MB Ref:				**Quant based on Method**	

Internal Standard Compounds

IS Ref	Parameter Name	RT	RT Dev	Quant Mass	Response	Solution Conc	Area Criteria
1	1,4-Dichlorobenzene-d4	5.25	0.00?	152	13285	50.00	OK

Surrogate Compounds

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	Quant Mass	Response	Solution Conc	%Rec	%Rec Limits	Rpt?
1	1,4-Dioxane-d8	3.17			96	1992	19.64		35-151	NA

Target Compounds

Final Conc. Units:

IS Ref	Parameter Name	RT	RT Dev	RRT Dev	QuantMass	Response	Solution Conc	Final Conc	Q	Rpt?
1	1,4-Dioxane	3.18			88	2054m	18.90			

U: Undetected at or above MDL
J: Analyte detected above MDL, but below MRL
B: Hit above MRL also found in Method Blank
E: Analyte concentration above high point of ICAL
N: Presumptive evidence of compound

D: Result from dilution
m: Manual integration performed
d: Compound manually deleted
NR: Analyte not reported from this analysis

*: Result fails acceptance criteria
#: Acceptance criteria not applicable
?: Insufficient information to determine acceptance
e: Result >= MRL, but MRL less than low point of ICAL
c: check for co-elution

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F018.D Vial: 2
Acq On : 23 May 2012 2:48 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-88W Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 15:01:28 2012 Quant Results File: 052312_DX.RES

Quant Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration
DataAcq Meth : SIM14DX

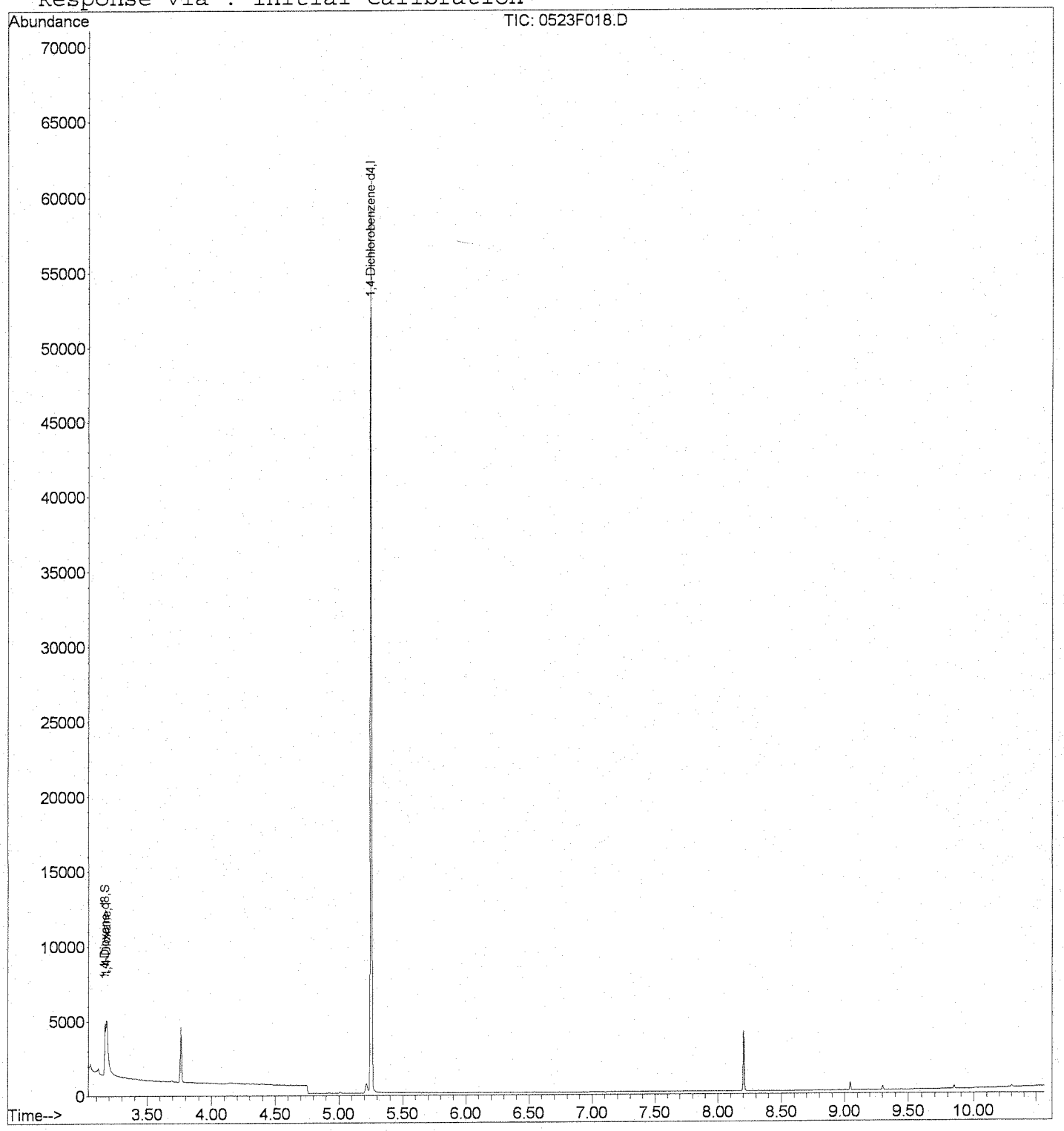
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.25	152	13285	50.00	ng/ml	0.00
System Monitoring Compounds						
2) 1,4-Dioxane-d8	3.17	96	1992	19.64	ng/ml	0.01
Spiked Amount 50.000			Recovery =	39.28%		
Target Compounds						Qvalue
3) 1,4-Dioxane	3.18	88	2054m	18.90	ng/ml	

(#) = qualifier out of range (m) = manual integration
0523F018.D 052312_DX.M Wed May 23 17:04:01 2012 Page 1

Quantitation Report (QT Reviewed)

Data File : J:\MS26\DATA\052312\0523F018.D Vial: 2
Acq On : 23 May 2012 2:48 pm Operator: KBailey
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-88W Inst : MS26
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 17:03 2012 Quant Results File: 052312_DX.RE

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Initial Calibration

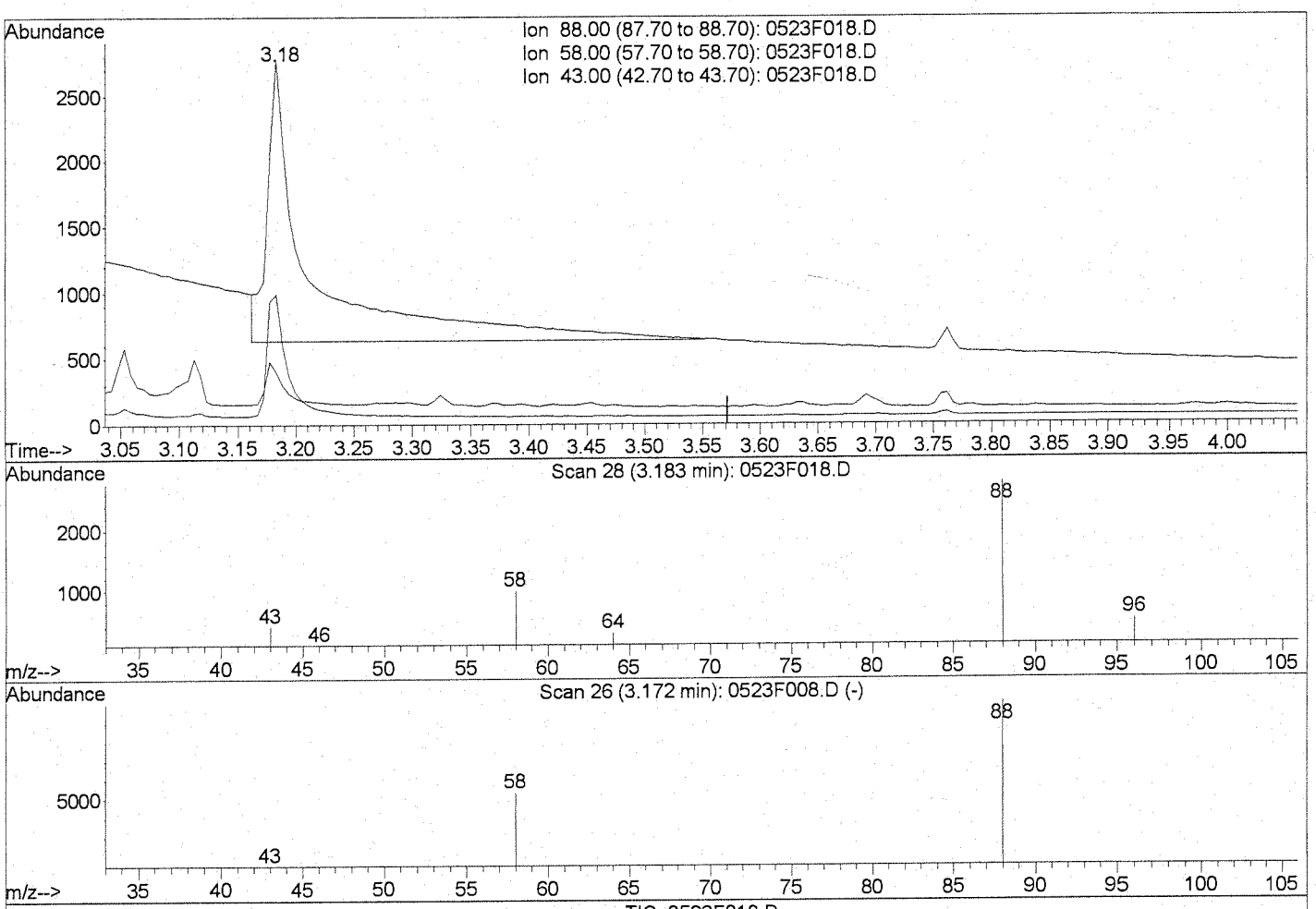


Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F018.D
Acq On : 23 May 2012 2:48 pm
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-88W
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 23 15:01 2012

Vial: 2
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Multiple Level Calibration



TIC: 0523F018.D

(3) 1,4-Dioxane (T)

3.18min 51.11ng/ml

response 5556

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	43.42
43.00	16.10	12.83
0.00	0.00	0.00

Manual Integration:

Before

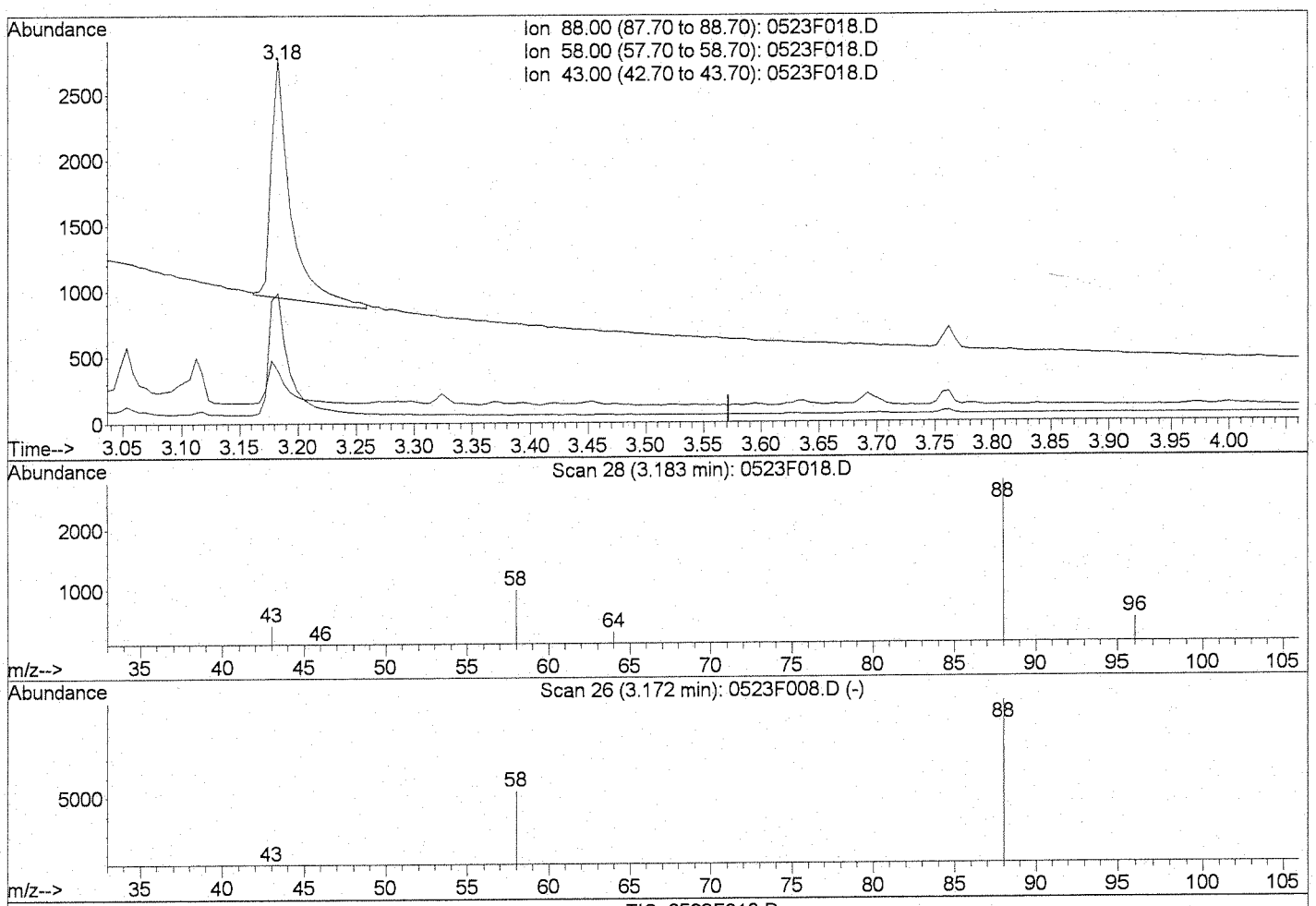
0523F018.D 052312_DX.M Wed May 23 17:03:42 2012

Quantitation Report (Qedit)

Data File : J:\MS26\DATA\052312\0523F018.D
Acq On : 23 May 2012 2:48 pm
Sample : 20ng/mL CCV 1,4-Dioxane | SVM38-88W
Misc :
MS Integration Params: RTEINT.P
Quant Time: May 23 17:03 2012

Vial: 2
Operator: KBailey
Inst : MS26
Multiplr: 1.00
Quant Results File: temp.res

Method : J:\MS26\METHODS\SIM\052312_DX.M (RTE Integrator)
Title : 1,4-Dioxane Calibration
Last Update : Wed May 23 12:09:46 2012
Response via : Multiple Level Calibration



TIC: 0523F018.D

(3) 1,4-Dioxane (T)

3.18min 18.90ng/ml m

response 2054

Ion	Exp%	Act%
88.00	100	100
58.00	37.00	35.55
43.00	16.10	14.49
0.00	0.00	0.00

Manual Integration:

After

IC-Overintegrated

05/23/12

LB

CA 05·24·12

0523F018.D 052312_DX.M Wed May 23 17:03:49 2012

Organic Analysis:
1,4-Dioxane by GC/MS

Validation Package

Sample Prep and Screen Data

Preparation Information

Group ID:	KWG1205231	**Prep Method:**	EPA 3510C	**Prep Date:**	05/18/12 00:00
Department:	Semivoa GCMS				

Lab Code	Client ID	Product	Matrix	Amt. Ext.	Final Vol.
K1204661-001	27516-0512-01	8270D 1,4-Dioxane	WATER	100ml	50ml
K1204661-002	27517-0512-01	8270D 1,4-Dioxane	WATER	100ml	50ml
K1204661-003	27517-0512-02	8270D 1,4-Dioxane	WATER	100ml	50ml
K1204661-004	28521-0512-01	8270D 1,4-Dioxane	WATER	100ml	50ml
K1204661-005	27010-0512-01	8270D 1,4-Dioxane	WATER	100ml	50ml
K1204737-001	22043-0512-01	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1205231-1	Matrix Spike	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1205231-2	Duplicate Matrix Spike	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1205231-3	Matrix Spike	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1205231-4	Duplicate Matrix Spike	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1205231-5	Lab Control Sample	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1205231-6	Duplicate Lab Control Sampl	8270D 1,4-Dioxane	WATER	100ml	50ml
KWG1205231-7	Method Blank	8270D 1,4-Dioxane	WATER	100ml	50ml
P1201921-002	MW-17-4	8270D 1,4-Dioxane	WATER	100ml	50ml

Lab Code	Parent Lab Code	Comments
KWG1205231-1	K1204661-001	
KWG1205231-2	K1204661-001	
KWG1205231-3	P1201921-002	
KWG1205231-4	P1201921-002	

Lab Code	Prep Event ID	Surrogate Solution ID	Amount Added	Spike Solution ID	Amount Added	Witness
K1204661-001	1127182	SVM38-29C	50uL			SCaggian
K1204661-002	1127183	SVM38-29C	50uL			SCaggian
K1204661-003	1127184	SVM38-29C	50uL			SCaggian
K1204661-004	1127185	SVM38-29C	50uL			SCaggian
K1204661-005	1127186	SVM38-29C	50uL			SCaggian
K1204737-001	1127181	SVM38-29C	50uL			SCaggian
KWG1205231-1	1127188	SVM38-29C	50uL	SVM37-5D	50uL	SCaggian
KWG1205231-2	1127189	SVM38-29C	50uL	SVM37-5D	50uL	SCaggian
KWG1205231-3	1127190	SVM38-29C	50uL	SVM37-5D	50uL	SCaggian
KWG1205231-4	1127191	SVM38-29C	50uL	SVM37-5D	50uL	SCaggian
KWG1205231-5	1127192	SVM38-29C	50uL	SVM37-5D	50uL	SCaggian
KWG1205231-6	1127193	SVM38-29C	50uL	SVM37-5D	50uL	SCaggian
KWG1205231-7	1127194	SVM38-29C	50uL			SCaggian
P1201921-002	1127187	SVM38-29C	50uL			SCaggian

Comments: IS: SVM37-L1A

Started By: DHongel Assisted By: Training Yes No

Completed By: LBerg Assisted By: Yes No

Reviewed By: HBailey Date: 5/22/12 Storage: SVM LAB / HS2L

Chain of Custody

Relinquished By: Date: 5.21.12

Received By: LB Date: 5/23/12 Extracts Examined Yes No

Preparation Information

Due: 5/24/12

Group ID:	KWG1205231	**Prep Method:**	EPA 3510C	**Prep Date:**	05/18/12 00:00
Department:	Semivoa GCMS				

#	Lab Code	Client ID	B#	√	Product	Matrix	Amt. Ext. mL	pH	Int. Vol.	Final Vol. M	Surr. Added	Spike Added
1	K1204661-001	27516-0512-01	.04	√	8270D 1,4-Dioxane	WATER	100	–	NA	50	50µL	N/A
2	K1204661-002	27517-0512-01	.03	√	8270D 1,4-Dioxane	WATER	100	–		50		
3	K1204661-003	27517-0512-02	.03	√	8270D 1,4-Dioxane	WATER	100	–		50		
4	K1204661-004	28521-0512-01	.03	√	8270D 1,4-Dioxane	WATER	100	–		50		
5	K1204661-005	27010-0512-01	.04	√	8270D 1,4-Dioxane	WATER	100	–		50		
6	K1204737-001	22043-0512-01	.08	√	8270D 1,4-Dioxane	WATER	100	–		50		
7	KWG1205231-1	Matrix Spike 4661-1MS	.04	√	8270D 1,4-Dioxane	WATER	100	–		50		50µL
8	KWG1205231-2	Duplicate Matrix Spike 4661-1DMS	.03	√	8270D 1,4-Dioxane	WATER	100	–		50		
9	KWG1205231-3	Matrix Spike P01921-2MS	.04	√	8270D 1,4-Dioxane	WATER	100	–		50		
10	KWG1205231-4	Duplicate Matrix Spike P01921-2DMS	.04	√	8270D 1,4-Dioxane	WATER	100	–		50		
11	KWG1205231-5	Lab Control Sample			8270D 1,4-Dioxane	WATER	100	–		50		
12	KWG1205231-6	Duplicate Lab Control Sample			8270D 1,4-Dioxane	WATER	100	–		50		
13	KWG1205231-7	Method Blank			8270D 1,4-Dioxane	WATER	100	–		50		N/A
14	P1201921-002	MW-17-4	.04	√	8270D 1,4-Dioxane	WATER	100	–	√	50		

Comments: Prep# 158418

Surrogate ID: SVM38-2SC, 50µg/mL, Exp: 10/4/12, 50µL(epp)

Spike ID: SVM37-SD, 50µg/mL, Exp: 6/21/12, 50µL(epp)

Witness: SC 5/18/12

Started By: DHongel Assisted By: KTW

Completed By: Assisted By:

Additional Prep Information For 1,4 Dioxane by EPA 3510

Service Request 461,4737 **Workgroup** 05231

Pre-Prep Information:

DCM Lot DF597

Batch Start (Time/Date/Initial): 19:30/ 5·18·12/DH

Batch Stop (Time/Date/Initial): 21:30/ 5·18·12/DH

Sulfate Lot # 116413 Salt Lot # G38343

Extract Storage: Grinch

Completed (Time/Date/Initial): 1745 5·21·12 ~~5·18~~ 5·21·12(WD)

Comments/Observations:

Bench Sheet Review Check List
☑ Hold Times Met (if no, Reason:)
☑ Prep date, dept, method, product code correct in stealth
☑ Spike Information correct
☑ Weights/Volumes and units correct on raw and final bench sheets
☑ Sample IDs have been checked—Bottle numbers appended if required
☑ Names present for: Started by, Completed by, relinquished by, and witnessed by.
☑ Training has been circled
☑ Extract Storage recorded
☑ Additional Prep Sheet completely filled out (NA or line out Blanks)
☑ All clean-ups have been noted on additional prep sheet
☑ Signed service request with Form V, if applicable, has been attached

Injection Log

Directory: J:\MS26\DATA\052312

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0523F001.d	1.	PR		23 May 2012 08:3
2	1	0523F002.d	1.	PR		23 May 2012 08:5
3	2	0523F003.d	1.	3.0ug/mL DFTPP | SVM38-66A		23 May 2012 09:1
4	3	0523F004.d	1.	IB		23 May 2012 09:3
5	4	0523F005.d	1.	2.0ng/mL ICAL 1,4-Dioxane | SVM38-88T		23 May 2012 09:5
6	5	0523F006.d	1.	4.0ng/mL ICAL 1,4-Dioxane | SVM38-88U		23 May 2012 10:1
7	6	0523F007.d	1.	10ng/mL ICAL 1,4-Dioxane | SVM38-88V		23 May 2012 10:3
8	7	0523F008.d	1.	20ng/mL ICAL 1,4-Dioxane | SVM38-88W		23 May 2012 10:5
9	8	0523F009.d	1.	50ng/mL ICAL 1,4-Dioxane | SVM38-88X		23 May 2012 11:1
10	9	0523F010.d	1.	100ng/mL ICAL 1,4-Dioxane | SVM38-88Y		23 May 2012 11:2
11	10	0523F011.d	1.	200ng/mL ICAL 1,4-Dioxane | SVM38-88Z		23 May 2012 11:4
12	11	0523F012.d	1.	20ng/mL ICV 1,4-Dioxane | SVM38-29B		23 May 2012 12:0
13	1	0523F013.d	1.	3.0ug/mL DFTPP | SVM38-66A		23 May 2012 12:2
14	2	0523F014.d	1.	20ng/mL CCV 1,4-Dioxane | SVM39-2C		23 May 2012 12:4
15	3	0523F015.d	1.	PR		23 May 2012 13:0
16	4	0523F016.d	1.	PR		23 May 2012 13:2
17	1	0523F017.d	1.	3.0ug/mL DFTPP | SVM38-66A		23 May 2012 14:2
18	2	0523F018.d	1.	20ng/mL CCV 1,4-Dioxane | SVM38-88W		23 May 2012 14:4
19	3	0523F019.d	1.	KWG1205359-5 | MB		23 May 2012 15:0
20	4	0523F020.d	1.	KWG1205359-3 | LCS		23 May 2012 15:2
21	5	0523F021.d	1.	KWG1205359-4 | DLCS		23 May 2012 15:4
22	6	0523F022.d	1.	KWG1205359-1 | MS K1204848-003MS		23 May 2012 16:0
23	7	0523F023.d	1.	KWG1205359-2 | DMS K1204848-003DMS		23 May 2012 16:2
24	8	0523F024.d	1.	K1204848-001		23 May 2012 16:4
25	9	0523F025.d	1.	K1204848-002		23 May 2012 17:0
26	10	0523F026.d	1.	K1204848-003		23 May 2012 17:2
27	11	0523F027.d	1.	K1204848-004		23 May 2012 17:4
28	12	0523F028.d	1.	K1204848-005		23 May 2012 17:5
29	13	0523F029.d	1.	KWG1205062-4 | MB		23 May 2012 18:1
30	14	0523F030.d	1.	KWG1205062-2 | LCS		23 May 2012 18:3
31	15	0523F031.d	1.	KWG1205062-3 | DLCS		23 May 2012 18:5
32	16	0523F032.d	1.	KWG1205062-1 | MS K1204507-001MS		23 May 2012 19:1
33	17	0523F033.d	1.	K1204507-001		23 May 2012 19:3
34	18	0523F034.d	1.	K1204507-002		23 May 2012 19:5
35	19	0523F035.d	1.	K1204618-001		23 May 2012 20:1
36	51	0523F036.d	5.	K1204848-001DMS 5X		23 May 2012 20:3
37	20	0523F037.d	1.	KWG1205231-7 | MB		23 May 2012 20:5
38	21	0523F038.d	1.	KWG1205231-5 | LCS		23 May 2012 21:1
39	22	0523F039.d	1.	KWG1205231-6 | DLCS		23 May 2012 21:3
40	23	0523F040.d	1.	P1201921-002MS		23 May 2012 21:4
41	24	0523F041.d	1.	P1201921-002DMS		23 May 2012 22:0
42	25	0523F042.d	1.	P1201921-002	Run # 293052	23 May 2012 22:2
43	26	0523F043.d	1.	K1204661-001MS		23 May 2012 22:4
44	27	0523F044.d	1.	K1204661-001DMS		23 May 2012 23:0
45	28	0523F045.d	1.	K1204661-001	CAL 11557	23 May 2012 23:2
46	29	0523F046.d	1.	K1204661-002		23 May 2012 23:4
47	30	0523F047.d	1.	K1204661-003		24 May 2012 00:0
48	31	0523F048.d	1.	K1204661-004		24 May 2012 00:2
49	32	0523F049.d	1.	K1204661-005	LB MAY 24 2012	24 May 2012 00:4
50	33	0523F050.d	1.	K1204737-001		24 May 2012 01:0
51	1	0523F051.d	1.	3.0ug/mL DFTPP | SVM38-66A		24 May 2012 01:2
52	2	0523F052.d	1.	20ng/mL CCV 1,4-Dioxane | SVM38-88W		24 May 2012 01:3
53	34	0523F053.d	1.	KWG1205284-3 | MB		24 May 2012 01:5
54	35	0523F054.d	1.	KWG1205284-1 | LCS		24 May 2012 02:1

LABORATORY REPORT

May 18, 2012

David Conner
Battelle
4800 Oak Grove Dr. M/S 180-801
Pasadena, CA 91109

RE: JPL GW Mon 2Q12 / 100006114

Dear David:

Enclosed are the results of the samples submitted to our laboratory on May 16, 2012. For your reference, these analyses have been assigned our service request number P1201940.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA200007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L11-203; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 362188; Washington State Department of Ecology, ELAP Lab ID: C946, State of Utah Department of Health, NELAP Certificate No. CA015272011-1; Los Angeles Department of Building and Safety, Approval No: TA00001. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Digitally Signed By Sue Anderson at 5:28 pm, May 18, 2012

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114
Service Request No: P1201940

CASE NARRATIVE

The samples were received intact under chain of custody on May 16, 2012 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA Method 7196A

No anomalies were encountered during this analysis.

DETAIL SUMMARY REPORT

Client: Battelle
Project ID: JPL GW Mon 2Q12 / 100006114
Service Request: P1201940

Date Received: 5/16/2012
Time Received: 12:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	7196A - Cr6
MW-26-2	P1201940-001	Water	5/16/2012	08:27	X
MW-26-1	P1201940-002	Water	5/16/2012	08:56	X
EB-15-5/16/12	P1201940-003	Water	5/16/2012	08:45	X

Acronyms

CA LUFT	California DHS LUFT Methoc
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert* -Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater* , 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* , SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P1201940

CAS Contact:

Company Name & Address (Reporting Information)	Project Name	Project Number
BATTELLE 3990 OLD TOWN AVE., C-205 SAN DIEGO, CA 92110	JPL GW MON. 2Q12	100006114

Project Manager	P.O. # / Billing Information
DAVID CONNER	#285651 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE COLUMBUS, OH 43201

Phone	Fax
(619) 726-7311	(619) 458-6641

Email Address for Result Reporting: Connerd@battelle.org

Sampler (Print & Sign): CHASE BROSIUS

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	Cr VI (7196A)	1,4-DIOXANE (8270SIM)	NDMA (521)	Remarks
												0	0	7	
MW-26-2	1	5/16/12	0827	GW	1							X			
MW-26-1	2	5/16/12	0856	GW	1							X			
EB-15-5/16/12	3	5/16/12	0845	GW	1							X			EQUIP BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC)
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	5/16/12	1200		5/16/12	1200
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	5/16/12	1230		5/16/12	1230
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 3.2 °C

5 of 20

Chain of Custody Report

Client: Battelle **Service Request:** P1201940
Project: JPL GW Mon 2Q12/100006114

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P1201940-001.01					
	7196A				
		5/16/12	1306	SMO / MZAMORA	
		5/16/12	1306	P-37 / MZAMORA	
		5/16/12	1336	In Lab / SANDERSON	
P1201940-002.01					
	7196A				
		5/16/12	1306	SMO / MZAMORA	
		5/16/12	1306	P-37 / MZAMORA	
		5/16/12	1336	In Lab / SANDERSON	
P1201940-003.01					
	7196A				
		5/16/12	1306	SMO / MZAMORA	
		5/16/12	1306	P-37 / MZAMORA	
		5/16/12	1336	In Lab / SANDERSON	

Please note that all of the samples were placed back in P-37 5/16/12 @ 1600. SMA

Columbia Analytical Services
Now part of the ALS Group
2655 Park Center Drive, Suite A, Simi Valley, CA 93065 | 805.526.7161 | www.caslab.com

Sample Acceptance Check Form

Client: Battelle Work order: P1201940

Project: JPL GW Mon 2Q12 / 100006114

Sample(s) received on: 5/16/12 Date opened: 5/16/12 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
9	Was a **trip blank** received?	☐	☐	☒
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1201940-001.01	125mL Plastic NP					
P1201940-002.01	125mL Plastic NP					
P1201940-003.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201940
Date Collected : 05/16/12
Date Received : 05/16/12

Chromium, Hexavalent

Units : mg/L (ppm)
Analysis Method : 7196A
Basis : NA
Test Notes :

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-26-2	P1201940-001	0.010	0.003	1	NA	05/16/12 15:00	ND	
MW-26-1	P1201940-002	0.010	0.003	1	NA	05/16/12 15:00	ND	
EB-15-5/16/12	P1201940-003	0.010	0.003	1	NA	05/16/12 15:00	ND	
Method Blank	P1201940-MB	0.010	0.003	1	NA	05/16/12 15:00	ND	

Approved By Karen Rya Date : 5/17/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P1201940
Project:	JPL GW Mon 2Q12 / 100006114	**Date Analyzed:**	05/16/12

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND

Approved By: Karen Ryan Date: 5/17/12

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 2Q12 / 100006114

Service Request: P1201940
Date Analyzed: 05/16/12

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0500	0.0486	97	90-110
CCV1	0.0500	0.0504	101	90-110

Approved By: Karen Ryan Date: 5/17/12

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P1201940
Project Name :	JPL GW Mon 2Q12	**Date Collected :**	NA
Project Number :	100006114	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	05/16/12

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P1201940-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0407	102	92-110	

Approved By Karen Ryan Date : 5/17/12

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL GW Mon 2Q12
Project Number : 100006114
Sample Matrix : WATER

Service Request : P1201940
Date Collected : 05/16/12
Date Received : 05/16/12
Date Extracted : NA
Date Analyzed : 05/16/12

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-26-2
Lab Code : P1201940-001MS P1201940-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0433	0.0442	87	88	69-119	2	

Approved By Karen Rya Date : 5/17/12

Columbia Analytical Services™

pH Run Log

Service Request #(s): MDL, LOD P1201940

Time: 0830

Sample	VWR lot #	Exp.
pH 2 Buffer	524-02141203	11/2013
pH 4 Buffer	524-10241101	2/28/13
pH 7 Buffer	524-03231201	1/2014
pH 10 Buffer	524-03281201	1/31/14

Slope	Prep.Run #
98.8%	—
	Run#
	—

pH in liquid: (1) 9040B **pH in solid:** (2) 9045C (*Note method number in column labeled # below*)

pH adjustment:(3) 7196A,(4) 7199 (Note method # In column labeled #)

Sample	#	pH	Temp. °C
pH 2.000	3,4	2.007	22.8°
pH 4.000	|	4.010	23.2°
pH 7.000	|	7.014	23.2°
pH 10.000	|	9.992	23.6°
Ref#: T.V=7.38 EXP: 8/2013 524-10241102	↓	7.411	23.6°
DI	3	2.000	21.7°
DI	4	9.458	23.2°
MB 5/14/12 solid prep	4	9.377	22.9°
LCS	—	9.412	23.4°
DLCS	|	9.338	23.1°
MDL 5	↓	9.432	23.6°
pH 10.000	3,4	10.003	24.0°
MDL 6 5/14/12 solid prep	4	9.453	24.3°
7	—	9.413	23.8°
8	|	9.150	22.2°
9	|	9.444	21.8°
10 ↓	↓	9.304	22.3°

Sample	#	pH	Temp. °C
LOD 5/14/12 soil prep	4	9.432	21.4°
pH 10.000	4	9.986	23.3°
TIME:	1425		
pH 2.000	3	1.985	20.6°
P1201940-1.01	—	1.897	16.6°
7.01	|	2.101	16.9°
↓ 3.01	|	2.020	17.1°
pH 2.000	↓	1.981	20.6°

Check not used

pH Adjustments: ☒ **7196A**: Diluted/Conc H_2SO_4 EMD 49284 EXP: 11/20/14

☒ **7199A**: Diluted NaOH 524-04161201 EXP: 10/11/12

Comments: _____

* Soil or Solid prep: 1:1(wt:vol) with DI water: ** Samples received past recommended hold time.

Date buffers and filling solution changed: 5/14/12

Note: ATC probe used; therefore, temperature correction calculation is not necessary.

Analyst: _____ Date: 5/16/12

Reviewer: EL Date: 5/16/12

Columbia Analytical Services™

Hexavalent Chromium (Liquids)

Method EPA 7196A

Service Request#(s): P1201940 Run#: 291964

Stock#: S24-0223/201 T.V=10PPM EXP: 8/03/12 Prep Run#:

ICV/CCV#: S24-0327/201 T.V=100PPM EXP. 7/2012 Conc. H_2SO_4 Lot#: EM0 49284 EXP: 11/30/14

Coloring Reagent Ref#: S24-0503/201 EXP: 6/3/12

Working Curve:

Prep Dilution	*NA*	*0.05/50*	*0.25/50*	*0.5/50*	*Corr. Coeff.*
Concentration mg/L	*0.00*	*0.01*	*0.05*	*0.1*	0.99998123
Absorbance @ 540 nm	0.000	0.011	0.057	0.113	

	Sample #	Sample Vol.(mL)	Dilution	pH ✓	Bkg.	Absorbance @ 540nm	Corrected Abs. (minus bkg.)	Results - mg/L	QA/QC - %R / RPD
1	ICB	10ml	—	✓	0.000	0.000	0.000	0.0000356	<0.003
2	ICV 0.05PPM		—	✓	0.000	0.055	0.055	0.0486	97%
3	MB		—	✓	0.000	0.000	0.000	0.0000356	<0.003
4	LCS 0.04PPM		—	✓	0.000	0.046	0.046	0.0407	102%
5	P1201940-1.01		—	✓	0.001	0.003	0.002	0.00180	<0.003
6	-1.01 MS 0.05PPM		—	✓	0.001	0.050	0.049	0.0433	87% 2%
7	-1.01 MSD		—	✓	0.001	0.051	0.050	0.0442	88% RPD
8	-2.01		—	✓	0.000	0.000	0.000	0.0000356	<0.003
9	-2.01 VS 0.03PPM		—	✓	0.000	0.030	0.030	0.0265	88%
10	-3.01		—	✓	0.000	0.000	0.000	0.0000356	<0.003
11	CCV1 0.05PPM		—	✓	0.000	0.057	0.057	0.0504	101%
12	CCB1	↓	—	✓	0.000	0.000	0.000	0.0000356	<0.003
13									
14									
15			Spike not added						
16									
17									

pH Requirement: Method 7196A (2 ± 0.5) *Samples filtered prior to pH adjustment

ICV/CCV spiked with 0.25 ml of S24-0327/201 @ 50 ↑ 50 ml of pH adjusted DI WATER (T.V.= 0.05 ppm)

MS/MSD spiked with 0.05 ml of S24-0223/201 ↑ 10 ml of pH adjusted sample (T.V.= 0.05 ppm)

LCS spiked with 0.2 ml of ↑ 50 ml of pH adjusted DI Water (T.V.= 0.04 ppm)

Verification Standard Spiked 0.3 ml of ↓ @ 10 ↑ 10 ml of sample (T.V.= 0.03 ppm)

Comments:

Prepared By: Date/Time: 5/16/12 @ 1445

Analyzed By: Date/Time: 5/16/12 @ 1500

Reviewed By: EI Date: 5/16/12

10/17/11 SR

S24-10171102 1000PPM NH3
0.3141 g NH_4Cl (EMD 4919893; EXP: 10/19/14) ↑ 100mL
W/ S24-10171101 (0.1N H_2SO_4 EXP: 10/17/12)
EXP: 4/17/12

10/17/11 SR

S24-10171103 IC02 Eluent
100 mL of S24-09201103 (10x conc Eluent; EXP: 9/20/12)
↑ 1L w/ DI. DEGASSED.
EXP. 10/31/11

10/21/11 SR

S24-10211101 pH 7.000 Buffer
Purchased
BDH Cat No: BDH5046-500mL
LOT # 11074491
EXP: 7/2013

10/24/11 SR

S24-10241101 pH 4.000 Buffer
Purchased
JT Baker Cat No: 5657-01 500ml
LOT # K04505
EXP: 2/28/13

10/24/11 SR

S24-10241102 pH 7.38 Buffer
Purchased
BDH Cat No BDH5058-500ml
LOT # 1109034
EXP: 8/2013

2/9/12 524-0209/202 Nitrite Soln
0.2500g N-1-Naphthylethylene diamine Dihydrochloride (JT Baker; lot IK22587 EXP 10/19/14) ↑ 250mL w/ DI
EXP: 8/9/12

2/9/12 524-0209/203 ICO2 Eluent
100mL 524-0220/103 (for Conc Eluent, EXP 9/20/12) ↑ 1 L w/ DI H2O. Degassed.
2/23/12

2/9/12 524-0209/204 ICO2 PCR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER 305641 exp: 6/15/15) in 100 mL Methanol (B&J DE932 exp: 10/10/16) Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H2SO4 (EMD 49284 exp: 11/20/14). Bring up to volume w/ DI H2O; mix and degas.

EXP: 2/14/12

2/10/12 524-02/0120/1 995 ~~1000~~ ppm Cr6+
Purchased
INORGANIC VENTURES CCCR(6)1-1
LOT: 02-CR03049
EXP: 3/1/13

2/13/12 524-0213/201
5.6mL Conc H_2SO_4 (EMD 49184; EXP: 11/20/14) ↑ 1 L DI H_2O
EXP: 2/13/13

2/14/12 SL 524-02141203 pH Buffer 2.00
Purchased
BDH Cat NO: BDH5010-500ml
LOT# 11214G
EXP. 11/2013

2/20/12 SL 524-0220/201 500ppm NO_2 STOCK
Purchased
RICCA CHEMICAL Co Cat# 5444.5-4 120ml Amber Gl
LOT# 1262292
EXP: 8/12

2/22/12 SL 524-0222/201 Alkaline DIGESTION SOL
30.0g ~~NaOH~~ Na_2CO_3 (EMD 4632715; EXP: 10/11/12) + 20.0g $NaHCO_3$ (EMD 4702713C; EXP: 10/11/12) ↑1L-W/DI
EXP: 3/22/12

2/23/12 SL 524-0223/201 10PPM C-6+ STD
1.0ml 524-02101201 (1000ppm C-6+; EXP: 3/1/13)
↑ 100ml W/DI H2O
EXP: 8/23/12

2/27/12 SL 524-0227/201 0.1N H_2SO_4
5.6ml Conc H_2SO_4 (EMD 4928-4; EXP: 11/20/1
↑ 2L W/DI H2O
EXP: 2/27/13

3/20/12 S24-0320120I 1000 PPM SO_3 Std/c
SR

0.1591 Na_2SO_3 (JT Baker Lot #H10627; Exp: 8/31/14) up to 100 ml w/ DI Water.

EXP. 4/3/12

3/20/12 S24-0320130Z 1000PPM SO_3 ICV/CCV
SR

0.1607 Na_2SO_3 (Mallinckrodt Lot #H25469; Exp: 8/11/14) up to 100 ml w/ DI Water.

EXP: 4/3/12

3/21/12 S24-0321120I ICO2 PCR
SR

Dissolve 0.5g 1,5-Diphenylcarbohydrazide (~~EM~~ JT BAKER J05641 exp: 6/15/15) in 100 mL Methanol (B&J DC433 exp: 2/27/17. Add to 1 L volumetric flask containing 500 mL DI water + 5.6 mL conc. H_2SO_4 (EMD 44284 exp: 11/30/14. Bring up to volume w/ DI H_2O; mix and degas.

EXP: 3/26/12

3/21/12 S24-0321130Z Alkaline Digestion Sol'n
SR

30.0g NaOH (EMD 47022730 ; EXP 10/11/12) + 30.0g Na_2CO_3 (EMD 46-32171 5B EXP: 10/11/12) ↑ 1L W/ DI H_2O.

EXP: 4/21/12

3/23/12 S24-0323120I pH 7.000 buffer
SR

Purchased
Thermo Scientific Orion 910107 475ml/plastic
LOT Code: QZI P/N: 702483-ACZ
EXP: 11/2014

3/23/12 SR 524-0323/202 pH 7.38 buffer
Purchased
BDH Cat No: BDH5058-500mL
LOT#: 110934
EXP: 8/2013

3/27/12 SR 524-0327/201 100 PPM Cr6+ ICV/
Purchased
RICCA Chemical Company Cat No 2695-1
500ml Plastic
LOT # 120701
EXP: 7/2013

3/28/12 SR 524-0328/201 pH 10.000
Purchased
JT Baker Cat # 5655-01
LOT # L04514 500ml plastic
EXP: 1/31/14

3/28/12 SR 524-0328/202 Methylene Blue 1% AC Sol
100ml Purchased
Alfa Aesar stock # 42771
LOT # H04X026
EXP: 3/28/13

5/3/12 524-0503/201 Ph Coloring Reagent

0.250g 1,5-Diphenylcarbohydrazide (EMD 3056-41; EXP: 6/15/18) ↑ 50 ml w/ Acetone (EMD 47154; EXP: [illegible] EXP: 6/3/12

5/4/12 524-0504/201 ICO2 ICV/CCV 2.5

0.25ml of 524-0527/201 (10ppm Cr6+; EXP: 7/2013) prepped 0.1/10 ↑ 100ml w/ pH ADJUSTED (pH 9.455) DI. EXP: 5/18/12