ATTACHMENT 1: QUALITY ASSURANCE/QUALITY CONTROL SUMMARY

This attachment contains a summary of the field quality assurance, laboratory quality assurance, data verification and data validation procedures utilized for the JPL groundwater monitoring program. Data validation was performed by an independent subcontractor, Laboratory Data Consultants, Inc., Carlsbad, California. Data verification and validation indicated that all of the sample results obtained from the 1st Quarter 2007 sampling event were acceptable for their intended use of characterizing aquifer quality.

ATTACHMENT 1: QUALITY ASSURANCE/QUALITY CONTROL SUMMARY

A comprehensive QA/QC plan for groundwater monitoring is described in detail in the Quality Assurance Project Plan for the Groundwater Monitoring Plan (Ebasco, 1993). QC checks, including both field and laboratory, are the specific operational techniques and activities used to fulfill QA requirements. Proper sample acquisition and handling procedures are necessary to ensure the integrity of the analytical results.

FIELD QUALITY ASSURANCE/QUALITY CONTROL

The field QA/QC samples collected for JPL groundwater monitoring included duplicate samples, equipment rinsate blanks, trip blanks and a source blank. These QC sample results were used as part of a qualitative evaluation of the aquifer recovery.

Duplicate Field Samples. Duplicate samples were used to evaluate the precision of the laboratory analyses. Duplicate samples for volatile organic compounds (VOCs), total chromium, hexavalent chromium [Cr(VI)], perchlorate, lead and arsenic were collected from monitoring wells MW-15, MW-16, MW-17 (Screen 2), MW-18 (Screen 2), MW-19 (Screen 1), MW-20 (Screen 2), MW-22 (Screen 3) and MW-24 (Screen 1). Duplicate samples for major cations and anions, alkalinity, total dissolved solids (TDS), and pH analyses were collected from monitoring wells MW-16 and MW-24 (Screen 1). The analytical results for the duplicate samples were comparable to the results of the original groundwater samples (Tables 1 and 2).

Equipment Rinsate Blanks. Table 1-1 presents a summary of contaminants detected in quality control samples collected during the March/April 2007 sampling event. Equipment rinsate blanks were collected each day that non-dedicated sampling equipment was used. The equipment rinsate blanks, consisting of distilled water run through the sampling equipment after decontamination, were analyzed for all contaminants of concern to monitor possible cross-contamination of samples due to inadequate decontamination. Total Cr was detected in 10 of 11 equipment blanks. The chromium detections may indicate that the equipment decontamination process was insufficient in some cases. M,p-xylene was detected in 5 of 11 equipment blanks. O-xylene was detected in 3 of 11 equipment blanks. M,p-xylene was also detected in several of the associated monitoring well samples. In all cases, the results were flagged with "J" indicating that they are considered to be estimated concentrations.

Trip Blanks. Trip blanks, which consisted of reagent-grade water placed in a vial and transported with the sample bottles to and from the field, were submitted to the laboratory with each daily shipment of groundwater samples. Trip blanks were used to help identify cross-contamination of groundwater samples during transport and/or deficiencies in the laboratory bottle cleaning and sample handling procedures. No contaminants were detected in the trip blanks.

Source Blank. A source blank consists of distilled water used by sampling personnel for equipment decontamination. The source blank is collected at the sampling site and preserved, as appropriate. This QC sample serves as a check on contamination present

in the source water. No source blank was collected during the March/April 2007 sampling event; however, the same source of water has been used in previous groundwater monitoring events and only very low levels of VOCs and chromium, if any, were found.

All detections in the various blanks were compared to the sample results during the data validation process described below to determine the impact on the sample results.

LABORATORY QUALITY ASSURANCE/QUALITY CONTROL

Laboratory QC samples included surrogate compounds (for VOC analyses), matrix spike samples, blank spike samples, and method blanks. The results of the laboratory QC samples were used by the laboratory to determine the accuracy and precision of the analytical techniques with respect to the JPL groundwater matrix, and to identify anomalous results due to laboratory contamination or instrument malfunction.

DATA VERIFICATION AND VALIDATION

The purpose of data verification and validation is to assure that the data collected meet the data quality objectives (DQOs) outlined in the Quality Assurance Project Plan of the Groundwater Monitoring Plan (Ebasco, 1993). The process was intended to ensure that the data are of sufficient quality for use in meeting the objectives outlined in the Groundwater Monitoring Plan. Data verification and validation indicated that all of the sample results obtained from the March/April 2007 event were acceptable for their intended use of characterizing aquifer quality.

Data Verification. All data collected were subjected to data verification. Data verification included confirming that the sample identification numbers on laboratory reports matched those on the chain-of-custody records. Data verification also included reviewing analytical data reports to assure that all samples were analyzed and all required analytes were quantified for each sample.

Data Validation. Data validation is a systematic review of the analytical data that is used to determine the compliance of the established method performance criteria and determine whether the data quality is sufficient to support the data quality objectives. Validation of a data package included review of the technical holding time requirements, review of sample preparation, review of the initial and continuing calibration data, review and recalculation of the laboratory QC sample data, review of the equipment performance, reconciliation of the raw data with the reduced results, identification of data anomalies, and qualification of data to identify data usability limitations.

Data validation was performed by an independent subcontractor, Laboratory Data Consultants, Inc. (LDC), Carlsbad, CA. One hundred percent of all data analyzed by the analytical laboratories, Laucks Laboratory and Columbia Analytical Services, Inc. (CAS) were validated. Ninety percent of the data were subjected to Level III validation and ten percent of the data were subjected to Level IV validation in accordance with the EPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic

Data Review (U.S. EPA, 1999; 2004). The data were evaluated to ensure suitability and usability for the purpose of the groundwater monitoring report.

Data Validation Qualifiers. Analytical data were qualified based on data validation reviews. For chemical data, qualifiers were assigned in accordance with EPA guidelines. Individual laboratory data flags can be found in Attachment 2 (Data Validation Reports). There was one major exception to the analytical criteria as noted in the laboratory validation reports.

Two VOCs (methylene chloride and 1,2,3-trichlorobenzene) were detected in the laboratory method blank for groundwater samples from wells MW-14, MW-17, MW-18, and associated field blanks. The field sample results were compared to the results obtained for the method blank. If the VOC results were less than five times the level in the method blank, then the results were qualified as "U" undetected.

Exceptions to the analytical criteria resulted in the assignment of "J" flags to the results, unless otherwise noted, by Laboratory Data Consultants, Inc. The "J" flag indicates that the result is an estimated value.

No analytical data were rejected for non-compliance with method requirements during the data validation.

REFERENCES

Ebasco. 1993. *Work Plan for Performing a Remedial Investigation/Feasibility Study*. National Aeronautics and Space Administration Jet Propulsion Laboratory, Pasadena, California. December.

U.S. EPA. 1999. *Contract Laboratory Program National Functional Guidelines for Organic Data Review*. February.

U.S. EPA. 2004. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. December.

ATTACHMENT 1
TABLE 1-1
SUMMARY OF CONTAMINANTS DETECTED IN QUALITY CONTROL SAMPLES
COLLECTED DURING THE Mar/April 2007 SAMPING EVENT

Blank Type	Sample ID Number	Sampling Location(s)	Total Chromium (µg/L)	Methylene Chloride (µg/L)	1,2,3-Trichloropropane (µg/L)	2-Butanone (µg/L)	Other Organic Compounds (µg/L)	
EQUIPMENT BLANK	EB-10-4/9/07	MW-25	**3.6 J**	0.5 U	0.5 U	5.0 U	**m,p-Xylene**	**0.94 J**
EQUIPMENT BLANK	EB-11-4/10/07	MW-26	**3.4**	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-1-3/27/07	MW-21	1.0 U	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-2-3/28/07	MW-14	**1.53**	0.5 U	0.5 U	5.0 U	**m,p-Xylene**	**0.88 J**
							o-Xylene	**0.32 J**
EQUIPMENT BLANK	EB-3-3/29/07	MW-17 and MW-18	**3.41**	0.5 U	0.5 U	5.0 U	**m,p-Xylene**	**0.76 J**
							o-Xylene	**0.28 J**
EQUIPMENT BLANK	EB-4-3/30/07	MW-20	**3.42**	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-5-4/2/07	MW-3 and MW-19	**3.43**	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-6-4/3/07	MW-4 and MW-11	**3.39**	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-7-4/4/07	MW-12 and MW-23	**3.6 J**	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-8-4/5/07	MW-24	**3.59 J**	0.5 U	0.5 U	5.0 U	**m,p-Xylene**	**1.1**
EQUIPMENT BLANK	EB-9-4/6/07	MW-22	**3.59 J**	0.5 U	0.5 U	5.0 U	**m,p-Xylene**	**1.8**
							o-Xylene	**0.36 J**
TRIP BLANK	TB-10-4/9/07	MW-25	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-11-4/10/07	MW-26	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-12-4/11/07	MW-13 and MW-16	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-1-3/27/07	MW-21	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-13-4/12/07	MW-7 and MW-8	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-14-4/13/07	MW-5 and MW-10	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-15-4/16/07	MW-6 and MW-15	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-2-3/28/07	MW-14	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-3-3/29/07	MW-17 and MW-18	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-4-3/30/07	MW-20	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-5-4/2/07	MW-3 and MW-19	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-6-4/3/07	MW-4 and MW-11	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-7-4/4/07	MW-12 and MW-23	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-8-4/5/07	MW-24	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-9-4/6/07	MW-22	NA	0.5 U	0.5 U	5.0 U		

Notes

J	Indicates an estimated value.
µg/L	Micrograms per liter
U	Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
NA	Not Analyzed

ATTACHMENT 2: DATA VALIDATION REPORTS (SUMMARY SHEETS)

This attachment contains the summary sheets from the data validation performed by an independent subcontractor, Laboratory Data Consultants, Inc. (LDC), Carlsbad, CA. Complete data validation reports are available upon request.

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

May 25, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on May 11, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 16763:

SDG #	Fraction
P0700303, P0700321, P0700347	Hexavalent Chromium

The data validation was performed under EPA Level III and Level IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

Please feel free to contact us if you have any questions.

Sincerely,

Stella Arenco for
Erlinda T. Rauto
Operations Manager/Senior Chemist

Attachment 1

PO 190288 **10/90**

LDC #16763 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Cr(VI) (7196A)																															
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	P0700303	05/11/07	06/04/07	32	0																														
A	P0700303	05/11/07	06/04/07	2	0																														
B	P0700321	05/11/07	06/04/07	38	0																														
B	P0700321	05/11/07	06/04/07	4	0																														
C	P0700347	05/11/07	06/04/07	31	0																														
Total	B/LR			107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	107

Shaded cells indicate Level IV validation (all other cells are Level III validation).

16763ST.wpd

NASA JPL
Data Validation Reports
LDC# 16763

Hexavalent Chromium

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: March 27 through March 30, 2007

LDC Report Date: May 25, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0700303

Sample Identification

MW-21-5
MW-21-4
MW-21-3
MW-21-2
MW-21-1
EB-1-3/27/07
MW-14-3
MW-14-2
MW-14-1
EB-2-3/28/07
MW-17-4
MW-17-3**
MW-17-2
DUPE-1-1Q07
EB-3-3/29/07
MW-18-4**
MW-18-3
MW-18-2
DUPE-2-1Q07
MW-20-5
MW-20-4
MW-20-3
MW-20-2
MW-20-1
DUPE-3-1Q07
EB-4-3/30/07
MW-21-1MS
MW-21-1MSD
MW-14-3MS
MW-14-3MSD
MW-17-4MS
MW-17-4MSD
MW-20-3MS
MW-20-3MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 34 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-17-2 and DUPE-1-1Q07, samples MW-18-2 and DUPE-2-1Q07, and samples MW-20-2 and DUPE-3-1Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

X. Field Blanks

Samples EB-1-3/27/07, EB-2-3/28/07, EB-3-3/29/07, and samples EB-4-3/30/07 were identified as equipment blanks. No contaminant concentrations were found in these blanks.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0700303

No Sample Data Qualified in this SDG

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0700303

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 2 through April 6, 2007

LDC Report Date: May 24, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0700321

Sample Identification

MW-3-4	MW-24-3	MW-22-3MS
MW-3-3**	MW-24-2	MW-22-3MSD
MW-3-2	MW-24-1	
EB-5-4/2/07	DUPE-5-1Q07	
MW-4-3	EB-8-4/5/07	
MW-4-2	MW-22-3	
MW-4-1	MW-22-2	
EB-6-4/3/07	MW-22-1**	
MW-11-3	DUPE-6-1Q07	
MW-11-2**	EB-9-4/6/07	
MW-11-1	MW-3-3MS	
MW-23-4**	MW-3-3MSD	
MW-23-3	MW-4-3MS	
MW-23-2	MW-4-3MSD	
MW-23-1	MW-11-3MS	
EB-7-4/4/07	MW-11-3MSD	
MW-12-3	MW-23-3MS	
MW-12-2**	MW-23-3MSD	
MW-12-1	MW-24-4MS	
MW-24-4	MW-24-4MSD	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 42 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-24-4MS/MSD (MW-24-4 MW-24-3 MW-24-2 MW-24-1 DUPE-5-1Q07 EB-8-4/5/07)	Hexavalent chromium	-	83 (85-115)	-	J (all detects) UJ (all non-detects)	A

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-24-1 and DUPE-5-1Q07 and samples MW-22-3 and DUPE-6-1Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

X. Field Blanks

Samples EB-5-4/2/07, EB-6-4/3/07, EB-7-4/4/07, EB-8-4/5/07, and EB-9-4/6/07 were identified as equipment blanks. No contaminant concentrations were found in these blanks.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0700321

SDG	Sample	Analyte	Flag	A or P	Reason
P0700321	MW-24-4 MW-24-3 MW-24-2 MW-24-1 DUPE-5-1Q07 EB-8-4/5/07	Hexavalent chromium	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0700321

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 9 through April 16, 2007

LDC Report Date: May 24, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0700347

Sample Identification

MW-25-5	MW-25-5MSD
MW-25-4	MW-26-2MS
MW-25-3	MW-26-2MSD
MW-25-2	MW-13MS
MW-25-1	MW-13MSD
EB-10-4/9/07	MW-8MS
MW-26-2	MW-8MSD
MW-26-1	MW-10MS
EB-11-4/10/07	MW-10MSD
MW-13	MW-6MS
MW-16	MW-6MSD
DUPE-7-1Q07	
MW-7	
MW-8	
MW-5	
MW-10	
MW-6	
MW-15	
DUPE-8-1Q07	
MW-25-5MS	

Introduction

This data review covers 31 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-16 and DUPE-7-1Q07 and samples MW-15 and DUPE-8-1Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

X. Field Blanks

Samples EB-10-4/9/07 and EB-11-4/10/07 were identified as equipment blanks. No contaminant concentrations were found in these blanks.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0700347

No Sample Data Qualified in this SDG

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0700347

No Sample Data Qualified in this SDG

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

May 22, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fractions listed below. This SDG was received on May 9, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 16742:

SDG #	Fraction
JPL34	Volatiles, Chromium, Perchlorate

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

Attachment 1

PO 190288 10/90

LDC #16742 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		Cr (200.8)		CLO_4 (314.0)																											
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL34	05/09/07	05/31/07	4	0	7	0	3	0																										
Total	B/LR			4	0	7	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14

Shaded cells indicate Level IV validation (all other cells are Level III validation).

16742ST.wpd

NASA JPL
Data Validation Reports
LDC# 16742

Volatiles

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 16, 2007

LDC Report Date: May 22, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL34

Sample Identification

MW-6
TB-15-4/16/07
MW-6MS
MW-6MSD

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
4/19/07	Dichlorodifluoromethane	36.32	All samples in SDG JPL34	J (all detects) UJ (all non-detects)	P
	Methyl-tert-butyl ether	32.69		J (all detects) UJ (all non-detects)	

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
4/16/07	2,2-Dichloropropane Chloromethane Dichlorodifluoromethane Methyl-tert-butyl ether Vinyl chloride	35.78 43.56 61.94 74.94 33.62	All samples in SDG JPL34	J (all detects) UJ (all non-detects)	A

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S041907MVOWM1	cis-1,3-Dichloropropene	127 (73-122)	All samples in SDG JPL34	J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-15-4/16/07 was identified as trip blanks. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL34

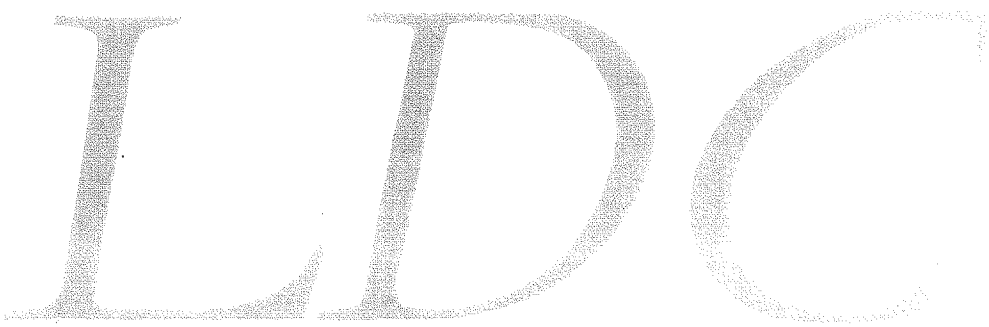
SDG	Sample	Compound	Flag	A or P	Reason
JPL34	MW-6 TB-15-4/16/07	Dichlorodifluoromethane Methyl-tert-butyl ether	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL34	MW-6 TB-15-4/16/07	2,2-Dichloropropane Chloromethane Dichlorodifluoromethane Methyl-tert-butyl ether Vinyl chloride	J (all detects) UJ (all non-detects)	P	Continuing calibration (ICV %D)
JPL34	MW-6 TB-15-4/16/07	cis-1,3-Dichloropropene	J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL34

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16742

Chromium



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 16, 2007

LDC Report Date: May 16, 2007

Matrix: Water

Parameters: Chromium

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL34

Sample Identification

MW-6
MW-15
DUPE-8-1Q07
MW-6MS
MW-6MSD
DUPE-8-1Q07MS
DUPE-8-1Q07MSD

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

Samples MW-15 and DUPE-8-1Q07 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-15	DUPE-8-1Q07	
Chromium	8.45	8.05	5

XIV. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Chromium - Data Qualification Summary - SDG JPL34

No Sample Data Qualified in this SDG

NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL34

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16742

Perchlorate

LDC

LDC Report# 16742A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 16, 2007

LDC Report Date: May 16, 2007

Matrix: Water

Parameters: Perchlorate

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL34

Sample Identification

MW-6
MW-6MS
MW-6MSD

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No perchlorate was found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Perchlorate - Data Qualification Summary - SDG JPL34

No Sample Data Qualified in this SDG

NASA JPL
Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL34

No Sample Data Qualified in this SDG

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

May 22, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fractions listed below. This SDG was received on May 7, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 16717:

SDG #	Fraction
JPL33	Volatiles, Chromium, Wet Chemistry

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

Attachment 1

PO 190288 10/90

LDC #16717 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		Cr (200.8)		CLO_4 (314.0)		Cl,SO_4 $O\text{-}PO_4$ (300.0)		$NO_3\text{-}N$ $NO_2\text{-}N$ (300.0)																							
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL33	05/07/07	05/29/07	16	0	12	0	12	0	9	0	9	0																				
Total	B/LR			16	0	12	0	12	0	9	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58

Shaded cells indicate Level IV validation (all other cells are Level III validation).

16717ST.wpd

NASA JPL
Data Validation Reports
LDC# 16717

Volatiles

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 10 through April 13, 2007

LDC Report Date: May 16, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL33

Sample Identification

MW-26-2
MW-26-1
EB-11-4/10/07
TB-11-4/10/07
MW-13
MW-16
TB-12/4/11/07
DUPE-7-1Q07
MW-7
MW-8
TB-13-4/12/07
MW-5
MW-10
TB-14-4/13/07
MW-10MS
MW-10MSD

Introduction

This data review covers 16 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
4/19/07	Dichlorodifluoromethane	36.32	All samples in SDG JPL33	J (all detects) UJ (all non-detects)	A
	Methyl-tert-butyl ether	32.69		J (all detects) UJ (all non-detects)	

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
4/16/07	2,2-Dichloropropane Chloromethane Dichlorodifluoromethane Methyl-tert-butyl ether Vinyl chloride	35.78 43.56 61.94 74.94 33.62	All samples in SDG JPL33	J (all detects) UJ (all non-detects)	A

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S041907MVOWM1	cis-1,3-Dichloropropene	127 (73-122)	All samples in SDG JPL33	J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples MW-16 and DUPE-7-1Q07 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-16	DUPE-7-1Q07	
1,1-Dichloroethene	1.2	0.84	35
Chloroform	9.1	9.2	1
Carbon tetrachloride	7.9	8.0	1
Trichloroethene	1.0	0.94	6
Toluene	1.1	0.98	12
Tetrachloroethene	2.8	2.7	4

XVII. Field Blanks

Samples TB-11-4/10/07, TB-12/4/11/07, TB-13-4/12/07, and TB-14-4/13/07 were identified as trip blanks. No volatile contaminants were found in these blanks.

Sample EB-11-4/10/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL33

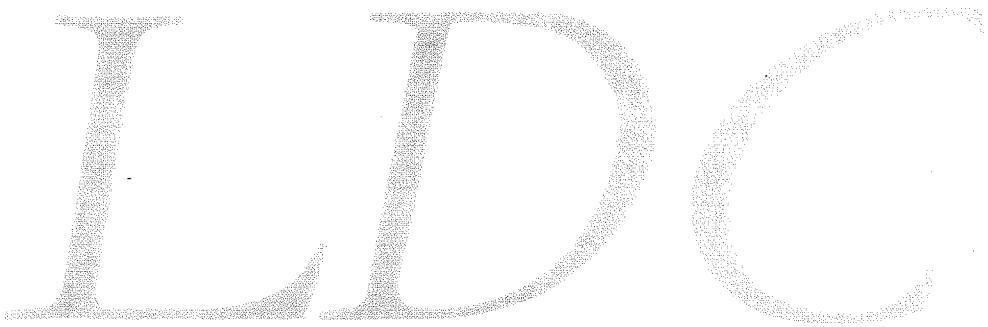
SDG	Sample	Compound	Flag	A or P	Reason
JPL33	MW-26-2 MW-26-1 EB-11-4/10/07 TB-11-4/10/07 MW-13 MW-16 TB-12/4/11/07 DUPE-7-1Q07 MW-7 MW-8 TB-13-4/12/07 MW-5 MW-10 TB-14-4/13/07	Dichlorodifluoromethane Methyl-tert-butyl ether	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL33	MW-26-2 MW-26-1 EB-11-4/10/07 TB-11-4/10/07 MW-13 MW-16 TB-12/4/11/07 DUPE-7-1Q07 MW-7 MW-8 TB-13-4/12/07 MW-5 MW-10 TB-14-4/13/07	2,2-Dichloropropane Chloromethane Dichlorodifluoromethane Methyl-tert-butyl ether Vinyl chloride	J (all detects) UJ (all non-detects)	P	Continuing calibration (ICV %D)
JPL33	MW-26-2 MW-26-1 EB-11-4/10/07 TB-11-4/10/07 MW-13 MW-16 TB-12/4/11/07 DUPE-7-1Q07 MW-7 MW-8 TB-13-4/12/07 MW-5 MW-10 TB-14-4/13/07	cis-1,3-Dichloropropene	J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL33

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16717

Chromium



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 10 through April 13, 2007

LDC Report Date: May 16, 2007

Matrix: Water

Parameters: Chromium

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL33

Sample Identification

MW-26-2
MW-26-1
EB-11-4/10/07
MW-13
MW-16
DUPE-7-1Q07
MW-7
MW-8
MW-5
MW-10
MW-10MS
MW-10MSD

Introduction

This data review covers 12 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

Samples MW-16 and DUPE-7-1Q07 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-16	DUPE-7-1Q07	
Chromium	11.3	10.5	7

XIV. Field Blanks

Sample EB-11-4/10/07 was identified as an equipment blank. No chromium was detected in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-11-4/10/07	Chromium	3.40

NASA JPL
Chromium - Data Qualification Summary - SDG JPL33

No Sample Data Qualified in this SDG

NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL33

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16717

Wet Chemistry

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 10 through April 13, 2007

LDC Report Date: May 16, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL33

Sample Identification

MW-26-2
MW-26-1
EB-11-4/10/07
MW-13
MW-16
DUPE-7-1Q07
MW-7
MW-8
MW-5
MW-10
DUPE-7-1Q07MS
DUPE-7-1Q07MSD
MW-8MS
MW-8MSD
MW-10MS
MW-10MSD

Introduction

This data review covers 16 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.0 for Chloride, Nitrate as Nitrogen, Nitrite as Nitrogen, and Orthophosphate, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
DUPE-7-1Q07MS/MSD (MW-13 MW-16 DUPE-7-1Q07)	Nitrite as N	-	87 (90-110)	-	J (all detects) UJ (all non-detects)	A
MW-8MS/MSD (MW-7 MW-8)	Nitrite as N	-	82 (90-110)	-	J (all detects) UJ (all non-detects)	A
	Orthophosphate	84 (90-110)	88 (90-110)	-	J (all detects) UJ (all non-detects)	

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-16 and DUPE-7-1Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	MW-16	DUPE-7-1Q07	
Chloride	28 mg/L	3.1 mg/L	10
Nitrate as N	4.4 mg/L	4.4 mg/L	0
Sulfate	26 mg/L	26 mg/L	0
Perchlorate	1500 ug/L	1500 ug/L	0

X. Field Blanks

Sample EB-11-4/10/07 was identified as an equipment blank. No contaminant concentrations were found in this blank.

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL33

SDG	Sample	Analyte	Flag	A or P	Reason
JPL33	MW-13 MW-16 DUPE-7-1Q07	Nitrite as N	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL33	MW-7 MW-8	Nitrite as N Orthophosphate	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL33

No Sample Data Qualified in this SDG

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

May 24, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fractions listed below. This SDG was received on May 3, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 16691:

SDG #	Fraction
JPL32	Volatiles, Chromium, Wet Chemistry

The data validation was performed under EPA Level III and Level IVguidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

R1 (Added Level "IVs")

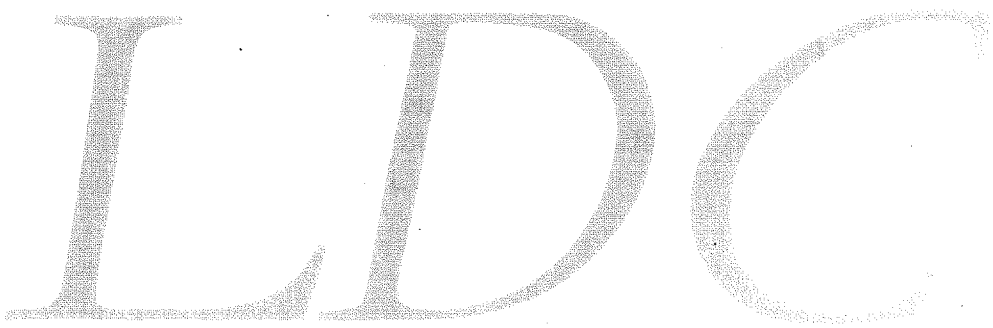
Attachment 1

PO 190288	10/90	LDC #16691 (Battelle-San Diego / NASA JPL)																																			
LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		Cr (200.8)		CLO_4 (314.0)		Cl,SO_4 O-PO_4 (300.0)		NO_3-N NO_2-N (300.0)																									
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL32	05/03/07	05/24/07	18	0	26	0	23	0	4	0	4	0																								
A	JPL32	05/03/07	05/24/07	1	0	1	0	1	0	0	0	0	0																								
Total	B/LR			19	0	27	0	24	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78

Shaded cells indicate Level IV validation (all other cells are Level III validation).

NASA JPL
Data Validation Reports
LDC# 16691

Volatiles



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 6 through April 9, 2007

LDC Report Date: May 11, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL32

Sample Identification

MW-24-3
MW-24-2
MW-24-1
DUPE-5-1Q07
EB-8-4/5/07
TB-8-4/5/07
MW-22-3
MW-22-2
MW-22-1**
DUPE-6-1Q07
EB-9-4/6/07
TB-9-4/6/07
MW-25-5
MW-25-4
MW-25-3
MW-25-2
MW-25-1
EB-10-4/9/07
TB-10-4/9/07

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 19 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
4/17/07	Methyl-tert-butyl ether	61.62	All samples in SDG JPL32	J (all detects) UJ (all non-detects)	A
	Carbon tetrachloride	30.51		J (all detects) UJ (all non-detects)	

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
4/17/07	2,2-Dichloropropane Chloromethane Dichlorodifluoromethane Methyl-tert-butyl ether Vinyl chloride	35.78 43.56 61.94 74.94 33.62	All samples in SDG JPL32	J (all detects) UJ (all non-detects)	A

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S041707MVOWM2	Methyl-tert-butyl ether cis-1,3-Dichloropropene Styrene	172 (60-140) 133 (73-122) 123 (80-121)	All samples in SDG JPL32	J (all detects) J (all detects) J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

All tentatively identified compounds were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples MW-24-1 and DUPE-5-1Q07 and samples MW-22-3 and DUPE-6-1Q07 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-24-1	DUPE-5-1Q07	
1,1-Dichloroethene	1.7	1.9	11
Chloroform	4.0	4.8	18
Carbon tetrachloride	11	14	24
Tetrachloroethene	5.9	7.4	23
Trichloroethene	0.50U	0.26	200

Compound	Concentration (ug/L)		RPD
	MW-22-3	DUPE-6-1Q07	
m,p-Xylenes	1.0U	0.91	200

XVII. Field Blanks

Samples TB-8-4/5/07, TB-9-4/6/07, and TB-10-4/9/07 were identified as trip blanks. No volatile contaminants were found in these blanks.

Samples EB-8-4/5/07, EB-9-4/6/07, and EB-10-4/9/07 were identified as equipment blanks. No volatile contaminants were found in these blanks with the following exceptions:

Equipment Blank ID	Compound	Concentration (ug/L)
EB-8-4/5/07	m,p-Xylenes	1.1
EB-9-4/6/07	m,p-Xylenes o-Xylene	1.8 0.36
EB-10-4/9/07	m,p-Xylenes	0.94

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL32

SDG	Sample	Compound	Flag	A or P	Reason
JPL32	MW-24-3 MW-24-2 MW-24-1 DUPE-5-1Q07 EB-8-4/5/07 TB-8-4/5/07 MW-22-3 MW-22-2 MW-22-1** DUPE-6-1Q07 EB-9-4/6/07 TB-9-4/6/07 MW-25-5 MW-25-4 MW-25-3 MW-25-2 MW-25-1 EB-10-4/9/07 TB-10-4/9/07	Methyl-tert-butyl ether Carbon tetrachloride	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL32	MW-24-3 MW-24-2 MW-24-1 DUPE-5-1Q07 EB-8-4/5/07 TB-8-4/5/07 MW-22-3 MW-22-2 MW-22-1** DUPE-6-1Q07 EB-9-4/6/07 TB-9-4/6/07 MW-25-5 MW-25-4 MW-25-3 MW-25-2 MW-25-1 EB-10-4/9/07 TB-10-4/9/07	2,2-Dichloropropane Chloromethane Dichlorodifluoromethane Methyl-tert-butyl ether Vinyl chloride	J (all detects) UJ (all non-detects)	P	Continuing calibration (ICV %D)

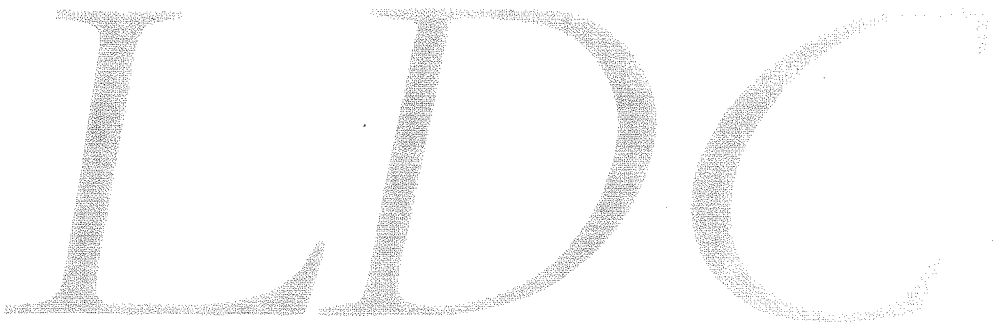
SDG	Sample	Compound	Flag	A or P	Reason
JPL32	MW-24-3 MW-24-2 MW-24-1 DUPE-5-1Q07 EB-8-4/5/07 TB-8-4/5/07 MW-22-3 MW-22-2 MW-22-1** DUPE-6-1Q07 EB-9-4/6/07 TB-9-4/6/07 MW-25-5 MW-25-4 MW-25-3 MW-25-2 MW-25-1 EB-10-4/9/07 TB-10-4/9/07	Methyl-tert-butyl ether cis-1,3-Dichloropropene Styrene	J (all detects) J (all detects) J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL32

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16691

Chromium



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 5 through April 9, 2007

LDC Report Date: May 16, 2007

Matrix: Water

Parameters: Chromium

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL32

Sample Identification

MW-24-4
MW-24-3
MW-24-2
MW-24-1
DUPE-5-1Q07
EB-8-4/5/07
MW-22-3
MW-22-2
MW-22-1**
DUPE-6-1Q07
EB-9-4/6/07
MW-25-5
MW-25-4
MW-25-3
MW-25-2
MW-25-1
EB-10-4/9/07
DUPE-5-1Q07MS
DUPE-5-1Q07MSD
EB-8-4/5/07MS
EB-8-4/5/07MSD
DUPE-6-1Q07MS
DUPE-6-1Q07MSD
EB-9-4/6/07MS
EB-9-4/6/07MSD
MW-25-1MS
MW-25-1DUP

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 27 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards

All internal standard percent recoveries (%R) were within QC limits for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met with the following exceptions:

Diluted Sample	Analyte	%D (Limits)	Associated Samples	Flag	A or P
DUPE-5-1Q07L	Chromium	13.0 (≤10)	MW-24-4 MW-24-3 MW-24-2 MW-24-1 DUPE-5-1Q07 EB-8-4/5/07 MW-22-3 MW-22-2 MW-22-1** DUPE-6-1Q07 EB-9-4/6/07 MW-25-5 MW-25-4 MW-25-3 MW-25-2 EB-10-4/9/07	J (all detects)	A
DUPE-6-1Q07L	Chromium	12.0 (≤10)	MW-24-4 MW-24-3 MW-24-2 MW-24-1 DUPE-5-1Q07 EB-8-4/5/07 MW-22-3 MW-22-2 MW-22-1** DUPE-6-1Q07 EB-9-4/6/07 MW-25-5 MW-25-4 MW-25-3 MW-25-2 EB-10-4/9/07	J (all detects)	A

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

Samples MW-24-1 and DUPE-5-1Q07 and samples MW-22-3 and DUPE-6-1Q07 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-24-1	DUPE-5-1Q07	
Chromium	8.46	7.79	8

Analyte	Concentration (ug/L)		RPD
	MW-22-3	DUPE-6-1Q07	
Chromium	9.59	7.99	18

XIV. Field Blanks

Samples EB-8-4/5/07, EB-9-4/6/07, and EB-10-4/9/07 were identified as equipment blanks. No chromium was detected in these blanks with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-8-4/5/07	Chromium	3.59
EB-9-4/6/07	Chromium	3.59
EB-10-4/9/07	Chromium	3.60

NASA JPL
Chromium - Data Qualification Summary - SDG JPL32

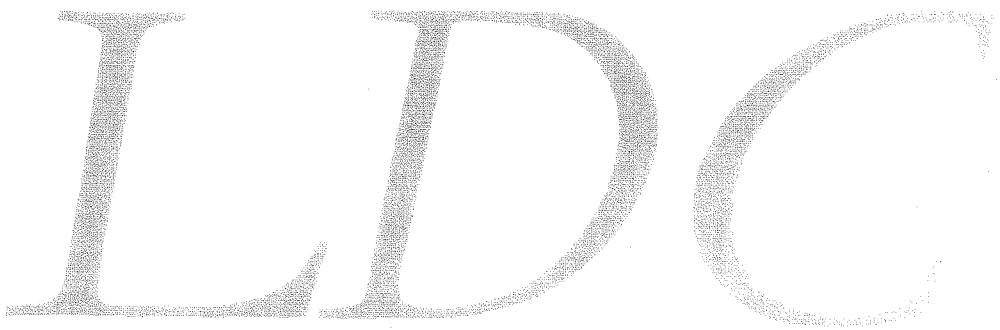
SDG	Sample	Analyte	Flag	A or P	Reason
JPL32	MW-24-4 MW-24-3 MW-24-2 MW-24-1 DUPE-5-1Q07 EB-8-4/5/07 MW-22-3 MW-22-2 MW-22-1** DUPE-6-1Q07 EB-9-4/6/07 MW-25-5 MW-25-4 MW-25-3 MW-25-2 EB-10-4/9/07	Chromium	J (all detects)	A	ICP serial dilution (%D)

NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL32

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16691

Wet Chemistry



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 5 through April 9, 2007

LDC Report Date: May 16, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL32

Sample Identification

MW-24-3
MW-24-2
MW-24-1
DUPE-5-1Q07
EB-8-4/5/07
MW-22-3
MW-22-2
MW-22-1**
DUPE-6-1Q07
EB-9-4/6/07
MW-25-5
MW-25-4
MW-25-3
MW-25-2
MW-25-1
EB-10-4/9/07
DUPE-5-1Q07MS
DUPE-5-1Q07MSD
EB-8-4/5/07MS
EB-8-4/5/07MSD
DUPE-6-1Q07MS
DUPE-6-1Q07MSD
EB-9-4/6/07MS
EB-9-4/6/07MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 24 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.0 for Chloride, Nitrate as Nitrogen, Nitrite as Nitrogen, Orthophosphate and Sulfate and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
DUPE-5-1Q07MS/MSD (MW-24-1 DUPE-5-1Q07)	Chloride Nitrate as N Nitrite as N Orthophosphate Sulfate	81 (90-110) 83 (90-110) 81 (90-110) 85 (90-110) 87 (90-110)	75 (90-110) 84 (90-110) 86 (90-110) 87 (90-110) 84 (90-110)	- - - - -	J (all detects) UJ (all non-detects)	A

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-24-1 and DUPE-5-1Q07 and samples MW-22-3 and DUPE-6-1Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	MW-24-1	DUPE-5-1Q07	
Chloride	28 mg/L	32 mg/L	13
Nitrate as N	2.7 mg/L	2.7 mg/L	0
Sulfate	30 mg/L	34 mg/L	13
Perchlorate	1900 ug/L	2000 ug/L	5

X. Field Blanks

Samples EB-8-4/5/07, EB-9-4/6/07, and EB-10-4/9/07 were identified as equipment blanks. No contaminant concentrations were found in these blanks.

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL32

SDG	Sample	Analyte	Flag	A or P	Reason
JPL32	MW-24-1 DUPE-5-1Q07	Chloride Nitrate as N Nitrite as N Orthophosphate Sulfate	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL32

No Sample Data Qualified in this SDG

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

May 24, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on April 30, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 16671:

SDG #	Fraction
JPL30, JPL31	Volatiles, Chromium, Wet Chemistry

The data validation was performed under EPA Level III and IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

Attachment 1

PO 190288 10/90

LDC #16671 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		Cr (200.8)		CLO_4 (314.0)		Cl,SO_4 $O\text{-}PO_4$ (300.0)		$NO_3\text{-}N$ $NO_2\text{-}N$ (300.0)																									
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL30	04/30/07	05/21/07	20	0	14	0	18	0	-	-	-	-																						
A	JPL30	04/30/07	05/21/07	6	0	6	0	6	0	-	-	-	-																						
B	JPL31	04/30/07	05/21/07	19	0	17	0	19	0	3	0	3	0																						
B	JPL31	04/30/07	05/21/07	6	0	6	0	6	0	0	0	0	0																						
Total	B/LR			46	0	38	0	44	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	134

Shaded cells indicate Level IV validation (all other cells are Level III validation).

NASA JPL
Data Validation Reports
LDC# 16671

Volatiles

LDC

LDC Report# 16671A1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: March 30 through April 2, 2007

LDC Report Date: May 23, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL30

Sample Identification

MW-20-5
MW-20-4
MW-20-3
MW-20-2
MW-20-1
DUPE-3-1Q07
EB-4-3/30/07
TB-4-3/30/07
MW-19-5
MW-19-4
MW-19-3
MW-19-2
MW-19-1
DUPE-4-1Q07
TB-5-4/2/07
MW-3-4
MW-3-3**
MW-3-2
EB-5-4/2/07
MW-3-3MS
MW-3-3MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 21 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% .

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
B041307MVOWY1	4/13/07	Hexachlorobutadiene	1.5 ug/L	All samples in SDG JPL30

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Although matrix spike (MS) and matrix spike duplicate (MSD) samples were not required by the method, MS and MSD samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-3-3MS/MSD (MW-3-3**)	Dichlorodifluoromethane	39 (60-140)	32 (60-140)	-	J (all detects)	A
	Chloromethane	-	54 (60-140)	-	UJ (all non-detects)	
	Vinyl chloride	-	54 (60-140)	-		
	2,2-Dichloropropane	10 (60-140)	9 (60-140)	-		

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

All tentatively identified compounds were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples MW-20-2 and DUPE-3-1Q07 and samples MW-19-1 and DUPE-4-1Q07 was identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-20-2	DUPE-3-1Q07	
Chloroform	0.26	0.34	27

XVII. Field Blanks

Samples TB-4-3/30/07 and TB-5-4/2/07 were identified as trip blanks. No volatile contaminants were found in these blanks.

Samples EB-4-3/30/07 and EB-5-4/2/07 were identified as equipment blanks. No volatile contaminants were found in these blanks.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL30

SDG	Sample	Compound	Flag	A or P	Reason
JPL30	MW-3-3**	Dichlorodifluoromethane Chloromethane Vinyl chloride 2,2-Dichloropropane	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL30

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 3 through April 4, 2007

LDC Report Date: May 11, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL31

Sample Identification

MW-4-3
MW-4-2
MW-4-1
EB-6-4/3/07
TB-6-4/3-07
MW-11-4
MW-11-3
MW-11-2**
MW-11-1
MW-23-3
MW-23-2
MW-23-1
EB-7-4/4/07
TB-7-4/4/07
MW-12-5**
MW-12-4
MW-12-3
MW-12-2**
MW-12-1
MW-4-3MS
MW-4-3MSD
MW-11-3MS
MW-11-3MSD
MW-23-3MS
MW-23-3MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 25 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
4/15/07	Methyl-tert-butyl ether	30.95	MW-4-3 MW-4-2 MW-4-1 EB-6-4/3/07 TB-6-4/3-07 MW-11-4 MW-11-3 MW-11-2** MW-11-1 MW-23-3 TB-7-4/4/07 B041507MVOWY1	J (all detects) UJ (all non-detects)	P

Date	Compound	%D	Associated Samples	Flag	A or P
4/17/07	Trichlorofluoromethane 1,3-Dichloropropane Dibromochloromethane n-Propylbenzene 1,3,5-Trimethylbenzene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene 1,2-Dibromo-3-chloropropane 1,2,4-Trichlorobenzene Naphthalene 1,2,3-Trichlorobenzene	30.81 33.46 38.67 31.89 32.73 33.37 30.28 30.99 45.94 39.30 49.90 43.1	MW-23-2 MW-23-1 EB-7-4/4/07 MW-12-5** MW-12-4 MW-12-3 MW-12-2** MW-12-1 MW-4-3MS MW-4-3MSD MW-11-3MS MW-11-3MSD MW-23-3MS MW-23-3MSD B041707MVOWY1	J (all detects) UJ (all non-detects)	P

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
B041507MVOWY1	4/15/07	Hexachlorobutadiene	1.6 ug/L	MW-4-3 MW-4-2 MW-4-1 EB-6-4/3/07 TB-6-4/3-07 MW-11-4 MW-11-3 MW-11-2** MW-11-1 MW-23-3 TB-7-4/4/07
B041707MVOWY1	4/17/07	1,2,4-Trichlorobenzene Hexachlorobutadiene 1,2,3-Trichlorobenzene	0.30 ug/L 1.6 ug/L 0.30 ug/L	MW-23-2 MW-23-1 EB-7-4/4/07 MW-12-5** MW-12-4 MW-12-3 MW-12-2** MW-12-1

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Although matrix spike (MS) and matrix spike duplicate (MSD) samples were not required by the method, MS and MSD samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-4-3MS/MSD (MW-4-3)	2,2-Dichloropropane	40 (60-140)	41 (60-140)	-	J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

All tentatively identified compounds were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Samples TB-6-4/3-07 and TB-7-4/4/07 were identified as trip blanks. No volatile contaminants were found in these blanks with the following exceptions:

Trip Blank ID	Compound	Concentration (ug/L)
TB-6-4/3-07	Hexachlorobutadiene	1.5

Samples EB-6-4/3/07 and EB-7-4/4/07 were identified as equipment blanks. No volatile contaminants were found in these blanks.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL31

SDG	Sample	Compound	Flag	A or P	Reason
JPL31	MW-4-3 MW-4-2 MW-4-1 EB-6-4/3/07 TB-6-4/3-07 MW-11-4 MW-11-3 MW-11-2** MW-11-1 MW-23-3 TB-7-4/4/07	Methyl-tert-butyl ether	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL31	MW-23-2 MW-23-1 EB-7-4/4/07 MW-12-5** MW-12-4 MW-12-3 MW-12-2** MW-12-1	Trichlorofluoromethane 1,3-Dichloropropane Dibromochloromethane n-Propylbenzene 1,3,5-Trimethylbenzene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene 1,2-Dibromo-3-chloropropane 1,2,4-Trichlorobenzene Naphthalene 1,2,3-Trichlorobenzene	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL31	MW-4-3	2,2-Dichloropropane	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL31

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16671

Chromium

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: March 30 through April 2, 2007

LDC Report Date: May 14, 2007

Matrix: Water

Parameters: Chromium

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL30

Sample Identification

MW-20-5
MW-20-4
MW-20-3
MW-20-2
MW-20-1
DUPE-3-1Q07
EB-4-3/30/07
MW-3-4
MW-3-3**
MW-3-2
EB-5-4/2/07
MW-20-4MS
MW-20-4DUP
MW-3-3MS
MW-3-3MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 15 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards

All internal standard percent recoveries (%R) were within QC limits for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

Samples MW-20-2 and DUPE-3-1Q07 were identified as field duplicates. No Chromium was detected in any of the samples.

XIV. Field Blanks

Samples EB-4-3/30/07 and EB-5-4/2/07 were identified as equipment blanks. No chromium was detected in these blanks with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-4-3/30/07	Chromium	3.42
EB-5-4/2/07	Chromium	3.43

NASA JPL
Chromium - Data Qualification Summary - SDG JPL30

No Sample Data Qualified in this SDG

NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL30

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 3 through April 4, 2007

LDC Report Date: May 14, 2007

Matrix: Water

Parameters: Chromium

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL31

Sample Identification

MW-4-3
MW-4-2
MW-4-1
EB-6-4/3/07
MW-11-3
MW-11-2**
MW-11-1
MW-23-4**
MW-23-3
MW-23-2
MW-23-1
EB-7-4/4/07
MW-12-3
MW-12-2**
MW-12-1
MW-4-3MS
MW-4-3DUP
MW-11-3MS
MW-11-3MSD
MW-23-3MS
MW-23-3MSD
EB-7-4/4/07MS
EB-7-4/4/07MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 23 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
4/10/07	CCV9	Chromium	112.7 (90-110)	MW-23-4** MW-23-3 MW-23-2 EB-7-4/4/07 MW-12-3 MW-12-2** MW-12-1 MW-23-3MS MW-23-3MSD EB-7-4/4/07MS EB-7-4/4/07MSD	J (all detects)	P
4/10/07	CCV10	Chromium	114.6 (90-110)	MW-12-3 MW-12-2** MW-12-1	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards

All internal standard percent recoveries (%R) were within QC limits for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Samples EB-6-4/3/07 and EB-7-4/4/07 were identified as equipment blanks. No chromium was detected in these blanks with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-6-4/3/07	Chromium	3.39
EB-7-4/4/07	Chromium	3.60

NASA JPL
Chromium - Data Qualification Summary - SDG JPL31

SDG	Sample	Analyte	Flag	A or P	Reason
JPL31	MW-23-4** MW-23-3 MW-23-2 EB-7-4/4/07 MW-12-3 MW-12-2** MW-12-1	Chromium	J (all detects)	P	Calibration (%R)

NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL31

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16671

Wet Chemistry

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: March 30 through April 2, 2007

LDC Report Date: May 14, 2007

Matrix: Water

Parameters: Perchlorate

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL30

Sample Identification

MW-20-5
MW-20-4
MW-20-3
MW-20-2
MW-20-1
DUPE-3-1Q07
EB-4-3/30/07
MW-19-5
MW-19-4
MW-19-3
MW-19-2
MW-19-1
DUPE-4-1Q07
MW-3-4
MW-3-3**
MW-3-2
EB-5-4/2/07
MW-3-3MS
MW-3-3MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 19 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-20-2 and DUPE-3-1Q07 and samples MW-19-1 and DUPE-4-1Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-19-1	DUPE-4-1Q07	
Perchlorate	47	2.0U	200

X. Field Blanks

Samples EB-4-3/30/07 and EB-5-4/2/07 were identified as equipment blanks. No contaminant concentrations were found in these blanks.

NASA JPL
Perchlorate - Data Qualification Summary - SDG JPL30

No Sample Data Qualified in this SDG

NASA JPL
Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL30

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 3 through April 4, 2007

LDC Report Date: May 14, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL31

Sample Identification

MW-4-3
MW-4-2
MW-4-1
EB-6-4/3/07
MW-11-4
MW-11-3
MW-11-2**
MW-11-1
MW-23-3
MW-23-2
MW-23-1
EB-7-4/4/07
MW-12-5**
MW-12-4
MW-12-3
MW-12-2**
MW-12-1
MW-4-3MS
MW-4-3MSD
MW-11-3MS
MW-11-3MSD
MW-11-1MS
MW-11-1MSD
MW-23-3MS
MW-23-3MSD
EB-7-4/4/07MS
EB-7-4/4/07MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 27 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.0 for Chloride, Nitrate as Nitrogen, Nitrite as Nitrogen, Orthophosphate and Sulfate and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-11-1MS/MSD (MW-11-1)	Chloride	73 (90-110)	-	22 (≤11)	J (all detects) UJ (all non-detects)	A
	Nitrate as N	-	88 (90-110)	-		
	Nitrite as N	86 (90-110)	82 (90-110)	-		
	Orthophosphate	86 (90-110)	-	17 (≤10)		
	Sulfate	70 (90-110)	66 (90-110)	-		

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Samples EB-6-4/3/07 and EB-7-4/4/07 were identified as equipment blanks. No contaminant concentrations were found in these blanks.

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL31

SDG	Sample	Analyte	Flag	A or P	Reason
JPL31	MW-11-1	Nitrate as N Nitrite as N Sulfate	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL31	MW-11-1	Chloride Orthophosphate	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)(RPD)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL31

No Sample Data Qualified in this SDG

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

May 4, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on April 19, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 16607:

SDG #	Fraction
JPL28, JPL29	Volatiles, Chromium, Perchlorate

The data validation was performed under EPA Level III and IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

Attachment 1

PO 190288 10/90

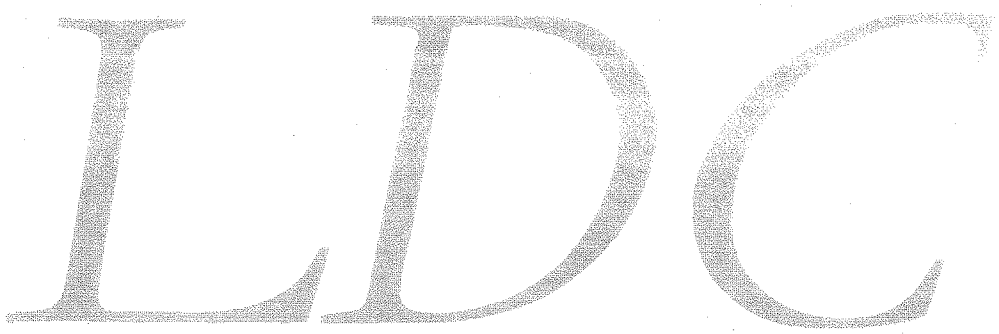
LDC #16607 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		Cr (200.8)		CLO_4 (314.0)																											
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL28	04/19/07	05/10/07	7	0	8	0	7	0																										
B	JPL29	04/19/07	05/10/07	16	0	15	0	18	0																										
B	JPL29	04/19/07	05/10/07	2	0	2	0	2	0																										
Total	B/LR			25	0	25	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77

Shaded cells indicate Level IV validation (all other cells are Level III validation).

NASA JPL
Data Validation Reports
LDC# 16607

Volatiles



LDC Report# 16607A1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: March 27, 2007

LDC Report Date: April 29, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL28

Sample Identification

MW-21-5
MW-21-4
MW-21-3
MW-21-2
MW-21-1
EB-1-3/27/07
TB-1-3/27/07

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
4/9/07	Carbon tetrachloride Isopropylbenzene 1,3,5-Trimethylbenzene	20.15 20.06 20.21	All samples in SDG JPL28	J (all detects) UJ (all non-detects)	P

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% .

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
B041007MVOWM3	4/10/07	Methylene chloride 1,2,3-Trichlorobenzene	0.53 ug/L 0.34 ug/L	All samples in SDG JPL28

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-1-3/27/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-1-3/27/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL28

SDG	Sample	Compound	Flag	A or P	Reason
JPL28	MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1 EB-1-3/27/07 TB-1-3/27/07	Carbon tetrachloride Isopropylbenzene 1,3,5-Trimethylbenzene	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL28

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: March 28 through March 29, 2007

LDC Report Date: April 29, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL29

Sample Identification

MW-14-5
MW-14-4
MW-14-3
MW-14-2
MW-14-1
EB-2-3/28/07
TB-2-3/28/07
MW-17-4
MW-17-3**
MW-17-2
DUPE-1-1Q07
EB-3-3/29/07
TB-3-3/29/07
MW-18-5
MW-18-4**
MW-18-3
MW-18-2
DUPE-2-1Q07

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 18 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
4/9/07	Carbon tetrachloride Isopropylbenzene 1,3,5-Trimethylbenzene	20.15 20.06 20.21	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-2-3/28/07 TB-2-3/28/07 MW-17-4 MW-17-3** B041107MV0WM3	J (all detects) UJ (all non-detects)	P

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
4/11/07	Chloroethane	31.09	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-2-3/28/07 TB-2-3/28/07 MW-17-4 MW-17-3** B041107MV0WM3	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
4/12/07	1,2-Dibromo-3-chloropropane Naphthalene	35.79 36.45	DUPE-1-1Q07 EB-3-3/29/07 TB-3-3/29/07 MW-18-5 MW-18-4** MW-18-3 MW-18-2 DUPE-2-1Q07 B041207MVOWY1	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
B041307MVOWY1	4/13/07	Hexachlorobutadiene	1.5 ug/L	MW-17-2
B041107MVOWM3	4/11/07	Methylene chloride 1,2,3-Trichlorobenzene	0.57 ug/L 0.34 ug/L	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-2-3/28/07 TB-2-3/28/07 MW-17-4 MW-17-3**

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
B041207MVOWY1	4/12/07	1,2,4-Trichlorobenzene Hexachlorobutadiene 1,2,3-Trichlorobenzene	0.27 ug/L 1.6 ug/L 0.30 ug/L	DUPE-1-1Q07 EB-3-3/29/07 TB-3-3/29/07 MW-18-5 MW-18-4** MW-18-3 MW-18-2 DUPE-2-1Q07

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
MW-14-3	1,2,3-Trichlorobenzene	0.25 ug/L	0.50U ug/L
EB-2-3/28/07	Methylene chloride	0.25 ug/L	0.50U ug/L
TB-2-3/28/07	Methylene chloride	0.44 ug/L	0.50U ug/L

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S041107MVOWM1	Dibromochloromethane	124 (79-123)	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-2-3/28/07 TB-2-3/28/07 MW-17-4 MW-17-3** B041107MV0WM3	J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

All tentatively identified compounds were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples MW-17-2 and DUPE-1-1Q07 and samples MW-18-2 and DUPE-2-1Q07 was identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/Kg)		RPD
	MW-17-2	DUPE-1-1Q07	
1,1-Dichloroethane	0.27	0.50U	200
Chloroform	0.60	0.59	2
Trichloroethene	1.3	1.4	7
Tetrachloroethene	0.74	0.75	1

XVII. Field Blanks

Samples TB-2-3/28/07 and TB-3-3/29/07 were identified as trip blanks. No volatile contaminants were found in these blanks with the following exceptions:

Trip Blank ID	Compound	Concentration (ug/L)
TB-2-3/28/07	Methylene chloride	0.44

Samples EB-2-3/28/07 and EB-3-3/29/07 were identified as equipment blanks. No volatile contaminants were found in these blanks with the following exceptions:

Equipment Blank ID	Compound	Concentration (ug/L)
EB-2-3/28/07	Methylene chloride m,p-Xylenes o-Xylene	0.25 0.88 0.32
EB-3-3/29/07	m,p-Xylenes o-Xylene	0.76 0.28

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL29

SDG	Sample	Compound	Flag	A or P	Reason
JPL29	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-2-3/28/07 TB-2-3/28/07 MW-17-4 MW-17-3**	Carbon tetrachloride Isopropylbenzene 1,3,5-Trimethylbenzene	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
JPL29	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-2-3/28/07 TB-2-3/28/07 MW-17-4 MW-17-3**	Chloroethane	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL29	DUPE-1-1Q07 EB-3-3/29/07 TB-3-3/29/07 MW-18-5 MW-18-4** MW-18-3 MW-18-2 DUPE-2-1Q07	1,2-Dibromo-3-chloropropane Naphthalene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL29	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-2-3/28/07 TB-2-3/28/07 MW-17-4 MW-17-3**	Dibromochloromethane	J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL29

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
JPL29	MW-14-3	1,2,3-Trichlorobenzene	0.50U ug/L	A
JPL29	EB-2-3/28/07	Methylene chloride	0.50U ug/L	A

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
JPL29	TB-2-3/28/07	Methylene chloride	0.50U ug/L	A

NASA JPL
Data Validation Reports
LDC# 16607

Cromium

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: March 27, 2007

LDC Report Date: May 1, 2007

Matrix: Water

Parameters: Chromium

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL28

Sample Identification

MW-21-5
MW-21-4
MW-21-3
MW-21-2
MW-21-1
EB-1-3/27/07
EB-1-3/27/07MS
EB-1-3/27/07MSD

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
4/10/07	CCV9	Chromium	112.7 (90-110)	MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1	J (all detects)	P
4/10/07	CCV10	Chromium	114.6 (90-110)	MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-1-3/27/07 was identified as an equipment blank. No chromium was detected in this blank.

NASA JPL
Chromium - Data Qualification Summary - SDG JPL28

SDG	Sample	Analyte	Flag	A or P	Reason
JPL28	MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1	Chromium	J (all detects)	P	Calibration (%R)

NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL28

No Sample Data Qualified in this SDG

LDC Report# 16607B4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: March 28 through March 29, 2007

LDC Report Date: May 1, 2007

Matrix: Water

Parameters: Chromium

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL29

Sample Identification

MW-14-3
MW-14-2
MW-14-1
EB-2-3/28/07
MW-17-4
MW-17-3**
MW-17-2
DUPE-1-1Q07
EB-3-3/29/07
MW-18-4**
MW-18-3
MW-18-2
DUPE-2-1Q07
MW-14-3MS
MW-14-3MSD
DUPE-1-1Q07MS
DUPE-1-1Q07MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 17 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
4/10/07	CCV10	Chromium	114.6 (90-110)	MW-14-3 MW-14-1 MW-14-3MS MW-14-3MSD	J (all detects)	P
4/10/07	CCV11	Chromium	113.6 (90-110)	MW-14-3 MW-14-1 MW-14-3MS MW-14-3MSD	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Internal Standards

All internal standard percent recoveries (%R) were within QC limits for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

Samples MW-17-2 and DUPE-1-1Q07 and samples MW-18-2 and DUPE-2-1Q07 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-17-2	DUPE-1-1Q07	
Chromium	1.69	1.79	6

XIV. Field Blanks

Samples EB-2-3/28/07 and EB-3-3/29/07 were identified as equipment blanks. No chromium was detected in these blanks with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-2-3/28/07	Chromium	1.53
EB-3-3/29/07	Chromium	3.41

NASA JPL
Chromium - Data Qualification Summary - SDG JPL29

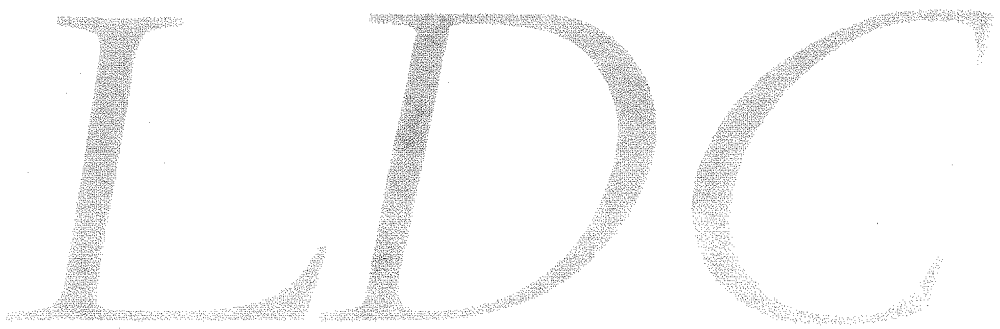
SDG	Sample	Analyte	Flag	A or P	Reason
JPL29	MW-14-3 MW-14-1	Chromium	J (all detects)	P	Calibration (%R)

NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL29

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16607

Perchlorate



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: March 27, 2007

LDC Report Date: May 1, 2007

Matrix: Water

Parameters: Perchlorate

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL28

Sample Identification

MW-21-5
MW-21-4
MW-21-3
MW-21-2
MW-21-1
EB-1-3/27/07
EB-1-3/27/07MS

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No perchlorate was found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-1-3/27/07 was identified as an equipment blank. No perchlorate was found in this blank.

NASA JPL
Perchlorate - Data Qualification Summary - SDG JPL28

No Sample Data Qualified in this SDG

NASA JPL
Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL28

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: March 28 through March 29, 2007

LDC Report Date: May 1, 2007

Matrix: Water

Parameters: Perchlorate

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL29

Sample Identification

MW-14-5
MW-14-4
MW-14-3
MW-14-2
MW-14-1
EB-2-3/28/07
MW-17-4
MW-17-3**
MW-17-2
DUPE-1-1Q07
EB-3-3/29/07
MW-18-5
MW-18-4**
MW-18-3
MW-18-2
DUPE-2-1Q07
MW-14-3MS
MW-14-3MSD
DUPE-1-1Q07MS
DUPE-1-1Q07MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 20 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No perchlorate was found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-17-2 and DUPE-1-1Q07 and samples MW-18-2 and DUPE-2-1Q07 were identified as field duplicates. No perchlorate was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-17-2	DUPE-1-1Q07	
Perchlorate	10	9.4	6

X. Field Blanks

Samples EB-2-3/28/07 and EB-3-3/29/07 were identified as equipment blanks. No perchlorate was found in these blanks.

NASA JPL
Perchlorate - Data Qualification Summary - SDG JPL29

No Sample Data Qualified in this SDG

NASA JPL
Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL29

No Sample Data Qualified in this SDG