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 fourth quarter 2006 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 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, arsenic, major cations and anions, alkalinity, total dissolved solids (TDS), and pH analyses were collected from monitoring wells MW-3 (Screen 3), MW-4 (Screen 2), MW-9, MW-10, MW-11 (Screen 1), MW-17 (Screen 2), MW-22 (Screen 1) and MW-25 (Screen 1). Duplicate samples for ordnance, nitrosamines, fumigants (EDB and DBCP), Tin, Silica and 1, 2, 3-TCP were collected from monitoring wells MW-3 (Screen 3), MW-4 (Screen 2) and MW-10. The analytical results for the duplicate samples were comparable to the results of the original groundwater samples (Tables 1 and 2).

Table 1-1 presents a summary of contaminants detected in quality control samples collected during the October/December 2006 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 9 of 21 equipment blanks. The chromium detections may indicate that the equipment decontamination process was insufficient in some cases. 1, 2-Dibromo-3-chloropropane was detected in 1 of 21 equipment blanks. M,p-xylene was detected in 1 of 21 equipment blanks. None of the VOCs detected in the equipment blanks were detected in the associated monitoring well samples.

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. Methlyene chloride was detected in 1 of 26 trip blanks. 2-Butanone (MEK) was detected in 1 of 26 trip blanks. Bromoform was detected in 1 of 26 trip blanks. Chloromethane was detected in 2 of 26

trip blanks. None of the VOCs detected in the trip blanks were detected in the associated monitoring well samples.

A source blank was collected during the October/December 2006 sampling event. 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. Total Cr was detected at a low concentration in the source blank.

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 October/December 2006 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, Columbia Analytical Services, Inc. (CAS) and Laucks Laboratory 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 were a few major exceptions to the analytical criteria as noted in the laboratory validation reports.

- The holding time requirement was exceeded for Nitrate (NO_3-N), Nitrite and Orthophosphate for groundwater samples MW-7, MW-13 and MW-16. The holding time requirement was 48 hours and the actual elapsed time between collection and analysis was 63 to 69 hours.

- Chromium was detected in the laboratory preparation blank for groundwater samples from wells MW-6, MW-8, MW-10, MW-13, MW-16, MW-24, MW-25, and associated field duplicates. The Chromium results were compared to the result obtained for the preparation blank. If the Cr results were less than five times the level in the preparation blank, then the results were qualified as "U" undetected. All of the flagged Cr results were at least ten times below the California Maximum Contaminant Level (MCL) of 50 µg/L.

- All samples for monitoring well MW-6 for VOCs analysis had approximately ¼ inch air bubbles. Results for MW-6 were qualified due to the sample condition.

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 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., 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

December 28, 2006

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fractions listed below. This SDG was received on December 5, 2006. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 15905:

SDG #	Fraction
JPL21	Volatiles, 1,4-Dioxane, Chromium & Tin, Wet Chemistry, Nitroaromatics & Nitramines

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,

ERauto

Erlinda T. Rauto
Operations Manager/Senior Chemist

NASA JPL
Data Validation Reports
LDC# 15905

Volatiles

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: October 26 through October 31, 2006

LDC Report Date: December 11, 2006

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL21

Sample Identification

MW-20-5
MW-20-4
MW-20-3**
MW-20-2
MW-20-1
EB-2-10/27/06
TB-2-10/27/06
MW-21-5
MW-21-4
MW-21-3
MW-21-2
MW-21-1
EB-1-10/26/06
TB-1-10/26/06
MW-19-5
MW-19-4
MW-19-3**
EB-3-10/30/06
TB-3-10/30/06
MW-17-5
MW-19-2
MW-19-1
EB-4-10/31/06
TB-4-10/31/06
MW-21-1MS
MW-21-1MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 26 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.

All samples were received in good condition with the exceptions of samples TB-2-10/27/06 and TB-4-10/31/06. Air bubbles were apparent in the sample containers.

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 with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
11/3/06	Dichlorodifluoromethane	46.5	All samples in SDG JPL21	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

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-21-1MS/MSD (MW-21-1)	Dichlorodifluoromethane	-	179 (60-140)	60 (≤30)	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)

Tentatively identified compounds were not reported by the laboratory.

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-2-10/27/06, TB-1-10/26/06, TB-3-10/30/06, and TB-4-10/31/06 were identified as trip blanks. No volatile contaminants were found in these blanks.

Samples EB-2-10/27/06, EB-1-10/26/06, EB-3-10/30/06, and EB-4-10/31/06 were identified as equipment blanks. No volatile contaminants were found in these blanks.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL21

SDG	Sample	Compound	Flag	A or P	Reason
JPL21	MW-20-5 MW-20-4 MW-20-3** MW-20-2 MW-20-1 EB-2-10/27/06 TB-2-10/27/06 MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1 EB-1-10/26/06 TB-1-10/26/06 MW-19-5 MW-19-4 MW-19-3** EB-3-10/30/06 TB-3-10/30/06 MW-17-5 MW-19-2 MW-19-1 EB-4-10/31/06 TB-4-10/31/06	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (ICV %D)
JPL21	MW-21-1	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)(RPD)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL21

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 15905

1,4-Dioxane

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: October 30 through October 31, 2006

LDC Report Date: December 11, 2006

Matrix: Water

Parameters: 1,4-Dioxane

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL21

Sample Identification

MW-19-5
MW-19-4
MW-19-3**
EB-3-10/30/06
MW-17-5
MW-19-2
MW-19-1
EB-4-10/31/06

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA sw 846 Method 8270C using Selected Ion Monitoring (SIM) for 1,4-Dioxane.

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 EPA Level IV review. EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by EPA 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 all compounds.

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% .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,4-dioxane was found in the method blanks.

VI. Surrogate Spikes

Surrogates were not required by the method.

VII. Matrix Spike/Matrix Spike Duplicates

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

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 EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA Level III criteria.

XII. Compound Quantitation and CRQLs

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

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA 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 EB-3-10/30/06 and EB-4-10/31/06 were identified as equipment blanks. No 1,4-dioxane was found in these blanks.

NASA JPL
1,4-Dioxane - Data Qualification Summary - SDG JPL21

No Sample Data Qualified in this SDG

NASA JPL
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG JPL21

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 15905

Chromium & Tin

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: October 26 through October 31, 2006

LDC Report Date: December 13, 2006

Matrix: Water

Parameters: Chromium & Tin

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL21

Sample Identification

MW-20-5	MW-21-1MS
MW-20-4	MW-21-1MSD
MW-20-3**	
MW-20-2	
MW-20-1	
EB-2-10/27/06	
MW-21-5	
MW-21-4	
MW-21-3	
MW-21-2	
MW-21-1	
EB-1-10/26/06	
MW-19-5	
MW-19-4	
MW-19-3**	
EB-3-10/30/06	
MW-17-5	
MW-19-2	
MW-19-1	
EB-4-10/31/06	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 22 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Chromium and Tin.

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.

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

No field duplicates were identified in this SDG.

XIV. Field Blanks

Samples EB-2-10/27/06, EB-1-10/26/06, EB-3-10/30/06, and samples EB-4-10/31/06 were identified as equipment blanks. No chromium or tin were found in these blanks.

NASA JPL
Chromium & Tin - Data Qualification Summary - SDG JPL21

No Sample Data Qualified in this SDG

NASA JPL
Chromium & Tin - Laboratory Blank Data Qualification Summary - SDG JPL21

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 15905

Wet Chemistry

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: October 26 through October 13, 2006

LDC Report Date: December 13, 2006

Matrix: Water

Parameters: Perchlorate & Dissolved Silica

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL21

Sample Identification

MW-20-5	MW-21-1MS
MW-20-4	MW-21-1MSD
MW-20-3**	
MW-20-2	
MW-20-1	
EB-2-10/27/06	
MW-21-5	
MW-21-4	
MW-21-3	
MW-21-2	
MW-21-1	
EB-1-10/26/06	
MW-19-5	
MW-19-4	
MW-19-3**	
EB-3-10/30/06	
MW-17-5	
MW-19-2	
MW-19-1	
EB-4-10/31/06	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 22 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 314.0 for Perchlorate and EPA Method 370.1 for Dissolved Silica.

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 or dissolved silica were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
MB	Dissolved silica	0.030 mg/L	MW-19-5 MW-19-4 MW-19-3** MW-17-5 MW-19-2 MW-19-1

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method 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-21-1MS/MSD (MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1 EB-1-10/26/06 MW-19-5 MW-19-4 MW-19-3** EB-3-10/30/06 MW-17-5 MW-19-2)	Perchlorate	124 (80-120)	-	-	J (all 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

No field duplicates were identified in this SDG.

X. Field Blanks

Samples EB-2-10/27/06, EB-1-10/26/06, EB-3-10/30/06, and samples EB-4-10/31/06 were identified as equipment blanks. No perchlorate or dissolved silica were found in these blanks with the following exceptions:

Equipment Blank ID	Analyte	Concentration (mg/L)
EB-3-10/30/06	Dissolved silica	0.020 mg/L

Equipment Blank ID	Analyte	Concentration (mg/L)
EB-4-10/31/06	Dissolved silica	0.024 mg/L

NASA JPL
Perchlorate & Dissolved Silica - Data Qualification Summary - SDG JPL21

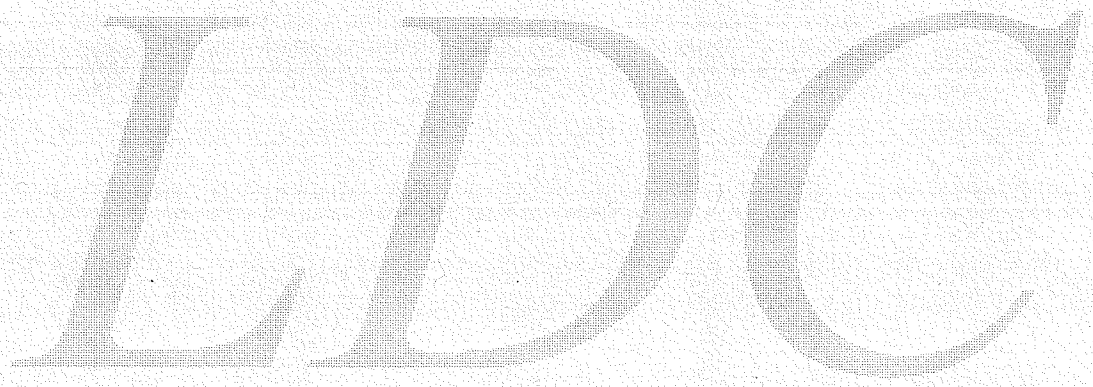
SDG	Sample	Analyte	Flag	A or P	Reason
JPL21	MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1 EB-1-10/26/06 MW-19-5 MW-19-4 MW-19-3** EB-3-10/30/06 MW-17-5 MW-19-2	Perchlorate	J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Perchlorate & Dissolved Silica - Laboratory Blank Data Qualification Summary - SDG JPL21

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 15905

Nitroaromatics & Nitramines



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: October 30 through October 31, 2006

LDC Report Date: December 11, 2006

Matrix: Water

Parameters: Nitroaromatics and Nitramines

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL21

Sample Identification

MW-19-5
MW-19-4
MW-19-3**
EB-3-10/30/06
MW-19-2
MW-19-1
EB-4-10/31/06

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8330 for Nitroaromatics and Nitramines.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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 EPA Level IV review. EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by EPA 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

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Retention time windows were evaluated and considered technically acceptable for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples on which EPA Level III review was performed.

b. Calibration Verification

Calibration verification was performed at the required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

Retention times (RT) of all compounds in the calibration standards were within QC limits for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples on which EPA Level III review was performed.

III. Blanks

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

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/(Matrix Spike) Duplicates

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

c. Laboratory Control Samples

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

V. Target Compound Identification

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

VI. Compound Quantitation and CRQLs

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

VII. System Performance

System performance was acceptable for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA 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-3-10/30/06 and EB-4-10/31/06 were identified as equipment blanks. No nitroaromatic or nitramine contaminants were found in this blank.

NASA JPL
Nitroaromatics and Nitramines - Data Qualification Summary - SDG JPL21

No Sample Data Qualified in this SDG

NASA JPL
Nitroaromatics and Nitramines - Laboratory Blank Data Qualification Summary - SDG JPL21

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

January 9, 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 December 19, 2006. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 15981:

SDG #	Fraction
JPL22, JPL24	Volatiles, 1,4-Dioxane, Chromium & Tin, Wet Chemistry, Nitroaromatics & Nitramines

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

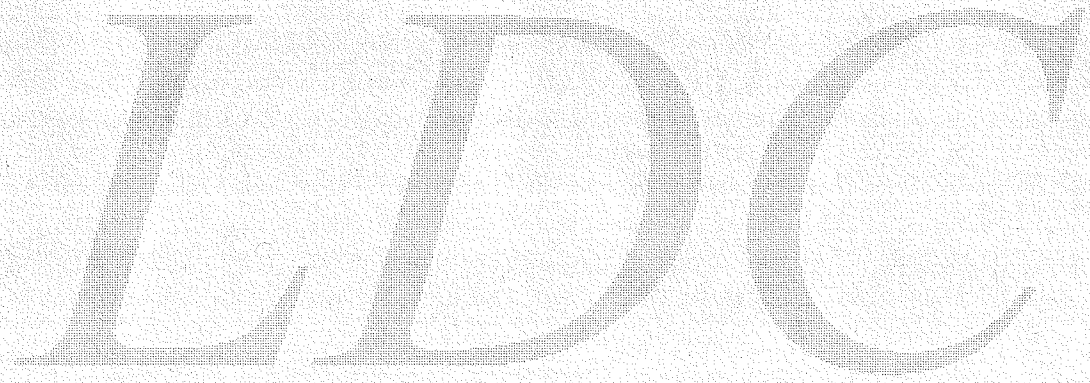
Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

NASA JPL
Data Validation Reports
LDC# 15981

Volatiles



LDC Report# 15981A1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 1 through November 7, 2006

LDC Report Date: December 27, 2006

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL22

Sample Identification

MW-17-4	MW-3-3
MW-17-3	MW-3-2
EB-5-11/1/06	DUPE-2-4Q06
TB-5-11/1/06	EB-9-11/7/06
TB-6-11/2/06	TB-9-11/7/06
EB-6-11/2/06	MW-14-2MS
DUPE-1-4Q06	MW-14-2MSD
MW-17-1	
MW-17-2	
MW-14-5	
MW-14-4	
MW-14-3	
MW-14-2	
MW-14-1	
EB-7-11/3/06	
TB-7-11/3/06	
MW-3-5**	
MW-3-4	
EB-8-11/6/06	
TB-8-11/6/06	

**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 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
11/8/06	Chloroethane	33.35	MW-17-4 MW-17-3	J (all detects) UJ (all non-detects)	A
	Trichlorofluoromethane	37.47	EB-5-11/1/06 TB-5-11/1/06 TB-6-11/2/06 EB-6-11/2/06 DUPE-1-4Q06 MW-17-1 MW-17-2 MW-14-5 MW-14-4 MW-14-3 MW-14-1 TB-8-11/6/06 B110806MVOWBZ	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
11/3/06	Dichlorodifluoromethane	46.5	All samples in SDG JPL22	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 with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
B110906MVOWB2	11/9/06	Methylene chloride	0.43 ug/L	MW-14-2 TB-7-11/3/06 MW-3-5** MW-3-4 EB-8-11/6/06 MW-3-3
B111006MVOWB1	11/10/06	Methylene chloride	0.43 ug/L	EB-7-11/3/06 MW-3-2 DUPE-2-4Q06 EB-9-11/7/06 TB-9-11/7/06

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) 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)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-14-2MS/MSD (MW-14-2)	Trichloroethene	-	55 (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)

Tentatively identified compounds were not reported by the laboratory.

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 DUPE-1-4Q06 and MW-17-2 and samples MW-3-3 and DUPE-2-4Q06 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	DUPE-1-4Q06	MW-17-2	
Carbon tetrachloride	0.29	0.50U	200
Trichloroethene	1.2	1.1	9
Tetrachloroethene	0.49	0.48	26

XVII. Field Blanks

Samples TB-5-11/1/06, TB-6-11/2/06, TB-7-11/3/06, TB-8-11/6/06, and samples TB-9-11/7/06 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-9-11/7/06	Bromoform	0.35

Samples EB-5-11/1/06, EB-6-11/2/06, EB-7-11/3/06, EB-8-11/6/06, EB-9-11/7/06 were identified as trip blanks. No volatile contaminants were found in these blanks.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL22

SDG	Sample	Compound	Flag	A or P	Reason
JPL22	MW-17-4 MW-17-3 EB-5-11/1/06 TB-5-11/1/06 TB-6-11/2/06 EB-6-11/2/06 DUPE-1-4Q06 MW-17-1 MW-17-2 MW-14-5 MW-14-4 MW-14-3 MW-14-1 TB-8-11/6/06	Chloroethane Trichlorofluoromethane	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL22	MW-17-4 MW-17-3 EB-5-11/1/06 TB-5-11/1/06 TB-6-11/2/06 EB-6-11/2/06 DUPE-1-4Q06 MW-17-1 MW-17-2 MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-7-11/3/06 TB-7-11/3/06 MW-3-5** MW-3-4 EB-8-11/6/06 TB-8-11/6/06 MW-3-3 MW-3-2 DUPE-2-4Q06 EB-9-11/7/06 TB-9-11/7/06	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (ICV %D)
JPL22	MW-14-2	Trichloroethene	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL22

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 16 through November 20, 2006

LDC Report Date: December 29, 2006

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL24

Sample Identification

MW-11-5	DUPE-5-4Q06
MW-11-4	EB-17-11/20/06
MW-11-3	TB-17-11/20/06
MW-11-2	
MW-11-1	
DUPE-4-4Q06	
EB-15-11/16/06	
TB-15-11/16/06	
MW-12-5	
MW-12-4	
MW-12-3	
MW-12-2**	
MW-12-1	
EB-16-11/17/06	
TB16-11/17/06	
MW-22-5	
MW-22-4	
MW-22-3	
MW-22-2	
MW-22-1	

**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 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
11/21/06	Dichlorodifluoromethane	40.2	MW-11-5 MW-11-4	J (all detects) UJ (all non-detects)	A
	2-Butanone	44.3	MW-11-3 MW-11-2 MW-11-1 DUPE-4-4Q06 EB-15-11/16/06 TB-15-11/16/06 MW-12-5 MW-12-4 MW-12-3 MW-12-2** MW-12-1 EB-16-11/17/06 TB16-11/17/06 MW-22-5 MW-22-4 MW-22-3 B112106MVOWY1	J (all detects) UJ (all non-detects)	
11/22/06	Dichlorodifluoromethane 2-Butanone 4-Methyl-2-pentanone	42.8 52.2 32.3	MW-22-2 MW-22-1 DUPE-5-4Q06 EB-17-11/20/06 B112206MVOWY1	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.

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
S112206MVOWY1	2-Butanone	144 (60-140)	MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 DUPE-4-4Q06 EB-15-11/16/06 TB-15-11/16/06 MW-12-5 MW-12-4 MW-12-3 MW-12-2** MW-12-1 EB-16-11/17/06 TB16-11/17/06 MW-22-5 MW-22-4 MW-22-3 TB-17-11/20/06 B112106MVOWY1	J (all detects)	P
S112206MVOWY1	Tetrachloroethene	79 (80-116)	MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 DUPE-4-4Q06 EB-15-11/16/06 TB-15-11/16/06 MW-12-5 MW-12-4 MW-12-3 MW-12-2** MW-12-1 EB-16-11/17/06 TB16-11/17/06 MW-22-5 MW-22-4 MW-22-3 TB-17-11/20/06 B112106MVOWY1	J (all detects) UJ (all non-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-11-1 and DUPE-4-4Q06 and samples MW-22-1 and DUPE-5-4Q06 identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-22-1	DUPE-5-4Q06	
Chloroform	0.26	0.34	27
Tetrachloroethene	1.3	1.5	14
1,1-Dichloroethane	0.50U	0.36	200

XVII. Field Blanks

Samples TB-15-11/16/06, TB16-11/17/06, and sample TB-17-11/20/06 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-17-11/20/06	Chloromethane	0.71

Samples EB-15-11/16/06, EB-16-11/17/06, and sample EB-17-11/20/06 were identified as trip blanks. No volatile contaminants were found in these blanks.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL24

SDG	Sample	Compound	Flag	A or P	Reason
JPL24	MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 DUPE-4-4Q06 EB-15-11/16/06 TB-15-11/16/06 MW-12-5 MW-12-4 MW-12-3 MW-12-2** MW-12-1 EB-16-11/17/06 TB16-11/17/06 MW-22-5 MW-22-4 MW-22-3	Dichlorodifluoromethane 2-Butanone	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL24	MW-22-2 MW-22-1 DUPE-5-4Q06 EB-17-11/20/06	Dichlorodifluoromethane 2-Butanone 4-Methyl-2-pentanone	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL24	MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 DUPE-4-4Q06 EB-15-11/16/06 TB-15-11/16/06 MW-12-5 MW-12-4 MW-12-3 MW-12-2** MW-12-1 EB-16-11/17/06 TB16-11/17/06 MW-22-5 MW-22-4 MW-22-3 TB-17-11/20/06	2-Butanone	J (all detects)	P	Laboratory control samples (%R)

SDG	Sample	Compound	Flag	A or P	Reason
JPL24	MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 DUPE-4-4Q06 EB-15-11/16/06 TB-15-11/16/06 MW-12-5 MW-12-4 MW-12-3 MW-12-2** MW-12-1 EB-16-11/17/06 TB16-11/17/06 MW-22-5 MW-22-4 MW-22-3 TB-17-11/20/06	Tetrachloroethene	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL24

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 15981

1,4-Dioxane

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 1 through November 7, 2006

LDC Report Date: December 27, 2006

Matrix: Water

Parameters: 1,4-Dioxane

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL22

Sample Identification

MW-17-4
MW-17-3
EB-5-11/1/06
EB-6-11/2/06
DUPE-1-4Q06
MW-17-1
MW-17-2
MW-3-5**
MW-3-4
EB-8-11/6/06
MW-3-3
MW-3-2
DUPE-2-4Q06
EB-9-11/7/06

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 14 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA sw 846 Method 8270C using Selected Ion Monitoring (SIM) for 1,4-Dioxane.

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 EPA Level IV review. EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by EPA 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 all compounds.

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 difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,4-dioxane was 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

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

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 EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA Level III criteria.

XII. Compound Quantitation and CRQLs

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

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA 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 DUPE-1-4Q06 and MW-17-2 and samples MW-3-3 and DUPE-2-4Q06 were identified as field duplicates. No 1,4-Dioxane was detected in any of the samples.

XVII. Field Blanks

Samples EB-5-11/1/06, EB-6-11/2/06, EB-8-11/6/06, and sample EB-9-11/7/06 were identified as equipment blanks. No 1,4-dioxane was found in these blanks.

NASA JPL
1,4-Dioxane - Data Qualification Summary - SDG JPL22

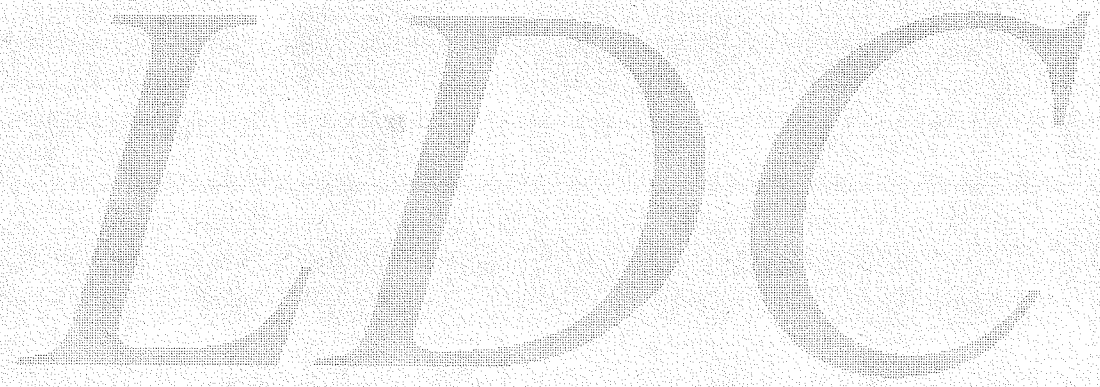
No Sample Data Qualified in this SDG

NASA JPL
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG JPL22

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 15981

Chromium & Tin



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 1 through November 7, 2006

LDC Report Date: January 3, 2007

Matrix: Water

Parameters: Chromium & Tin

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL22

Sample Identification

MW-17-4	EB-5-11/1/06MS
MW-17-3	EB-5-11/1/06MSD
EB-5-11/1/06	MW-14-2MS
EB-6-11/2/06	MW-14-2MSD
DUPE-1-4Q06	MW-3-3MS
MW-17-1	MW-3-3MSD
MW-17-2	
MW-14-5	
MW-14-4	
MW-14-3	
MW-14-2	
MW-14-1	
EB-7-11/3/06	
MW-3-5**	
MW-3-4	
EB-8-11/6/06	
MW-3-3	
MW-3-2	
DUPE-2-4Q06	
EB-9-11/7/06	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 26 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Chromium and Tin.

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.

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 DUPE-1-4Q06 and MW-17-2 and samples MW-3-3 and DUPE-2-4Q06 were identified as field duplicates. No chromium or tin was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	DUPE-1-4Q06	MW-17-2	
Chromium	2.42	3.32	31

Analyte	Concentration (ug/L)		RPD
	MW-3-3	DUPE-2-4Q06	
Chromium	1.27	1.08	16

XIV. Field Blanks

Samples EB-5-11/1/06, EB-6-11/2/06, EB-7-11/3/06, EB-8-11/6/06, and EB-9-11/7/06 were identified as equipment blanks. No chromium or tin was detected in these blanks with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-5-11/1/06	Chromium	2.85

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-7-11/3/06	Chromium	1.35
EB-8-11/6/06	Chromium	1.71
EB-9-11/7/06	Chromium	1.69

NASA JPL
Chromium & Tin - Data Qualification Summary - SDG JPL22

No Sample Data Qualified in this SDG

NASA JPL
Chromium & Tin - Laboratory Blank Data Qualification Summary - SDG JPL22

No Sample Data Qualified in this SDG

LDC Report# 15981B4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 16 through November 20, 2006

LDC Report Date: January 8, 2007

Matrix: Water

Parameters: Chromium

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL24

Sample Identification

MW-11-5	MW-11-5MS	MW-11-5MSDRE
MW-11-4	MW-11-5MSD	
MW-11-3	MW-11-5RE	
MW-11-2	MW-11-4RE	
MW-11-1	MW-11-3RE	
DUPE-4-4Q06	MW-11-2RE	
EB-15-11/16/06	MW-11-1RE	
MW-12-5	DUPE-4-4Q06RE	
MW-12-4	EB-15-11/16/06RE	
MW-12-3	MW-12-4RE	
MW-12-2**	MW-12-3RE	
MW-12-1	MW-12-2RE**	
EB-16-11/17/06	EB-16-11/17/06RE	
MW-22-5	MW-22-5RE	
MW-22-4	MW-22-4RE	
MW-22-3	MW-22-3RE	
MW-22-2	MW-22-1RE	
MW-22-1	DUPE-5-4Q06RE	
DUPE-5-4Q06	EB-17-11/20/06RE	
EB-17-11/20/06	MW-11-5MSRE	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 41 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 with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Chromium	1.57 ug/L	MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 DUPE-4-4Q06 EB-15-11/16/06 MW-12-5 MW-12-4 MW-12-3 MW-12-2** MW-12-1 EB-16-11/17/06 MW-22-5 MW-22-4 MW-22-3 MW-22-2 MW-22-1 DUPE-5-4Q06 EB-17-11/20/06

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
MW-12-5	Chromium	5.43 ug/L	5.43U ug/L
MW-12-1	Chromium	6.08 ug/L	6.08U ug/L
MW-22-2	Chromium	5.04 ug/L	5.04U ug/L

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-11-1 and DUPE-4-4Q06, samples MW-22-1 and DUPE-5-4Q06, samples MW-11-1RE and DUPE-4-4Q06RE, and samples MW-22-1RE and DUPE-5-4Q06RE were identified as field duplicates. No chromium was detected in any of the samples.

XIV. Field Blanks

Samples EB-15-11/16/06, EB-16-11/17/06, EB-11-11/20/06, EB-15-11/16/06RE, EB-16-11/17/06RE, and EB-11-11/20/06RE were identified as equipment blanks. No chromium was detected in these blanks.

NASA JPL
Chromium - Data Qualification Summary - SDG JPL24

No Sample Data Qualified in this SDG

NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL24

SDG	Sample	Analyte	Modified Final Concentration	A or P
JPL24	MW-12-5	Chromium	5.43U ug/L	A
JPL24	MW-12-1	Chromium	6.08U ug/L	A
JPL24	MW-22-2	Chromium	5.04U ug/L	A

NASA JPL
Data Validation Reports
LDC# 15981

Wet Chemistry

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 1 through November 7, 2006

LDC Report Date: January 3, 2007

Matrix: Water

Parameters: Perchlorate & Dissolved Silica

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL22

Sample Identification

MW-17-4	EB-5-11/1/06MS
MW-17-3	EB-5-11/1/06MSD
EB-5-11/1/06	MW-17-1MS
EB-6-11/2/06	MW-17-1MSD
DUPE-1-4Q06	MW-14-2MS
MW-17-1	MW-14-2MSD
MW-17-2	MW-3-3MS
MW-14-5	MW-3-3MSD
MW-14-4	
MW-14-3	
MW-14-2	
MW-14-1	
EB-7-11/3/06	
MW-3-5**	
MW-3-4	
EB-8-11/6/06	
MW-3-3	
MW-3-2	
DUPE-2-4Q06	
EB-9-11/7/06	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 33 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 314.0 for Perchlorate and EPA Method 370.1 for Dissolved Silica as Silicon.

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 or dissolved silica were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
PBW2	Dissolved silica as silicon	0.030 mg/L	MW-17-4 MW-17-3 DUPE-1-4Q06
ICB/CCB	Dissolved silica as silicon	0.040 mg/L	MW-17-4 MW-17-3 DUPE-1-4Q06

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method 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
EB-5-11/1/06MS/MSD (MW-17-4 MW-17-3 EB-5-11/1/06 MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-7-11/3/06)	Perchlorate	-	-	22 (≤15)	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 with the following exceptions:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS/LCSD (MW-3-5** MW-3-4 EB-8-11/6/06 MW-3-3 MW-3-2 DUPE-2-4Q06 EB-9-11/7/06)	Perchlorate	84.5 (85-115)	-	-	J (all detects) UJ (all non-detects)	P

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 DUPE-1-4Q06 MW-17-2 and samples MW-3-3 and DUPE-2-4Q06 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	DUPE-1-4Q06	MW-17-2	
Perchlorate	13 ug/L	14 ug/L	7
Silica as silicon	28 mg/L	30 mg/L	7

Analyte	Concentration		RPD
	MW-3-3	DUPE-2-4Q06	
Silica as silicon	30	30	0

X. Field Blanks

Samples EB-5-11/1/06, EB-6-11/2/06, EB-7-11/3/06, EB-8-11/6/06, and sample EB-9-11/7/06 were identified as equipment blanks. No perchlorate or dissolved silica as silicon were found in these blanks with the following exceptions:

Equipment Blank ID	Analyte	Concentration (mg/L)
EB-5-11/1/06	Silica as silicon	0.021
EB-6-11/2/06	Silica as silicon	0.025
EB-8-11/6/06	Silica as silicon	0.027
EB-9-11/7/06	Silica as silicon	0.025

NASA JPL
Perchlorate & Dissolved Silica - Data Qualification Summary - SDG JPL22

SDG	Sample	Analyte	Flag	A or P	Reason
JPL22	MW-17-4 MW-17-3 EB-5-11/1/06 MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-7-11/3/06	Perchlorate	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (RPD)
JPL22	MW-3-5** MW-3-4 EB-8-11/6/06 MW-3-3 MW-3-2 DUPE-2-4Q06 EB-9-11/7/06	Perchlorate	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Perchlorate & Dissolved Silica - Laboratory Blank Data Qualification Summary - SDG JPL22

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 16 through November 20, 2006

LDC Report Date: January 3, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL24

Sample Identification

MW-11-5	DUPE-4-4Q06MS
MW-11-4	DUPE-4-4Q06MSD
MW-11-3	EB-17-11/20/06MS
MW-11-2	EB-17-11/20/06MSD
MW-11-1	
DUPE-4-4Q06	
EB-15-11/16/06	
MW-12-5	
MW-12-4	
MW-12-3	
MW-12-2**	
MW-12-1	
EB-16-11/17/06	
MW-22-5	
MW-22-4	
MW-22-3	
MW-22-2	
MW-22-1	
DUPE-5-4Q06	
EB-17-11/20/06	

**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-4-4Q06MS/MSD (MW-11-1 DUPE-4-4Q06)	Chloride Nitrite as N Sulfate	84 (90-110) - 83 (90-110)	- 88 (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-11-1 and DUPE-4-4Q06 and samples MW-22-1 and DUPE-5-4Q06 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	MW-11-1	DUPE-4-4Q06	
Nitrate as N	1.4	1.4	0
Sulfate	55	54	2
Chloride	25	25	0

X. Field Blanks

Samples EB-15-11/16/06, EB-16-11/17/06 and EB-17-11/20/06 were identified as equipment blanks. No contaminant concentrations were found in these blanks.

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL24

SDG	Sample	Analyte	Flag	A or P	Reason
JPL24	MW-11-1 DUPE-4-4Q06	Chloride Nitrite as N 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 JPL24

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 15981

Nitroaromatics & Nitramines

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 1 through November 7, 2006

LDC Report Date: December 27, 2006

Matrix: Water

Parameters: Nitroaromatics and Nitramines

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL22

Sample Identification

MW-17-4
MW-17-3
EB-5-11/1/06
EB-6-11/2/06
DUPE-1-4Q06
MW-17-1
MW-17-2
MW-3-5**
MW-3-5DL**
MW-3-4
MW-3-4DL
EB-8-11/6/06
MW-3-3
MW-3-2
DUPE-2-4Q06
EB-9-11/7/06

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 16 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8330 for Nitroaromatics and Nitramines.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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 EPA Level IV review. EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by EPA 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

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Retention time windows were evaluated and considered technically acceptable for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples on which EPA Level III review was performed.

b. Calibration Verification

Calibration verification was performed at the required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

Retention times (RT) of all compounds in the calibration standards were within QC limits for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples on which EPA Level III review was performed.

III. Blanks

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

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. Matrix Spike/(Matrix Spike) Duplicates

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

c. Laboratory Control Samples

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

V. Target Compound Identification

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

VI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which EPA Level IV review was performed.

The sample results for detected compounds from the two columns were within 40.0% relative percent differences (RPD) with the following exceptions:

Sample	Compound	RPD	Flag	A or P
MW-3-5**	Nitrobenzene	200	J (all detects)	A

Raw data were not evaluated for the samples reviewed by EPA Level III criteria.

VII. System Performance

System performance was acceptable for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA 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 DUPE-1-4Q06 and MW-17-2 and samples MW-3-3 and DUPE-2-4Q06 were identified as field duplicates. No nitroaromatics or nitramines were detected in any of the samples.

X. Field Blanks

Samples EB-5-11/1/06, EB-6-11/2/06, EB-8-11/6/06, and EB-9-11/7/06 were identified as equipment blanks. No nitroaromatic or nitramine contaminants were found in these blanks.

NASA JPL
Nitroaromatics and Nitramines - Data Qualification Summary - SDG JPL22

SDG	Sample	Compound	Flag	A or P	Reason
JPL22	MW-3-5**	Nitrobenzene	J (all detects)	A	Compound quantitation and CRQLs (RPD)

NASA JPL
Nitroaromatics and Nitramines - Laboratory Blank Data Qualification Summary - SDG JPL22

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

January 11, 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 December 22, 2006. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 16005:

SDG #	Fraction
JPL23	Volatiles, 1,4-Dioxane, Chromium & Tin, Wet Chemistry, Nitroaromatics & Nitramines

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

NASA JPL
Data Validation Reports
LDC# 16005

Volatiles

LDC Report# 16005A1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 9 through November 15, 2006

LDC Report Date: January 10, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL23

Sample Identification

MW-4-4	EB-10/11/8/06
MW-4-3	SB-1-11/8/06
EB-11-11/9/06	TB-10-11/8/06
TB-11-11/9/06	MW-18-3MS
MW-4-2	MW-18-3MSD
MW-4-1	MW-3-1MS
DUPE-3-4Q06	MW-3-1MSD
EB-12-11/10/06	
TB-12-11/10/06	
MW-18-5	
MW-18-4	
MW-18-2	
EB-13-11/13/06	
TB-13-11/13/06	
MW-18-3	
MW-18-1	
EB-14-11/14/06	
TB-14/11/14/06	
MW-4-5**	
MW-3-1	

**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 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
11/14/06	cis-1,2-Dichloroethene	46.91	TB-11-11/9/06 TB-12-11/10/06 TB-13-11/13/06 B111406MVOWB1	J (all detects) UJ (all non-detects)	A

Date	Compound	%D	Associated Samples	Flag	A or P
11/15/06	Chloroethane 2-Butanone	33.56 85.74	MW-4-4 MW-4-3 EB-11-11/9/06 MW-4-2 MW-4-1 DUPE-3-4Q06 EB-12-11/10/06 MW-18-5 MW-18-4 MW-18-2 EB-13-11/13/06 B111506MVOWB1	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
11/16/06	2-Butanone	56.96	MW-18-1 MW-3-1 EB-10/11/8/06 SB-1-11/8/06 TB-10-11/8/06 MW-18-3MS MW-18-3MSD MW-3-1MS MW-3-1MSD B111606MVOWB1	J (all detects) UJ (all non-detects)	A
11/21/06	2-Butanone	44.33	MW-18-3 EB-14-11/14/06 TB-14/11/14/06 MW-4-5** B112106MVOWY1	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 with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
11/3/06	Dichlorodifluoromethane	46.5	MW-4-4 MW-4-3 EB-11-11/9/06 TB-11-11/9/06 MW-4-2 MW-4-1 DUPE-3-4Q06 EB-12-11/10/06 TB-12-11/10/06 MW-18-5 MW-18-4 MW-18-2 EB-13-11/13/06 TB-13-11/13/06 MW-18-1 MW-3-1 EB-10/11/8/06 SB-1-11/8/06 TB-10-11/8/06 MW-18-3MS MW-18-3MSD MW-3-1MS MW-3-1MSD B111406MVOWB1 B111506MVOWB1 B111606MVOWB1	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 with the following exceptions:

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
MW-18-5	1,2-Dichloroethane-d4	142 (60-140)	All TCL compounds	J (all detects)	P
B111506MVOWB1	1,2-Dichloroethane-d4	190 (60-140)	All TCL compounds	J (all detects)	P

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
S11210MVOWY1	Bromoform	66.8 (67-131)	MW-18-3 EB-14-11/14/06 TB-14/11/14/06 MW-4-5** B112106MVOWY1	J (all detects) UJ (all non-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-4-2 and DUPE-3-4Q06 was identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-4-2	DUPE-3-4Q06	
Trichloroethene	0.45	0.43	5

XVII. Field Blanks

Samples TB-11-11/9/06, TB-12-11/10/06, TB-13-11/13/06, TB-14/11/14/06, and sample TB-10-11/8/06 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-11-11/9/06	Chloromethane Methylene chloride	0.61 0.49
TB-10-11/8/06	Methylene chloride	0.29

Samples EB-11-11/9/06, EB-12-11/10/06, EB-13-11/13/06, EB-14-11/14/06, and sample EB-10/11/8/06 were identified as equipment blanks. No volatile contaminants were found in these blanks.

Sample SB-1-11/8/06 was identified as a source blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL23

SDG	Sample	Compound	Flag	A or P	Reason
JPL23	TB-11-11/9/06 TB-12-11/10/06 TB-13-11/13/06	cis-1,2-Dichloroethene	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL23	MW-4-4 MW-4-3 EB-11-11/9/06 MW-4-2 MW-4-1 DUPE-3-4Q06 EB-12-11/10/06 MW-18-5 MW-18-4 MW-18-2 EB-13-11/13/06	Chloroethane 2-Butanone	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL23	MW-18-1 MW-3-1 EB-10/11/8/06 SB-1-11/8/06 TB-10-11/8/06 MW-18-3 EB-14-11/14/06 TB-14/11/14/06 MW-4-5**	2-Butanone	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL23	MW-4-4 MW-4-3 EB-11-11/9/06 TB-11-11/9/06 MW-4-2 MW-4-1 DUPE-3-4Q06 EB-12-11/10/06 TB-12-11/10/06 MW-18-5 MW-18-4 MW-18-2 EB-13-11/13/06 TB-13-11/13/06 MW-18-1 MW-3-1 EB-10/11/8/06 SB-1-11/8/06 TB-10-11/8/06	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (ICV %D)
JPL23	MW-18-5	All TCL compounds	J (all detects)	P	Surrogate recovery (%R)
JPL23	MW-18-3 EB-14-11/14/06 TB-14/11/14/06 MW-4-5**	Bromoform	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL23

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16005

1,4-Dioxane

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 9 through November 15, 2006

LDC Report Date: January 5, 2007

Matrix: Water

Parameters: 1,4-Dioxane

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL23

Sample Identification

MW-4-4
MW-4-3
EB-11-11/9/06
MW-4-2
MW-4-1
DUPE-3-4Q06
EB-12-11/10/06
MW-18-5
MW-18-4
MW-18-2
EB-13-11/13/06
MW-18-3
MW-18-1
EB-14-11/14/06
MW-4-5**
MW-3-1
EB-10/11/8/06
MW-18-3MS
MW-18-3MSD
MW-3-1MS
MW-3-1MSD

**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 SW 846 Method 8270C for 1,4-Dioxane.

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 EPA Level IV review. EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by EPA 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 30.0% for all compounds.

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 25.0% .

The percent difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,4-Dioxane was 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.

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 EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA Level III criteria.

XII. Compound Quantitation and CRQLs

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

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA 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-4-2 and DUPE-3-4Q06 were identified as field duplicates. No 1,4-Dioxane was detected in any of the samples.

XVII. Field Blanks

Samples EB-11-11/9/06, EB-12-11/10/06, EB-13-11/13/06, EB-14-11/14/06, and EB-10/11/8/06 were identified as equipment blanks. No 1,4-Dioxane was found in these blanks.

NASA JPL
1,4-Dioxane - Data Qualification Summary - SDG JPL23

No Sample Data Qualified in this SDG

NASA JPL
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG JPL23

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16005

Chromium & Tin

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 9 through November 15, 2006

LDC Report Date: January 8, 2007

Matrix: Water

Parameters: Chromium & Tin

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL23

Sample Identification

MW-4-4
MW-4-3
EB-11-11/9/06
MW-4-2
MW-4-1
DUPE-3-4Q06
EB-12-11/10/06
MW-18-5
MW-18-4
MW-18-2
EB-13-11/13/06
MW-18-3
MW-18-1
EB-14-11/14/06
MW-4-5**
MW-3-1
EB-10/11/8/06
SB-1-11/8/06
MW-18-3MS
MW-18-3MSD
MW-3-1MS
MW-3-1MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 22 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Chromium and Tin.

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
11/29/06	CCV8	Chromium	111.4 (90-110)	MW-4-4 MW-4-3 EB-11-11/9/06 MW-4-2 MW-4-1 DUPE-3-4Q06 EB-12-11/10/06 MW-18-5 MW-18-4 MW-18-2 EB-13-11/13/06 MW-18-3 MW-18-1 EB-14-11/14/06 MW-4-5** MW-18-3MS MW-18-3MSD	J (all detects)	P
11/29/06	CCV9	Chromium	111.4 (90-110)	EB-13-11/13/06 MW-18-3 MW-18-1 EB-14-11/14/06 MW-4-5** MW-3-1 EB-10/11/8/06 SB-1-11/8/06 MW-18-3MS MW-18-3MSD MW-3-1MS MW-3-1MSD	J (all detects)	P
11/29/06	CCV10	Chromium	112.7 (90-110)	MW-3-1 EB-10/11/8/06 SB-1-11/8/06 MW-3-1MS MW-3-1MSD	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.

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-4-2 and DUPE-3-4Q06 were identified as field duplicates. No chromium or tin was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-4-2	DUPE-3-4Q06	
Chromium	3.26	3.20	2

XIV. Field Blanks

Samples EB-11-11/9/06, EB-12-11/10/06, EB-13-11/13/06, EB-14-11/14/06, and EB-10/11/8/06 were identified as equipment blanks. No chromium or tin was detected in these blanks with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-11-11/9/06	Chromium	1.45
EB-12-11/10/06	Chromium	1.97
EB-13-11/13/06	Chromium	1.33
EB-14-11/14/06	Chromium	1.79
EB-10/11/8/06	Chromium	1.51

Sample SB-1-11/8/06 was identified as a source blank. No chromium or tin was detected in this blank with the following exceptions:

Source Blank ID	Analyte	Concentration (ug/L)
SB-1-11/8/06	Chromium	1.65

NASA JPL
Chromium & Tin - Data Qualification Summary - SDG JPL23

No Sample Data Qualified in this SDG

NASA JPL
Chromium & Tin - Laboratory Blank Data Qualification Summary - SDG JPL23

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16005

Wet Chemistry

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 9 through November 15, 2006

LDC Report Date: January 8, 2007

Matrix: Water

Parameters: Perchlorate & Dissolved Silica as Silicon

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL23

Sample Identification

MW-4-4
MW-4-3
EB-11-11/9/06
MW-4-2
MW-4-1
DUPE-3-4Q06
EB-12-11/10/06
MW-18-5
MW-18-4
MW-18-2
EB-13-11/13/06
MW-18-3
MW-18-1
EB-14-11/14/06
MW-4-5**
MW-3-1
EB-10/11/8/06
SB-1-11/8/06
MW-18-3MS
MW-18-3MSD
MW-3-1MS
MW-3-1MSD
EB-10/11/8/06MS
EB-10/11/8/06MSD

**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 314.0 for Perchlorate and EPA Method 370.1 for Dissolved Silica as Silicon.

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 or dissolved silica 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-4-2 and DUPE-3-4Q06 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD
	MW-4-2	DUPE-3-4Q06	
Silica as silicon	49	48	2

X. Field Blanks

Samples EB-11-11/9/06, EB-12-11/10/06, EB-13-11/13/06, EB-14-11/14/06, and samples EB-10/11/8/06 were identified as equipment blanks. No perchlorate or dissolved silica as silicon were found in these blanks with the following exceptions:

Equipment Blank ID	Analyte	Concentration (mg/L)
EB-11-11/9/06	Silica as silicon	0.034
EB-12-11/10/06	Silica as silicon	0.021
EB-10/11/8/06	Silica as silicon	0.036

Sample SB-1-11/8/06 was identified as a source blank. No perchlorate or dissolved silica as silicon were found in this blank.

NASA JPL
Perchlorate & Dissolved Silica - Data Qualification Summary - SDG JPL23

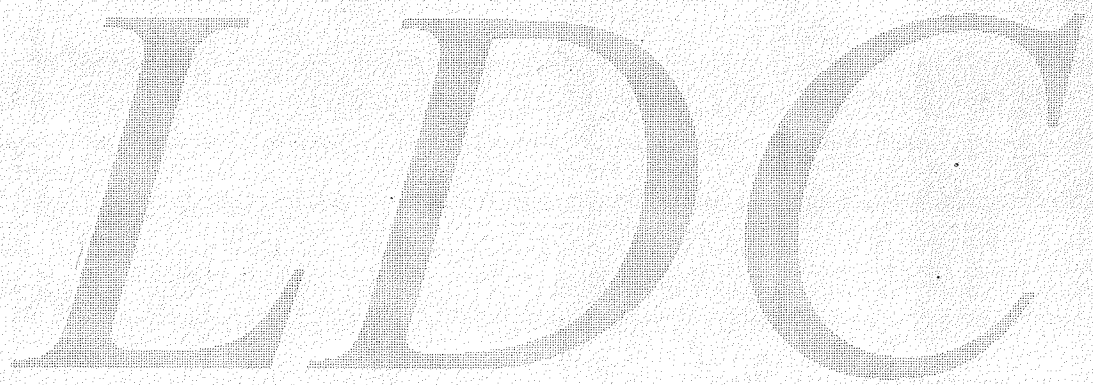
No Sample Data Qualified in this SDG

NASA JPL
Perchlorate & Dissolved Silica - Laboratory Blank Data Qualification Summary - SDG JPL23

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16005

Nitroaromatics & Nitramines



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 9 through November 15, 2006

LDC Report Date: January 5, 2007

Matrix: Water

Parameters: Nitroaromatics and Nitramines

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL23

Sample Identification

MW-4-4
MW-4-3
EB-11-11/9/06
MW-4-2
MW-4-1
DUPE-3-4Q06
EB-12-11/10/06
MW-18-5
MW-18-4
MW-18-2
EB-13-11/13/06
MW-18-3
MW-18-1
EB-14-11/14/06
MW-4-5**
MW-3-1
EB-10/11/8/06
MW-18-3MS
MW-18-3MSD
MW-3-1MS
MW-3-1MSD

**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 SW 846 Method 8330 for Nitroaromatics and Nitramines.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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 EPA Level IV review. EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by EPA 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

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Retention time windows were evaluated and considered technically acceptable for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples on which EPA Level III review was performed.

b. Calibration Verification

Calibration verification was performed at the required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

Retention times (RT) of all compounds in the calibration standards were within QC limits for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples on which EPA Level III review was performed.

III. Blanks

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

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. 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.

c. Laboratory Control Samples

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

V. Target Compound Identification

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

VI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which EPA Level IV review was performed.

The sample results for detected compounds from the two columns were within 40.0% relative percent differences (RPD) with the following exceptions:

Sample	Compound	RPD	Flag	A or P
MW-4-5**	Nitrobenzene	149	J (all detects)	A

Raw data were not evaluated for the samples reviewed by EPA Level III criteria.

VII. System Performance

System performance was acceptable for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA 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 EB-14-11/14/06 and MW-3-1 were identified as field duplicates. No nitroaromatics or nitramines were detected in any of the samples.

X. Field Blanks

Samples EB-11-11/9/06, EB-12-11/10/06, EB-13-11/13/06, EB-14-11/14/06, and EB-10/11/8/06 were identified as equipment blanks. No nitroaromatic or nitramine contaminants were found in these blanks.

NASA JPL
Nitroaromatics and Nitramines - Data Qualification Summary - SDG JPL23

SDG	Sample	Compound	Flag	A or P	Reason
JPL23	MW-4-5**	Nitrobenzene	J (all detects)	A	Compound quantitation and CRQLs (RPD)

NASA JPL
Nitroaromatics and Nitramines - Laboratory Blank Data Qualification Summary - SDG JPL23

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

January 12, 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 December 21, 2006. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 16010:

SDG #	Fraction
P0600159, P0600177, P0600187, P0600200, P0600233, P0600257	1,2,3-Trichloropropane, Hexavalent Chromium, 1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane, Nitrosamines

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 #16010 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	1,2,3-TCP (8270C -SIM)		EDB DBCP (504.1)		Nitro-samines (521)		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	P0600159	12/21/06	01/15/07	-	-	-	-	-	-	15	0																								
A	P0600159	12/21/06	01/15/07	-	-	-	-	-	-	1	0																								
B	P0600177	12/21/06	01/15/07	10	0	10	0	10	0	16	0																								
B	P0600177	12/21/06	01/15/07	1	0	0	0	1	0	1	0																								
C	P0600187	12/21/06	01/15/07	4	0	7	0	6	0	14	0																								
D	P0600200	12/21/06	01/15/07	17	0	22	0	17	0	26	0																								
D	P0600200	12/21/06	01/15/07	2	0	2	0	2	0	2	0																								
E	P0600233	12/21/06	01/15/07	9	0	11	0	9	0	27	0																								
E	P0600233	12/21/06	01/15/07	0	0	0	0	0	0	1	0																								
F	P0600257	12/21/06	01/15/07	-	-	-	-	-	-	16	0																								
F	P0600257	12/21/06	01/15/07	-	-	-	-	-	-	1	0																								
Total	B/LR			43	0	52	0	45	0	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	260

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

NASA JPL
Data Validation Reports
LDC# 16010

1,2,3-Trichloropropane

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: October 30 through November 1, 2006

LDC Report Date: January 11, 2007

Matrix: Water

Parameters: 1,2,3-Trichloropropane

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600177

Sample Identification

MW-19-5**
MW-19-4
MW-19-3
EB-3-10/30/06
MW-17-5
MW-19-2
MW-19-1
EB-4-10/31/06
MW-17-4
MW-17-3
EB-5-11/1/06

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C using Selected Ion Monitoring (SIM) for 1,2,3-Trichloropropane.

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 EPA Level IV review. EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by EPA 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 30.0% for all compounds.

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 25.0% .

The percent difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,2,3-trichloropropane was 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 with the following exceptions:

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
MW-19-4	1,2,3-Trichloropropane-d5	68 (70-130)	1,2,3-Trichloropropane	J (all detects) UJ (all non-detects)	P
MW-19-3	1,2,3-Trichloropropane-d5	67 (70-130)	1,2,3-Trichloropropane	J (all detects) UJ (all non-detects)	P

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
MW-17-5	1,2,3-Trichloropropane-d5	65 (70-130)	1,2,3-Trichloropropane	J (all detects) UJ (all non-detects)	P

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) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
KWG0618851-LCS/D (All samples in SDG P0600177)	1,2,3-Trichloropropane	-	68 (70-130)	-	J (all detects) UJ (all non-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 EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA Level III criteria.

XII. Compound Quantitation and CRQLs

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

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA 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 EB-3-10/30/06, EB-4-10/31/06, and EB-5-11/1/06 were identified as equipment blanks. No 1,2,3-trichloropropane was found in these blanks.

NASA JPL
1,2,3-Trichloropropane - Data Qualification Summary - SDG P0600177

SDG	Sample	Compound	Flag	A or P	Reason
P0600200	MW-19-4 MW-19-3 MW-17-5	1,2,3-Trichloropropane	J (all detects) UJ (all non-detects)	P	Surrogate spikes (%R)
P0600200	MW-19-5** MW-19-4 MW-19-3 EB-3-10/30/06 MW-17-5 MW-19-2 MW-19-1 EB-4-10/31/06 MW-17-4 MW-17-3 EB-5-11/1/06	1,2,3-Trichloropropane	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
1,2,3-Trichloropropane - Laboratory Blank Data Qualification Summary - SDG P0600177

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 2, 2006

LDC Report Date: January 11, 2007

Matrix: Water

Parameters: 1,2,3-Trichloropropane

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600187

Sample Identification

MW-17-2
MW-17-1
DUPE-1-4Q06
EB-6-11/2/06

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C using Selected Ion Monitoring (SIM) for 1,2,3-Trichloropropane.

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 30.0% for all compounds.

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 25.0% .

The percent difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,2,3-trichloropropane was 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) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
KWG0618851-LCS/D (All samples in SDG P0600187)	1,2,3-Trichloropropane	-	68 (70-130)	-	J (all detects) UJ (all non-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-17-2 and DUPE-1-4Q06 were identified as field duplicates. No 1,2,3-trichloropropane was detected in any of the samples.

XVII. Field Blanks

Sample EB-6-11/2/06 was identified as an equipment blank. No 1,2,3-trichloropropane was found in this blank.

NASA JPL
1,2,3-Trichloropropane - Data Qualification Summary - SDG P0600187

SDG	Sample	Compound	Flag	A or P	Reason
P0600200	MW-17-2 MW-17-1 DUPE-1-4Q06 EB-6-11/2/06	1,2,3-Trichloropropane	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
1,2,3-Trichloropropane - Laboratory Blank Data Qualification Summary - SDG P0600187

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 6 through November 10, 2006

LDC Report Date: January 11, 2007

Matrix: Water

Parameters: 1,2,3-Trichloropropane

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600200

Sample Identification

MW-3-5**
MW-3-4
EB-8-11/6/06
MW-3-3
MW-3-2
DUPE-2-4Q06
EB-9-11/7/06
MW-4-5**
MW-3-1
EB-10-11/8/06
MW-4-4
MW-4-3
EB-11-11/9/06
MW-4-2
MW-4-1
DUP3-3-4Q06
EB-12-11/10/06
MW-3-1MS
MW-3-1MSD

**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 sw 846 Method 8270C using Selected Ion Monitoring (SIM) for 1,2,3-Trichloropropane.

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 EPA Level IV review. EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by EPA 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 30.0% for all compounds.

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 25.0% .

The percent difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,2,3-trichloropropane was 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 with the following exceptions:

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
MW-3-4	1,2,3-Trichloropropane-d5	66 (70-130)	1,2,3-Trichloropropane	J (all detects) UJ (all non-detects)	P
MW-4-5**	1,2,3-Trichloropropane-d5	66 (70-130)	1,2,3-Trichloropropane	J (all detects) UJ (all non-detects)	P

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
MW-4-3	1,2,3-Trichloropropane-d5	62 (70-130)	1,2,3-Trichloropropane	J (all detects) UJ (all non-detects)	P
MW-4-1	1,2,3-Trichloropropane-d5	67 (70-130)	1,2,3-Trichloropropane	J (all detects) UJ (all non-detects)	P

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) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
KWG0619585-LCS/D (EB-10-11/8/06 MW-4-4 MW-4-3 EB-11-11/9/06 MW-4-2 MW-4-1 DUP3-3-4Q06 EB-12-11/10/06 KWG0619585-3)	1,2,3-Trichloropropane	64 (70-130)	-	-	J (all detects) UJ (all non-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 EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA Level III criteria.

XII. Compound Quantitation and CRQLs

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

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA 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-3-3 and DUPE-2-4Q06 and samples MW-4-2 and DUP3-3-4Q06 were identified as field duplicates. No 1,2,3-Trichloropropane was detected in any of the samples.

XVII. Field Blanks

Samples EB-8-11/6/06, EB-9-11/7/06, EB-10-11/8/06, EB-11-11/9/06, and EB-12-11/10/06 were identified as equipment blanks. No 1,2,3-trichloropropane was found in these blanks.

NASA JPL
1,2,3-Trichloropropane - Data Qualification Summary - SDG P0600200

SDG	Sample	Compound	Flag	A or P	Reason
P0600200	MW-3-4 MW-4-5** MW-4-3 MW-4-1	1,2,3-Trichloropropane	J (all detects) UJ (all non-detects)	P	Surrogate spikes (%R)
P0600200	EB-10-11/8/06 MW-4-4 MW-4-3 EB-11-11/9/06 MW-4-2 MW-4-1 DUP3-3-4Q06 EB-12-11/10/06	1,2,3-Trichloropropane	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
1,2,3-Trichloropropane - Laboratory Blank Data Qualification Summary - SDG P0600200

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 13 through November 14, 2006

LDC Report Date: January 11, 2007

Matrix: Water

Parameters: 1,2,3-Trichloropropane

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600233

Sample Identification

MW-18-5
MW-18-4
MW-18-2
EB-13-11/13/06
MW-18-3
MW-18-1
EB-14-11/14/06
MW-18-3MS
MW-18-3MSD

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C using Selected Ion Monitoring (SIM) for 1,2,3-Trichloropropane.

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 30.0% for all compounds.

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 25.0% .

The percent difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,2,3-trichloropropane was 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 with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-18-3MS/MSD (MW-18-3)	1,2,3-Trichloropropane	60 (70-130)	64 (70-130)	-	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

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

Samples EB-13-11/13/06 and EB-14-11/14/06 was identified as equipment blanks. No 1,2,3-trichloropropane was found in these blanks.

NASA JPL
1,2,3-Trichloropropane - Data Qualification Summary - SDG P0600233

SDG	Sample	Compound	Flag	A or P	Reason
P0600200	MW-18-5 MW-18-4 MW-18-2 EB-13-11/13/06 MW-18-3 MW-18-1 EB-14-11/14/06	1,2,3-Trichloropropane	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
1,2,3-Trichloropropane - Laboratory Blank Data Qualification Summary - SDG P0600233

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16010

Hexavalent Chromium

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: October 26 through October 27, 2006

LDC Report Date: January 8, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600159

Sample Identification

MW-21-5
MW-21-4
MW-21-3**
MW-21-2
MW-21-1
EB-1-10/26/06
MW-20-5
MW-20-4
MW-20-3
MW-20-2
MW-20-1
EB-2-10/27/06
MW-21-1MS
MW-21-1MSD
MW-20-5MS
MW-20-5MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 16 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 hexavalent chromium 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 with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-20-5MS/MSD (MW-20-5 MW-20-4 MW-20-3 MW-20-2 MW-20-1 EB-2-10/27/06)	Hexavalent chromium	48 (85-115)	48 (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

No field duplicates were identified in this SDG.

X. Field Blanks

Samples EB-1-10/26/06 and EB-2-10/27/06 were identified as equipment blanks. No hexavalent chromium was found in these blanks.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0600159

SDG	Sample	Analyte	Flag	A or P	Reason
P0600159	MW-20-5 MW-20-4 MW-20-3 MW-20-2 MW-20-1 EB-2-10/27/06	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 P0600159

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: October 30 through November 1, 2006

LDC Report Date: January 8, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600177

Sample Identification

MW-19-5**
MW-19-4
MW-19-3
EB-3-10/30/06
MW-17-5
MW-19-2
MW-19-1
EB-4-10/31/06
MW-17-4
MW-17-3
EB-5-11/1/06
MW-19-5MS
MW-19-5MSD
MW-17-5MS
MW-17-5MSD
MW-17-4MS
MW-17-4MSD

**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 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 hexavalent chromium 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) 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-3-10/30/06, EB-4-10/31/06, and samples EB-5-11/1/06 were identified as equipment blanks. No hexavalent chromium was found in these blanks.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0600177

No Sample Data Qualified in this SDG

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0600177

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 2 through November 3, 2006

LDC Report Date: January 8, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600187

Sample Identification

MW-17-2
MW-17-1
DUPE-1-4Q06
EB-6-11/2/06
MW-14-5
MW-14-4
MW-14-3
MW-14-2
MW-14-1
EB-7-11/3/06
MW-17-2MS
MW-17-2MSD
MW-14-2MS
MW-14-2MSD

Introduction

This data review covers 14 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 hexavalent chromium 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) 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-17-2 and DUPE-1-4Q06 were identified as field duplicates. No hexavalent chromium was detected in any of the samples.

X. Field Blanks

Samples EB-6-11/2/06 and EB-7-11/3/06 were identified as equipment blanks. No hexavalent chromium was found in these blanks.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0600187

No Sample Data Qualified in this SDG

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0600187

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 6 through November 10, 2006

LDC Report Date: January 8, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600200

Sample Identification

MW-3-5**	EB-9-11/7/06MS
MW-3-4	EB-9-11/7/06MSD
EB-8-11/6/06	MW-3-1MS
MW-3-3	MW-3-1MSD
MW-3-2	MW-4-4MS
DUPE-2-4Q06	MW-4-4MSD
EB-9-11/7/06	MW-4-2MS
MW-4-5**	MW-4-2MSD
MW-3-1	
EB-10-11/8/06	
SB-1-11/8/06	
MW-4-4	
MW-4-3	
EB-11-11/9/06	
MW-4-2	
MW-4-1	
DUP3-3-4Q06	
EB-12-11/10/06	
EB-8-11/6/06MS	
EB-8-11/6/06MSD	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 28 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 hexavalent chromium 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 with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-4-4MS/MSD (MW-4-4 MW-4-3 EB-11-11/9/06)	Hexavalent chromium	116 (85-115)	-	-	J (all 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-3-3 and DUPE-2-4Q06 and samples MW-4-2 and DUP3-3-4Q06 were identified as field duplicates. No hexavalent chromium was detected in any of the samples.

X. Field Blanks

Samples EB-8-11/6/06, EB-9-11/7/06, EB-10-11/8/06, EB-11-11/9/06, and EB-12-11/10/06 were identified as equipment blanks. No hexavalent chromium was found in these blanks.

Sample SB-1-11/8/06 was identified as a source blank. No hexavalent chromium was found in this blank.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0600200

SDG	Sample	Analyte	Flag	A or P	Reason
P0600200	MW-4-4 MW-4-3 EB-11-11/9/06	Hexavalent chromium	J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0600200

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 13 through November 17, 2006

LDC Report Date: January 8, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600233

Sample Identification

MW-18-5	MW-18-5MS
MW-18-4	MW-18-5MSD
MW-18-2	MW-18-3MS
EB-13-11/13/06	MW-18-3MSD
MW-18-3	MW-11-5MS
MW-18-1	MW-11-5MSD
EB-14-11/14/06	MW-12-5MS
MW-11-5	MW-12-5MSD
MW-11-4	
MW-11-3	
MW-11-2	
MW-11-1	
DUPE-4-4Q06	
EB-15-11/16/06	
MW-12-5	
MW-12-4	
MW-12-3	
MW-12-2**	
MW-12-1	
EB-16-11/17/06	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 28 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 hexavalent chromium 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) 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-11-1 and DUPE-4-4Q06 were identified as field duplicates. No hexavalent chromium was detected in any of the samples.

X. Field Blanks

Samples EB-13-11/13/06, EB-14-11/14/06, EB-15-11/16/06, and samples EB-16-11/17/06 were identified as equipment blanks. No hexavalent chromium was found in these blanks.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0600233

No Sample Data Qualified in this SDG

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0600233

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 20 through November 21, 2006

LDC Report Date: January 8, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600257

Sample Identification

MW-22-5
MW-22-4
MW-22-3
MW-22-2
MW-22-1
DUPE-5-4Q06
MW-23-5**
MW-23-4
MW-23-3
MW-23-2
MW-23-1
EB-18-11/21/06
MW-22-1MS
MW-22-1MSD
MW-23-2MS
MW-23-2MSD
EB-17-11/20/06

**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 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 hexavalent chromium 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) 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-22-1 and DUPE-5-4Q06 were identified as field duplicates. No hexavalent chromium was detected in any of the samples.

X. Field Blanks

Samples EB-18-11/21/06 and EB-17-11/20/06 were identified as equipment blanks. No hexavalent chromium was found in these blanks.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0600257

No Sample Data Qualified in this SDG

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0600257

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16010

1,2-Dibromomethane & 1,2-Dibromo-3-chloropropane

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 1, 2006

LDC Report Date: January 2, 2007

Matrix: Water

Parameters: 1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600177

Sample Identification

MW-17-4
MW-17-5
MW-17-3
MW-19-5
MW-19-4
MW-19-3
MW-19-2
MW-19-1
EB-5-11/1/06
TB-5-11/1/06

Introduction

This data review covers 10 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 504.1 for 1,2-Dibromoethane and 1,2-Dibromo-3-chloropropane.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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

Initial calibration of compounds was performed as required by method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were within QC limits.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 30.0% QC limits with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
11/15/06	1,2-Dibromoethane	35	MW-17-5	J (all detects) UJ (all non-detects)	A
	1,2-Dibromo-3-chloropropane	35		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.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane was found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were not required by the method.

b. 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.

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

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 TB-5-11/1/06 was identified as a trip blank. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane contaminants were found in this blank.

Sample EB-5-11/1/06 was identified as an equipment blank. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane contaminants were found in this blank.

NASA JPL
1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane - Data Qualification Summary - SDG P0600177

SDG	Sample	Compound	Flag	A or P	Reason
P0600177	MW-17-5	1,2-Dibromoethane 1,2-Dibromo-3-chloropropane	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

NASA JPL
1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane - Laboratory Blank Data Qualification Summary - SDG P0600177

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 2, 2006

LDC Report Date: January 2, 2007

Matrix: Water

Parameters: 1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600187

Sample Identification

MW-17-2
MW-17-1
DUPE-1-4Q06
EB-6-11/2/06
TB-6-11/2/06
MW-17-2MS
MW-17-2MSD

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 504.1 for 1,2-Dibromoethane and 1,2-Dibromo-3-chloropropane.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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

Initial calibration of compounds was performed as required by method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were within QC limits.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 30.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane was found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were not required by the method.

b. 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.

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

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-17-2 and DUPE-1-4Q06 were identified as field duplicates. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane was detected in any of the samples.

X. Field Blanks

Sample TB-6-11/2/06 was identified as a trip blank. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane contaminants were found in this blank.

Sample EB-6-11/2/06 was identified as an equipment blank. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane contaminants were found in this blank.

NASA JPL
1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane - Data Qualification Summary - SDG P0600187

No Sample Data Qualified in this SDG

NASA JPL
1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane - Laboratory Blank Data Qualification Summary - SDG P0600187

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 6 through November 10, 2006

LDC Report Date: January 11, 2007

Matrix: Water

Parameters: 1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600200

Sample Identification

MW-3-5**
MW-3-4
EB-8-11/6/06
TB-8-11/6/06
MW-3-3
MW-3-2
DUPEB-2-4Q06
EB-9-11/7/06
TB-9-11/7/06
MW-4-5**
MW-3-1
EB-10-11/8/06
TB-10-11/8/06
MW-4-4
MW-4-3
EB-11-11/9/06
TB-11-11/9/06
MW-4-2
MW-4-1
DUP3-3-4Q06
EB-12-11/10/06
TB-12-11/10/06
MW-3-1MS
MW-3-1MSD

** 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 SW 846 Method 504.1 for 1,2-Dibromoethane and 1,2-Dibromo-3-chloropropane.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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 EPA Level IV review. EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by EPA 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

Initial calibration of compounds was performed as required by method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were within QC limits.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 30.0% QC limits with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
11/14/06	1,2-Dibromo-3-chloropropane	33	MW-3-4 EB-8-11/6/06 TB-8-11/6/06 MW-3-3 MW-3-2 DUPEB-2-4Q06 EB-9-11/7/06 TB-9-11/7/06 MW-4-5**	J (all detects) UJ (all non-detects)	A
11/15/06 (1114A035)	1,2-Dibromoethane 1,2-Dibromo-3-chloropropane	36 40	MW-3-1 EB-10-11/8/06 TB-10-11/8/06 MW-4-4 MW-4-3 EB-11-11/9/06 TB-11-11/9/06 MW-4-2 MW-3-1MS MW-3-1MSD	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
11/15/06 (1114A046)	1,2-Dibromoethane 1,2-Dibromo-3-chloropropane	30 31	MW-4-1 DUP3-3-4Q06 EB-12-11/10/06 TB-12-11/10/06	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.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane was found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were not required by the method.

b. 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.

c. Laboratory Control Samples

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

V. Target Compound Identification

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

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA 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-3-3 and DUPEB-2-4Q06 and samples MW-4-2 and DUP3-3-4Q06 were identified as field duplicates. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane was detected in any of the samples.

X. Field Blanks

Samples TB-8-11/6/06, TB-9-11/7/06, TB-10-11/8/06, and TB-11-11/9/06 were identified as trip blanks. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane contaminants were found in these blanks.

Samples EB-8-11/6/06, EB-9-11/7/06, EB-10-11/8/06, and EB-11-11/9/06 were identified as equipment blanks. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane contaminants were found in these blanks.

NASA JPL
1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane - Data Qualification Summary - SDG P0600200

SDG	Sample	Compound	Flag	A or P	Reason
P0600200	MW-3-4 EB-8-11/6/06 TB-8-11/6/06 MW-3-3 MW-3-2 DUPEB-2-4Q06 EB-9-11/7/06 TB-9-11/7/06 MW-4-5**	1,2-Dibromo-3-chloropropane	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
P0600200	MW-3-1 EB-10-11/8/06 TB-10-11/8/06 MW-4-4 MW-4-3 EB-11-11/9/06 TB-11-11/9/06 MW-4-2 MW-4-1 DUP3-3-4Q06 EB-12-11/10/06 TB-12-11/10/06	1,2-Dibromoethane 1,2-Dibromo-3-chloropropane	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

NASA JPL
1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane - Laboratory Blank Data Qualification Summary - SDG P0600200

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 13 through November 14, 2006

LDC Report Date: January 2, 2007

Matrix: Water

Parameters: 1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600233

Sample Identification

MW-18-5
MW-18-4
MW-18-2
EB-13-11/13/06
TB-13-11/13/06
MW-18-3
MW-18-1
EB-14-11/14/06
TB-14-11/14/06
MW-18-3MS
MW-18-3MSD

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 504.1 for 1,2-Dibromoethane and 1,2-Dibromo-3-chloropropane.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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

Initial calibration of compounds was performed as required by method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were within QC limits.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 30.0% QC limits.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane was found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were not required by the method.

b. 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.

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

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

Samples TB-13-11/13/06 and TB-14-11/14/06 were identified as trip blanks. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane contaminants were found in these blanks.

Samples EB-13-11/13/06 and EB-14-11/14/06 was identified as equipment blanks. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane contaminants were found in these blanks.

NASA JPL
1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane - Data Qualification Summary - SDG P0600233

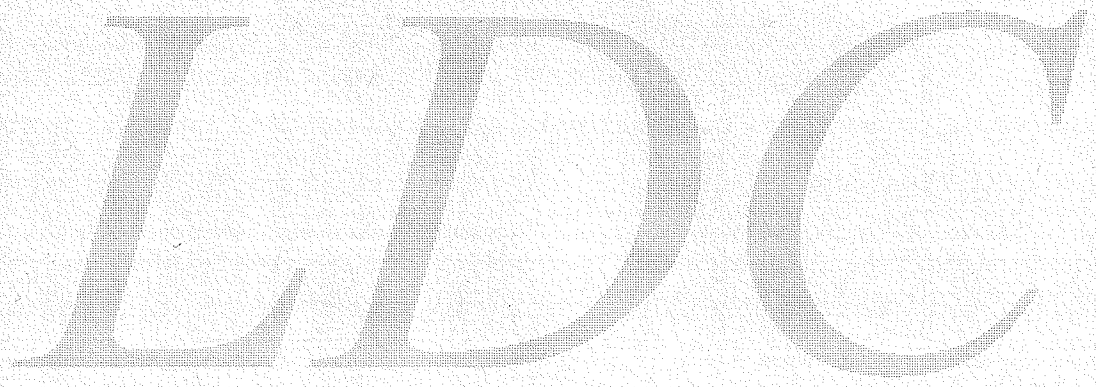
No Sample Data Qualified in this SDG

NASA JPL
1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane - Laboratory Blank Data Qualification Summary - SDG P0600233

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16010

Nitrosamines



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: October 30 through November 1, 2006

LDC Report Date: January 2, 2007

Matrix: Water

Parameters: Nitrosamines

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600177

Sample Identification

MW-19-5**
MW-19-4
MW-19-3
EB-3-10/30/06
MW-17-5
MW-19-2
MW-19-1
EB-4-10/31/06
MW-17-4
MW-17-3
EB-5-11/1/06

** Indicates sample underwent EPA Level IV review

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 521 for Nitrosamines.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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 EPA Level IV review. EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by EPA 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 8 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 30.0% for all compounds.

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
12/5/06 (1205001)	N-Nitrosopyrrolidine	34	MW-19-4 EB-3-10/30/06 MW-19-2 EB-5-11/1/06	J (all detects) UJ (all non-detects)	A
12/5/06 (1205012)	N-Nitrosopyrrolidine	59	MW-19-5**	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.

V. Blanks

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

Method Blank ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
KWG0619258-4	11/9/06	N-Nitrosodiethylamine	1.3 ng/L	All samples in SDG P0600177

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-19-5** (2X)	N-Nitrosodiethylamine	4.6 ug/L	4.6U 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

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 not within QC limits. Since there were no associated samples, no data were qualified.

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
KWG0619258-LCS	N-Nitrosopyrrolidine	147 (70-130)	All samples in SDG P0600177	J (all detects)	P
KWG0619258-LCS	N-Nitrosodiphenylamine	31 (70-130)	All samples in SDG P0600177	J (all detects) UJ (all non-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 EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA Level III criteria.

XII. Compound Quantitation and CRQLs

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

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

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

XV. Overall Assessment

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

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Samples EB-3-10/30/06, EB-4-10/31/06, and EB-5-11/1/06 were identified as equipment blanks. No nitrosamine contaminants were found in these blanks.

NASA JPL
Nitrosamines - Data Qualification Summary - SDG P0600177

SDG	Sample	Compound	Flag	A or P	Reason
P0600177	MW-19-5** MW-19-4 EB-3-10/30/06 MW-19-2 EB-5-11/1/06	N-Nitrosopyrrolidine	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
P0600177	MW-19-5** MW-19-4 MW-19-3 EB-3-10/30/06 MW-17-5 MW-19-2 MW-19-1 EB-4-10/31/06 MW-17-4 MW-17-3 EB-5-11/1/06	N-Nitrosopyrrolidine	J (all detects)	P	Laboratory control samples (%R)
P0600177	MW-19-5** MW-19-4 MW-19-3 EB-3-10/30/06 MW-17-5 MW-19-2 MW-19-1 EB-4-10/31/06 MW-17-4 MW-17-3 EB-5-11/1/06	N-Nitrosodiphenylamine	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Nitrosamines - Laboratory Blank Data Qualification Summary - SDG P0600177

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
P0600177	MW-19-5** (2X)	N-Nitrosodiethylamine	4.6U ug/L	A

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 2, 2006

LDC Report Date: January 2, 2007

Matrix: Water

Parameters: Nitrosamines

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600187

Sample Identification

MW-17-2
MW-17-1
DUPE-1-4Q06
EB-6-11/2/06
MW-17-2MS
MW-17-2MSD

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 521 for Nitrosamines.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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 8 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 30.0% for all compounds.

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
12/5/06 (1205001)	N-Nitrosopyrrolidine	34	MW-17-1 DUPE-1-4Q06 EB-6-11/2/06 MW-17-2MS MW-17-2MSD	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.

V. Blanks

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

Method Blank ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
KWG0619258-4	11/9/06	N-Nitrosodiethylamine	1.3 ng/L	All samples in SDG P0600187

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-17-2MS/MSD (MW-17-2)	N-Nitrosodimethylamine	63 (70-130)	-	-	J (all detects) UJ (all non-detects)	A
	N-Nitrosodiphenylamine	26 (70-130)	25 (70-130)	-	J (all detects) UJ (all non-detects)	

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
KWG0619258-LCS	N-Nitrosopyrrolidine	147 (70-130)	All samples in SDG P0600187	J (all detects)	P
KWG0619258-LCS	N-Nitrosodiphenylamine	31 (70-130)	All samples in SDG P0600187	J (all detects) UJ (all non-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

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

XVI. Field Duplicates

Samples MW-17-2 and DUPE-1-4Q06 were identified as field duplicates. No nitrosamines were detected in any of the samples.

XVII. Field Blanks

Sample EB-6-11/2/06 was identified as an equipment blank. No nitrosamine contaminants were found in this blank.

NASA JPL
Nitrosamines - Data Qualification Summary - SDG P0600187

SDG	Sample	Compound	Flag	A or P	Reason
P0600187	MW-17-1 DUPE-1-4Q06 EB-6-11/2/06	N-Nitrosopyrrolidine	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
P0600187	MW-17-2	N-Nitrosodimethylamine N-Nitrosodiphenylamine	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
P0600187	MW-17-2 MW-17-1 DUPE-1-4Q06 EB-6-11/2/06	N-Nitrosopyrrolidine	J (all detects)	P	Laboratory control samples (%R)
P0600187	MW-17-2 MW-17-1 DUPE-1-4Q06 EB-6-11/2/06	N-Nitrosodiphenylamine	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Nitrosamines - Laboratory Blank Data Qualification Summary - SDG P0600187

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 6 through November 10, 2006

LDC Report Date: January 2, 2007

Matrix: Water

Parameters: Nitrosamines

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600200

Sample Identification

MW-3-5**
MW-3-4
EB-8-11/6/06
MW-3-3
MW-3-2
DUPE-2-4Q06
EB-9-11/7/06
MW-4-5**
MW-3-1
EB-10-11/8/06
MW-4-4
MW-4-3
EB-11-11/9/06
MW-4-2
MW-4-1
DUP3-3-4Q06
EB-12-11/10/06
MW-3-1MS
MW-3-1MSD

** 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 521 for Nitrosamines.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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 EPA Level IV review. EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by EPA 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 8 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 30.0% for all compounds.

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
12/5/06	N-Nitrosopyrrolidine	59	MW-3-4 EB-8-11/6/06	J (all detects) UJ (all non-detects)	A
12/7/06	N-Nitrosodimethylamine	33	MW-3-5**	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.

V. Blanks

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

Method Blank ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
KWG0619258-4	11/9/06	N-Nitrosodiethylamine	1.3 ng/L	MW-3-5** MW-3-4 EB-8-11/6/06

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-3-1MS/MSD (MW-3-1)	N-Nitrosodiphenylamine	23 (70-130)	24 (70-130)	-	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 with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
KWG0619258-LCS	N-Nitrosopyrrolidine	147 (70-130)	MW-3-5** MW-3-4 EB-8-11/6/06 KWG0619258-4	J (all detects)	P
KWG0619258-LCS	N-Nitrosodiphenylamine	31 (70-130)	MW-3-5** MW-3-4 EB-8-11/6/06 KWG0619258-4	J (all detects) UJ (all non-detects)	P

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
KWG0619857-LCS	N-Nitrosopyrrolidine	131 (70-130)	MW-3-3 MW-3-2 DUPE-2-4Q06 EB-9-11/7/06 MW-4-5** MW-3-1 EB-10-11/8/06 MW-4-4 MW-4-3 EB-11-11/9/06 MW-4-2 MW-4-1 DUP3-3-4Q06 EB-12-11/10/06 KWG0619857-4	J (all detects)	P
KWG0619857-LCS	N-Nitrosodiphenylamine	34 (70-130)	MW-3-3 MW-3-2 DUPE-2-4Q06 EB-9-11/7/06 MW-4-5** MW-3-1 EB-10-11/8/06 MW-4-4 MW-4-3 EB-11-11/9/06 MW-4-2 MW-4-1 DUP3-3-4Q06 EB-12-11/10/06 KWG0619857-4	J (all detects) UJ (all non-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 EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA Level III criteria.

XII. Compound Quantitation and CRQLs

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

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

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

XV. Overall Assessment

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

XVI. Field Duplicates

Samples MW-3-3 and DUPE-2-4Q06 and samples MW-4-2 and DUP3-3-4Q06 were identified as field duplicates. No nitrosamines were detected in any of the samples with the following exceptions:

Compound	Concentration (ng/L)		RPD
	MW-3-3	DUPE-2-4Q06	
N-Nitrosodiethylamine	2.0	2.0U	200

XVII. Field Blanks

Samples EB-8-11/6/06, EB-9-11/7/06, EB-10-11/8/06, EB-11-11/9/06, and EB-12-11/10/06 were identified as equipment blanks. No nitrosamine contaminants were found in these blanks.

NASA JPL
Nitrosamines - Data Qualification Summary - SDG P0600200

SDG	Sample	Compound	Flag	A or P	Reason
P0600200	MW-3-4 EB-8-11/6/06	N-Nitrosopyrrolidine	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
P0600200	MW-3-5**	N-Nitrosodimethylamine	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
P0600200	MW-3-1	N-Nitrosodiphenylamine	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
P0600200	MW-3-5** MW-3-4 EB-8-11/6/06 MW-3-3 MW-3-2 DUPE-2-4Q06 EB-9-11/7/06 MW-4-5** MW-3-1 EB-10-11/8/06 MW-4-4 MW-4-3 EB-11-11/9/06 MW-4-2 MW-4-1 DUP3-3-4Q06 EB-12-11/10/06	N-Nitrosopyrrolidine	J (all detects)	P	Laboratory control samples (%R)
P0600200	MW-3-5** MW-3-4 EB-8-11/6/06 MW-3-3 MW-3-2 DUPE-2-4Q06 EB-9-11/7/06 MW-4-5** MW-3-1 EB-10-11/8/06 MW-4-4 MW-4-3 EB-11-11/9/06 MW-4-2 MW-4-1 DUP3-3-4Q06 EB-12-11/10/06	N-Nitrosodiphenylamine	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Nitrosamines - Laboratory Blank Data Qualification Summary - SDG P0600200

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 13 through November 14, 2006

LDC Report Date: January 2, 2007

Matrix: Water

Parameters: Nitrosamines

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600233

Sample Identification

MW-18-5
MW-18-4
MW-18-2
EB-13-11/13/06
MW-18-3
MW-18-1
EB-14-11/14/06
MW-18-3MS
MW-18-3MSD

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 521 for Nitrosamines.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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 8 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 30.0% for all compounds.

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.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No nitrosamine 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

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-18-3MS/MSD (MW-18-3)	N-Nitrosodimethylamine	66 (70-130)	57 (70-130)	-	J (all detects) UJ (all non-detects)	A
	N-Nitrosodiphenylamine	29 (70-130)	32 (70-130)	-	J (all detects) UJ (all non-detects)	

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
KWG0619857-LCS	N-Nitrosopyrrolidine	131 (70-130)	MW-18-5 MW-18-4 MW-18-2 EB-13-11/13/06 KWG0619857-4	J (all detects)	P
KWG0619857-LCS	N-Nitrosodiphenylamine	34 (70-130)	MW-18-5 MW-18-4 MW-18-2 EB-13-11/13/06 KWG0619857-4	J (all detects) UJ (all non-detects)	P
KWG0620320-LCS	N-Nitrosodiphenylamine	26 (70-130)	MW-18-3 MW-18-1 EB-14-11/14/06 KWG0620320-4	J (all detects) UJ (all non-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

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

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Samples EB-13-11/13/06 and EB-14-11/14/06 were identified as equipment blanks. No nitrosamine contaminants were found in these blanks.

NASA JPL
Nitrosamines - Data Qualification Summary - SDG P0600233

SDG	Sample	Compound	Flag	A or P	Reason
P0600233	MW-18-3	N-Nitrosodimethylamine N-Nitrosodiphenylamine	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
P0600233	MW-18-5 MW-18-4 MW-18-2 EB-13-11/13/06	N-Nitrosopyrrolidine	J (all detects)	P	Laboratory control samples (%R)
P0600233	MW-18-5 MW-18-4 MW-18-2 EB-13-11/13/06 MW-18-3 MW-18-1 EB-14-11/14/06	N-Nitrosodiphenylamine	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Nitrosamines - Laboratory Blank Data Qualification Summary - SDG P0600233

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

January 11, 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 January 5, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 16073:

SDG #	Fraction
JPL26	Volatiles, 1,4-Dioxane, Chromium & Tin, Wet Chemistry, Nitroaromatics & Nitramines

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

1 WEEK TAT

Attachment 1

PO 190288 10/90

LDC #16073 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		1,4-Dioxane (8270C)		Cr (200.8)		Sn (200.8)		Nitro. & Nitra. (8330)		CLO_4 (314.0)		Diss. Si (370.1)		Cl,SO_4 (300.0)		NO_3-N NO_2-N (300.0)		O-PO_4 (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	W	S
A	JPL26	01/05/07	01/12/07	22	0	8	0	20	0	7	0	7	0	20	0	5	0	7	0	7	0	7	0																
A	JPL26	01/05/07	01/12/07	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	1	0	1	0																
Total	B/LR			23	0	8	0	21	0	7	0	7	0	21	0	5	0	8	0	8	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	116

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

16073ST.wpd

NASA JPL
Data Validation Reports
LDC# 16073

Volatiles

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 30 through December 7, 2006

LDC Report Date: January 9, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL26

Sample Identification

MW-26-2
MW-26-1
EB-21-11/30/06
TB-21-11/30/06
MW-5
MW-6
TB-22-12/1/06
MW-1
MW-9
MW-15
DUPE-7-4Q06
TB-23-12/4/06
MW-7
MW-16**
TB-24-12/5/06
MW-13
MW-8
TB-25-12/6/06
MW-10
DUPE-8-4Q06
TB-12/7/06
MW-7MS
MW-7MSD

**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 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.

All samples were received in good condition with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
MW-6	All TCL compounds	Air bubbles were apparent in the sample containers.	There should be no air bubbles in the sample containers.	J (all detects) UJ (all non-detects)	A

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
12/4/06	Dichlorodifluoromethane 2-Butanone 4-Methyl-2-pentanone	37.62 53.24 41.78	MW-26-2 MW-26-1 EB-21-11/30/06 TB-21-11/30/06 MW-5 MW-6 TB-22-12/1/06 B120406MVOWY1	J (all detects) UJ (all non-detects)	A
12/12/06	Dichlorodifluoromethane	40.33	MW-1 MW-9 MW-15 DUPE-7-4Q06 TB-23-12/4/06 MW-7 MW-16** TB-24-12/5/06 MW-13 MW-8 TB-25-12/6/06 MW-10 DUPE-8-4Q06 TB-12/7/06 MW-7MS MW-7MSD B121206MVOWY1	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 with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/8/06	Dichlorodifluoromethane	36.70	MW-1 MW-9 MW-15 DUPE-7-4Q06 TB-23-12/4/06 MW-7 MW-16** TB-24-12/5/06 MW-13 MW-8 TB-25-12/6/06 MW-10 DUPE-8-4Q06 TB-12/7/06 MW-7MS MW-7MSD B121206MVOWY1	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
S120406MVOWY1	2-Butanone cis-1,3-Dichloropropene 4-Methyl-2-pentanone	166(60-140) 148 (73-122) 148 (60-140)	MW-26-2 MW-26-1 EB-21-11/30/06 TB-21-11/30/06 MW-5 MW-6 TB-22-12/1/06 B120406MVOWY1	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-10 and DUPE-8-4Q06 and samples MW-15 and DUPE-7-4Q06 was identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-10	DUPE-8-4Q06	
1,1-Dichloroethane	0.77	0.70	10
Chloroform	0.90	0.86	5
Trichloroethene	7.6	7.7	1
Tetrachloroethene	1.4	1.4	0

XVII. Field Blanks

Samples TB-21-11/30/06, TB-22-12/1/06, TB-23-12/4/06, TB-24-12/5/06, TB-25-12/6/06, and TB-12/7/06 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-25-12/6/06	2-Butanone	14

Sample EB-21-11/30/06 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL26

SDG	Sample	Compound	Flag	A or P	Reason
JPL26	MW-6	All TCL compounds	J (all detects) UJ (all non-detects)	A	Sample condition
JPL26	MW-26-2 MW-26-1 EB-21-11/30/06 TB-21-11/30/06 MW-5 MW-6 TB-22-12/1/06	Dichlorodifluoromethane 2-Butanone 4-Methyl-2-pentanone	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL26	MW-1 MW-9 MW-15 DUPE-7-4Q06 TB-23-12/4/06 MW-7 MW-16** TB-24-12/5/06 MW-13 MW-8 TB-25-12/6/06 MW-10 DUPE-8-4Q06 TB-12/7/06	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL26	MW-1 MW-9 MW-15 DUPE-7-4Q06 TB-23-12/4/06 MW-7 MW-16** TB-24-12/5/06 MW-13 MW-8 TB-25-12/6/06 MW-10 DUPE-8-4Q06 TB-12/7/06	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (ICV %D)
JPL26	MW-26-2 MW-26-1 EB-21-11/30/06 TB-21-11/30/06 MW-5 MW-6 TB-22-12/1/06	2-Butanone cis-1,3-Dichloropropene 4-Methyl-2-pentanone	J (all detects) J (all detects) J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL26

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16073

1,4-Dioxane

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 30 through December 7, 2006

LDC Report Date: January 8, 2007

Matrix: Water

Parameters: 1,4-Dioxane

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL26

Sample Identification

MW-3-2
MW-5
MW-10
DUPE-8-4Q06
MW-5MS
MW-5MSD
MW-10MS
MW-10MSD

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 1,4-Dioxane.

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 30.0% for all compounds.

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 25.0% .

The percent difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,4-Dioxane was 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.

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-10 and DUPE-8-4Q06 were identified as field duplicates. No 1,4-Dioxane was detected in any of the samples.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
1,4-Dioxane - Data Qualification Summary - SDG JPL26

No Sample Data Qualified in this SDG

NASA JPL
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG JPL26

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16073

Chromium & Tin

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 30 through December 7, 2006

LDC Report Date: January 9, 2007

Matrix: Water

Parameters: Chromium & Tin

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL26

Sample Identification

MW-26-2
MW-26-1
EB-21-11/30/06
MW-5
MW-6
MW-1
MW-9
MW-15
DUPE-7-4Q06
MW-7
MW-16**
MW-13
MW-8
MW-10
DUPE-8-4Q06
MW-5MS
MW-5MSD
MW-7MS
MW-7MSD
MW-10MS
MW-10MSD

**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 200.8 for Chromium and Tin.

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 with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
PB (prep blank)	Chromium	1.58 ug/L	MW-6 DUPE-7-4Q06 MW-16** MW-13 MW-8 MW-10 DUPE-8-4Q06

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

Sample	Analyte	Reported Concentration	Modified Final Concentration
MW-6	Chromium	5.81 ug/L	5.81U ug/L
DUPE-7-4Q06	Chromium	3.90 ug/L	3.90U ug/L

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-15 and DUPE-7-4Q06 and samples MW-10 and DUPE-8-4Q06 were identified as field duplicates. No chromium or tin was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-15	DUPE-7-4Q06	
Chromium	3.29	3.90	17

Analyte	Concentration (ug/L)		RPD
	MW-10	DUPE-8-4Q06	
Chromium	14.6	14.0	4

XIV. Field Blanks

Sample EB-21-11/30/06 was identified as an equipment blank. No chromium or tin was detected in this blank.

NASA JPL
Chromium & Tin - Data Qualification Summary - SDG JPL26

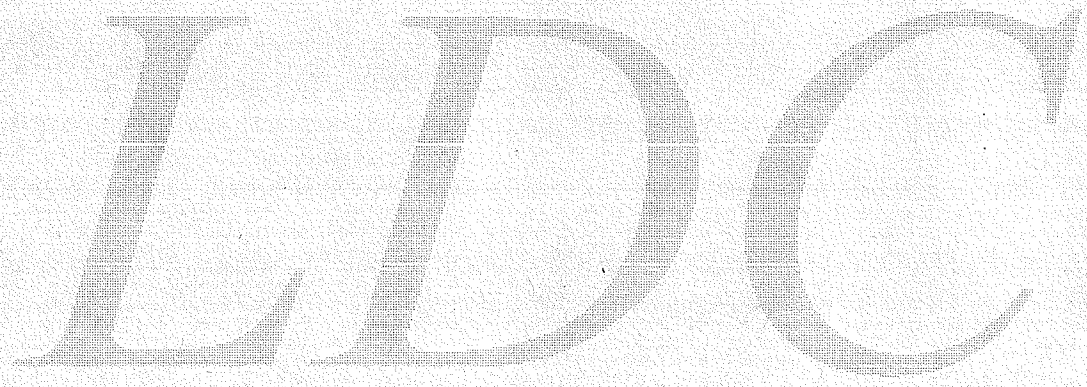
No Sample Data Qualified in this SDG

NASA JPL
Chromium & Tin - Laboratory Blank Data Qualification Summary - SDG JPL26

SDG	Sample	Analyte	Modified Final Concentration	A or P
JPL26	MW-6	Chromium	5.81U ug/L	A
JPL26	DUPE-7-4Q06	Chromium	3.90U ug/L	A

NASA JPL
Data Validation Reports
LDC# 16073

Wet Chemistry



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 30 through December 7, 2006

LDC Report Date: January 9, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL26

Sample Identification

MW-26-2
MW-26-1
EB-21-11/30/06
MW-5
MW-6
MW-1
MW-9
MW-15
DUPE-7-4Q06
MW-7
MW-16**
MW-13
MW-8
MW-10
DUPE-8-4Q06
EB-21-11/30/06MS
EB-21-11/30/06MSD
MW-5MS
MW-5MSD
MW-7MS
MW-7MSD
MW-13MS
MW-13MSD
MW-8MS
MW-8MSD
MW-10MS
MW-10MSD

**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, EPA Method 314.0 for Perchlorate, and EPA Method 370.1 for Dissolved Silica as Silicon.

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 with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
MW-7	Nitrate as N Nitrite as N Orthophosphate	69.25 hours	48 hours	J (all detects) UJ (all non-detects)	P
MW-16**	Nitrate as N	67.75 hours	48 hours	J (all detects) UJ (all non-detects)	P
MW-16**	Nitrite as N Orthophosphate	67.50 hours	48 hours	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P
MW-13	Nitrate as N	63.00 hours	48 hours	J (all detects) UJ (all non-detects)	P
MW-13	Nitrite as N Orthophosphate	62.75 hours	48 hours	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P

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-8MS/MSD (MW-7 MW-16** MW-8)	Sulfate	112 (90-110)	-	-	J (all detects)	A
MW-13MS/MSD (MW-13)	Chloride	-	86 (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-15 and DUPE-7-4Q06 and samples MW-10 and DUPE-8-4Q06 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	MW-10	DUPE-8-4Q06	
Perchlorate	4.0U ug/L	5.6 ug/L	200

Analyte	Concentration		RPD
	MW-10	DUPE-8-4Q06	
Silica as silicon	45 mg/L	49 mg/L	9

X. Field Blanks

Sample EB-21-11/30/06 was identified as an equipment blank. No contaminant concentrations were found in this blank.

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL26

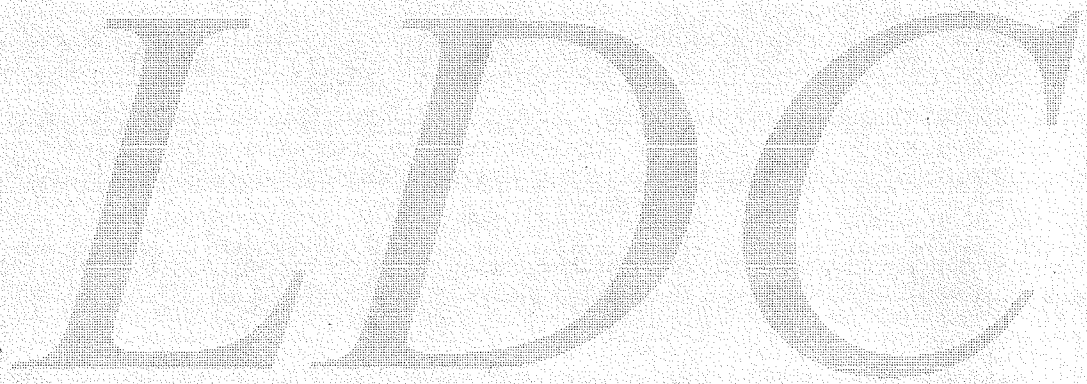
SDG	Sample	Analyte	Flag	A or P	Reason
JPL26	MW-7 MW-16** MW-13	Nitrate as N Nitrite as N Orthophosphate	J (all detects) UJ (all non-detects)	P	Technical holding times
JPL26	MW-7 MW-16** MW-8	Sulfate	J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL26	MW-13	Chloride	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL26

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16073

Nitroaromatics & Nitramines



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: December 1 through December 7, 2006

LDC Report Date: January 8, 2007

Matrix: Water

Parameters: Nitroaromatics and Nitramines

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL26

Sample Identification

MW-5
MW-10
DUPE-8-4Q06
MW-5MS
MW-5MSD
MW-10MS
MW-10MSD

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8330 for Nitroaromatics and Nitramines.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

b. Calibration Verification

Calibration verification was performed at the required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

III. Blanks

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

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. 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.

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

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-10 and DUPE-8-4Q06 were identified as field duplicates. No nitroaromatics or nitramines were detected in any of the samples.

X. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Nitroaromatics and Nitramines - Data Qualification Summary - SDG JPL26

No Sample Data Qualified in this SDG

NASA JPL
Nitroaromatics and Nitramines - Laboratory Blank Data Qualification Summary - SDG JPL26

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

January 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 January 5, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 16074:

SDG #	Fraction
JPL25	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 #16074 (Battelle-San Diego / NASA JPL)

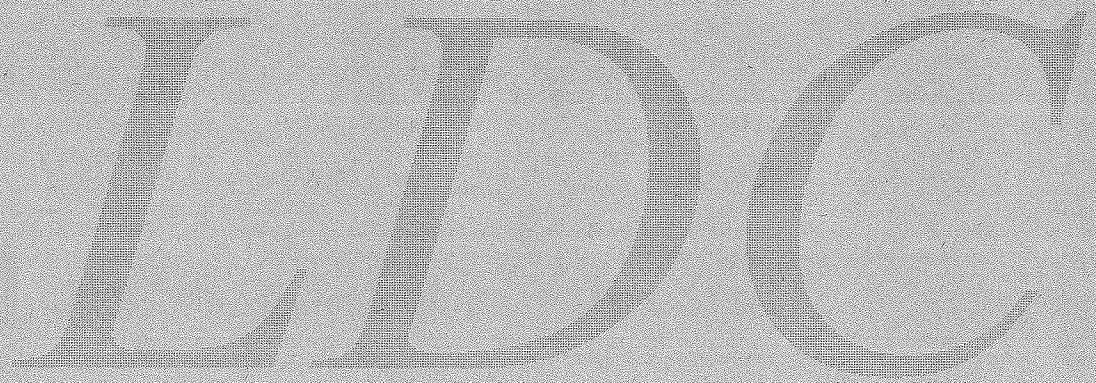
LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		Cr (200.8)		CLO_4 (314.0)		Cl (300.0)		SO_4 (300.0)		NO_3-N NO_2-N (300.0)		O-PO_4 (300.0)																					
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL25	01/05/07	01/26/07	24	0	21	0	21	0	6	0	3	0	3	0	3	0																				
A	JPL25	01/05/07	01/26/07	2	0	2	0	2	0	0	0	0	0	0	0	0	0																				
Total	B/LR			26	0	23	0	23	0	6	0	3	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	87

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

16074ST.wpd

NASA JPL
Data Validation Reports
LDC# 16074

Volatiles



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 21 through November 29, 2006

LDC Report Date: January 11, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL25

Sample Identification

MW-23-5**	EB-20-11/29/06
MW-23-4	TB-20-11/29/06
MW-23-3	MW-23-2MS
MW-23-2	MW-23-2MSD
MW-23-1	MW-25-2MS
EB-18-11/21/06	MW-25-2MSD
TB-18-11/21/06	
MW-24-5	
MW-24-4	
MW-24-3	
MW-24-2	
MW-24-1	
EB-19-11/28/06	
TB-19-11/28/06	
MW-25-5	
MW-25-4**	
MW-25-3	
MW-25-2	
MW-25-1	
Dupe-6-4Q06	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 26 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
11/27/06	Dichlorodifluoromethane	53.68	MW-23-5** MW-23-4	J (all detects) UJ (all non-detects)	A
	2-Butanone	45.02	MW-23-3 MW-23-2 MW-23-2MS MW-23-2MSD B112706MVOWY1	J (all detects) UJ (all non-detects)	

Date	Compound	%D	Associated Samples	Flag	A or P
11/29/06	Trichlorofluoromethane	31.04	MW-23-1 EB-18-11/21/06 TB-18-11/21/06 MW-24-5 TB-19-11/28/06 B112906MVOWY1	J (all detects) UJ (all non-detects)	A
12/1/06	2-Butanone 4-Methyl-2-pentanone	45.21 30.54	MW-24-4 MW-24-3 MW-24-2 MW-24-1 EB-19-11/28/06 MW-25-5 MW-25-4** MW-25-3 MW-25-2 MW-25-1 Dupe-6-4Q06 EB-20-11/29/06 TB-20-11/29/06 B120106MVOWY1	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
12/4/06	Dichlorodifluoromethane 2-Butanone 4-Methyl-2-pentanone Bromoform	37.62 53.24 41.78 30.35	MW-25-2MS MW-25-2MSD B120406MVOWY1	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.

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-23-2MS/MSD (MW-23-2)	Dichlorodifluoromethane	39 (60-140)	40 (60-140)	-	J (all detects) UJ (all non-detects)	A
MW-25-2MS/MSD (MW-25-2)	Chloroethane Trichlorofluoromethane 2-Butanone 4-Methyl-2-pentanone	- - 161 (60-140) 150 (60-140)	161 (60-140) 143 (60-140) 152 (60-140) 143 (60-140)	- - - -	J (all detects) J (all detects) J (all detects) J (all detects)	A
MW-25-2MS/MSD (MW-25-2)	2,2-Dichloropropane	6 (60-140)	7 (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 with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S112706MVOWY1	Dichlorodifluoromethane Tetrachloroethene	48 (60-140) 75 (80-116)	MW-23-5** MW-23-4 MW-23-3 MW-23-2 B112706MVOWY1	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P
S112706MVOWY1	2-Butanone	141 (60-140)	MW-23-5** MW-23-4 MW-23-3 MW-23-2 B112706MVOWY1	J (all detects)	P
S112906MVOWY1	Dichlorodifluoromethane	33 (60-140)	MW-23-1 EB-18-11/21/06 TB-18-11/21/06 MW-24-5 TB-19-11/28/06 B112906MVOWY1	J (all detects) UJ (all non-detects)	P
S112906MVOWY1	cis-1,3-Dichloropropene	134 (73-122)	MW-23-1 EB-18-11/21/06 TB-18-11/21/06 MW-24-5 TB-19-11/28/06 B112906MVOWY1	J (all detects)	P

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S120106MVOWY1	2-Butanone cis-1,3-Dichloropropene	146 (60-140) 140 (73-122)	MW-24-4 MW-24-3 MW-24-2 MW-24-1 EB-19-11/28/06 MW-25-5 MW-25-4** MW-25-3 MW-25-2 MW-25-1 Dupe-6-4Q06 EB-20-11/29/06 TB-20-11/29/06 B120106MVOWY1	J (all detects) J (all detects)	P
S120406MVOWY1	2-Butanone cis-1,3-Dichloropropene 4-Methyl-2-pentanone	166 (60-140) 148 (73-122) 148 (60-140)	B120406MVOWY1	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-25-1 and Dupe-6-4Q06 was identified as field duplicates. No volatiles were detected in any of the samples.

XVII. Field Blanks

Samples TB-18-11/21/06, TB-19-11/28/06, and samples TB-20-11/29/06 were identified as trip blanks. No volatile contaminants were found in these blanks.

Samples EB-18-11/21/06, EB-19-11/28/06, and samples EB-20-11/29/06 were identified as equipment blanks. No volatile contaminants were found in these blanks.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL25

SDG	Sample	Compound	Flag	A or P	Reason
JPL25	MW-23-5** MW-23-4 MW-23-3 MW-23-2	Dichlorodifluoromethane 2-Butanone	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL25	MW-23-1 EB-18-11/21/06 TB-18-11/21/06 MW-24-5 TB-19-11/28/06	Trichlorofluoromethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL25	MW-24-4 MW-24-3 MW-24-2 MW-24-1 EB-19-11/28/06 MW-25-5 MW-25-4** MW-25-3 MW-25-2 MW-25-1 Dupe-6-4Q06 EB-20-11/29/06 TB-20-11/29/06	2-Butanone 4-Methyl-2-pentanone	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL25	MW-23-2	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL25	MW-25-2	Chloroethane Trichlorofluoromethane 2-Butanone 4-Methyl-2-pentanone	J (all detects) J (all detects) J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL25	MW-25-2	2,2-Dichloropropane	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL25	MW-23-5** MW-23-4 MW-23-3 MW-23-2	Dichlorodifluoromethane Tetrachloroethene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JPL25	MW-23-5** MW-23-4 MW-23-3 MW-23-2	2-Butanone	J (all detects)	P	Laboratory control samples (%R)

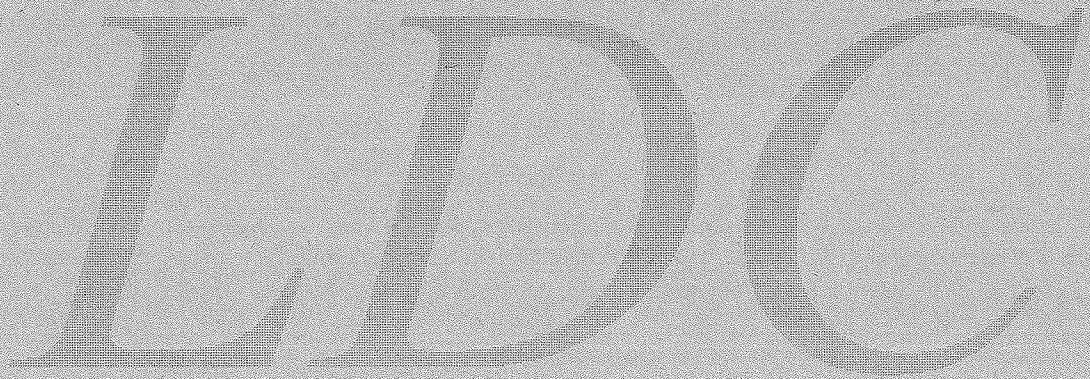
SDG	Sample	Compound	Flag	A or P	Reason
JPL25	MW-23-1 EB-18-11/21/06 TB-18-11/21/06 MW-24-5 TB-19-11/28/06	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JPL25	MW-23-1 EB-18-11/21/06 TB-18-11/21/06 MW-24-5 TB-19-11/28/06	cis-1,3-Dichloropropene	J (all detects)	P	Laboratory control samples (%R)
JPL25	MW-24-4 MW-24-3 MW-24-2 MW-24-1 EB-19-11/28/06 MW-25-5 MW-25-4** MW-25-3 MW-25-2 MW-25-1 Dupe-6-4Q06 EB-20-11/29/06 TB-20-11/29/06	2-Butanone cis-1,3-Dichloropropene	J (all detects) J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL25

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16074

Chromium



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 21 through November 29, 2006

LDC Report Date: January 19, 2007

Matrix: Water

Parameters: Chromium

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL25

Sample Identification

MW-23-5**	MW-23-2MSD
MW-23-4	MW-25-2MS
MW-23-3	MW-25-2MSD
MW-23-2	
MW-23-1	
EB-18-11/21/06	
MW-24-5	
MW-24-4	
MW-24-3	
MW-24-2	
MW-24-1	
EB-19-11/28/06	
MW-25-5	
MW-25-4**	
MW-25-3	
MW-25-2	
MW-25-1	
Dupe-6-4Q06	
EB-20-11/29/06	
MW-23-2MS	

**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
12/16/06	CCV9	Chromium	112.3 (90-110)	MW-25-2 MW-25-1 Dupe-6-4Q06 EB-20-11/29/06 MW-25-2MS MW-25-2MSD	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 with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Chromium	1.69 ug/L	EB-18-11/21/06 MW-24-4 EB-19-11/28/06 MW-25-2 MW-25-1 Dupe-6-4Q06 EB-20-11/29/06

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
EB-18-11/21/06	Chromium	2.20 ug/L	2.20U ug/L
MW-24-4	Chromium	2.64 ug/L	2.64U ug/L
EB-19-11/28/06	Chromium	2.19 ug/L	2.19U ug/L
MW-25-2	Chromium	3.65 ug/L	3.65U ug/L
MW-25-1	Chromium	2.39 ug/L	2.39U ug/L
Dupe-6-4Q06	Chromium	2.86 ug/L	2.86U ug/L
EB-20-11/29/06	Chromium	2.64 ug/L	2.64U ug/L

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 with the following exceptions:

Sample	Internal Standard	%R (Limits)	Analyte	Flag	A or P
MW-25-4**	Sc-45	125.549 (60-125)	Chromium	J (all detects) UJ (all non-detects)	P

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-25-1 and Dupe-6-4Q06 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-25-1	Dupe-6-4Q06	
Chromium	2.39	2.86	18

XIV. Field Blanks

Samples EB-18-11/21/06, EB-19-11/28/06 and EB-20-11/29/06 were identified as equipment blanks. No chromium was detected in these blanks with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-18-11/21/06	Chromium	2.20
EB-19-11/28/06	Chromium	2.19
EB-20-11/29/06	Chromium	2.64

NASA JPL
Chromium - Data Qualification Summary - SDG JPL25

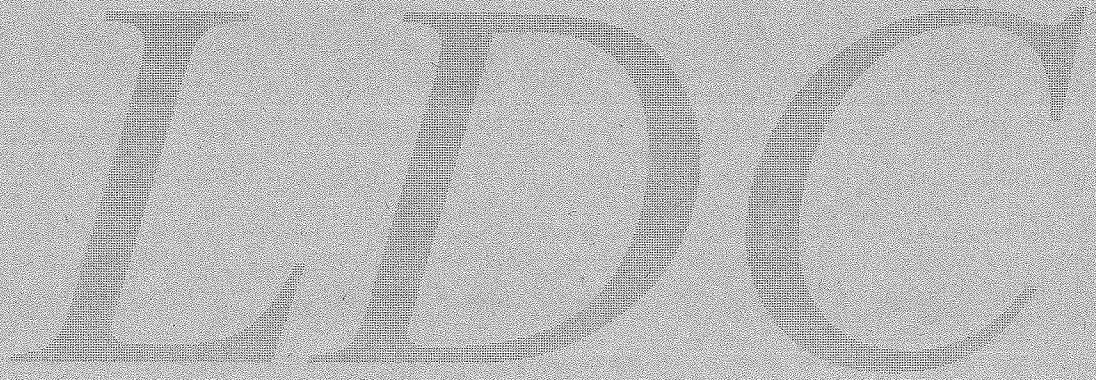
SDG	Sample	Analyte	Flag	A or P	Reason
JPL25	MW-25-2 MW-25-1 Dupe-6-4Q06 EB-20-11/29/06	Chromium	J (all detects)	P	Calibration (%R)
JPL25	MW-25-4**	Chromium	J (all detects) UJ (all non-detects)	P	Internal standards (%R)

NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL25

SDG	Sample	Analyte	Modified Final Concentration	A or P
JPL25	EB-18-11/21/06	Chromium	2.20U ug/L	A
JPL25	MW-24-4	Chromium	2.64U ug/L	A
JPL25	EB-19-11/28/06	Chromium	2.19U ug/L	A
JPL25	MW-25-2	Chromium	3.65U ug/L	A
JPL25	MW-25-1	Chromium	2.39U ug/L	A
JPL25	Dupe-6-4Q06	Chromium	2.86U ug/L	A
JPL25	EB-20-11/29/06	Chromium	2.64U ug/L	A

NASA JPL
Data Validation Reports
LDC# 16074

Wet Chemistry



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 21 through November 29, 2006

LDC Report Date: January 19, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL25

Sample Identification

MW-23-5**
MW-23-4
MW-23-3
MW-23-2
MW-23-1
EB-18-11/21/06
MW-24-5
MW-24-4
MW-24-3
MW-24-2
MW-24-1
EB-19-11/28/06
MW-25-5
MW-25-4**
MW-25-3
MW-25-2
MW-25-1
Dupe-6-4Q06
EB-20-11/29/06
MW-23-2MS
MW-23-2MSD
MW-24-1MS
MW-24-1MSD
MW-24-1REMS
MW-24-1REMSD
MW-25-2MS
MW-25-2MSD

**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 with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
11/29/06	ICV	Orthophosphate	84.6 (90-110)	MW-24-1	J (all detects) UJ (all non-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. 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-24-1MS/MSD (MW-24-1)	Nitrate as N	35 (90-110)	58 (90-110)	85 (≤10)	J (all detects) UJ (all non-detects)	A
MW-24-1MS/MSD (MW-24-1)	Nitrite as N Orthophosphate Sulfate	0 (90-110) 0 (90-110) 216 (90-110)	92 (90-110) 94 (90-110) 0 (90-110)	200 (≤10) 200 (≤10) 86 (≤10)	J (all detects) R (all non-detects)	A
MW-24-1REMS/MSD (MW-24-1)	Chloride	-	87 (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 with the following exceptions:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS (MW-24-1)	Orthophosphate	84 (90-110)	-	-	J (all detects) UJ (all non-detects)	P

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-25-1 and Dupe-6-4Q06 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-25-1	Dupe-6-4Q06	
Perchlorate	8.5	8.0	6

X. Field Blanks

Samples EB-18-11/21/06, EB-19-11/28/06, and EB-20-11/29/06 were identified as equipment blanks. No contaminant concentrations were found in this blank.

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL25

SDG	Sample	Analyte	Flag	A or P	Reason
JPL25	MW-24-1	Orthophosphate	J (all detects) UJ (all non-detects)	P	Calibration (%R)
JPL25	MW-24-1	Nitrate as N	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)(RPD)
JPL25	MW-24-1	Nitrite as N Orthophosphate Sulfate	J (all detects) R (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)(RPD)
JPL25	MW-24-1	Chloride	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL25	MW-24-1	Orthophosphate	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL25

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

January 11, 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 January 8, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 16078:

SDG #	Fraction
P0600267	1,2,3-Trichloropropane, Hexavalent Chromium, 1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane, Nitrosamines

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

1 WEEK TAT

Attachment 1

PO 190288 10/90

LDC #16078 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	1,2,3-TCP (8270C -SIM)		EDB DBCP (504.1)		Nitro-samines (521)		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	W	S
A	P0600267	01/08/07	01/15/07	3	0	4	0	3	0	25	0																										
A	P0600267	01/08/07	01/15/07	0	0	0	0	0	0	1	0																										
Total	B/LR			3	0	4	0	3	0	26	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	36

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

NASA JPL
Data Validation Reports
LDC# 16078

1,2,3-Trichloropropane

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: December 1, 2006

LDC Report Date: January 9, 2007

Matrix: Water

Parameters: 1,2,3-Trichloropropane

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600267

Sample Identification

MW-5
MW-5MS
MW-5MSD

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA sw 846 Method 8270C using Selected Ion Monitoring (SIM) for 1,2,3-Trichloropropane.

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 30.0% for all compounds.

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 25.0% .

The percent difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,2,3-trichloropropane was 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.

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

No field blanks were identified in this SDG.

NASA JPL
1,2,3-Trichloropropane - Data Qualification Summary - SDG P0600267

No Sample Data Qualified in this SDG

NASA JPL
1,2,3-Trichloropropane - Laboratory Blank Data Qualification Summary - SDG P0600267

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16078

Hexavalent Chromium

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: November 28 through December 1, 2006

LDC Report Date: January 9, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600267

Sample Identification

MW-24-5
MW-24-4
MW-24-3
MW-24-2
MW-24-1
EB-19-11/28/06
MW-25-5
MW-25-4**
MW-25-3
MW-25-2
MW-25-1
DUPE-6-4Q06
EB-20-11/29/06
MW-26-2
MW-26-1
EB-21-11/30/06
MW-5
MW-6
MW-24-5MS
MW-24-5MSD
MW-25-2MS
MW-25-2MSD
EB-21-11/30/06MS
EB-21-11/30/06MSD
MW-5MS
MW-5MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 26 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 hexavalent chromium 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 with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-24-5MS/MSD (MW-24-5 MW-24-4 MW-24-3 MW-24-2 MW-24-1 EB-19-11/28/06)	Hexavalent chromium	76 (85-115)	77 (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-25-1 and DUPE-6-4Q06 were identified as field duplicates. No hexavalent chromium was detected in any of the samples.

X. Field Blanks

Samples EB-19-11/28/06, EB-20-11/29/06, and EB-21-11/30/06 were identified as equipment blanks. No hexavalent chromium was found in these blanks.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0600267

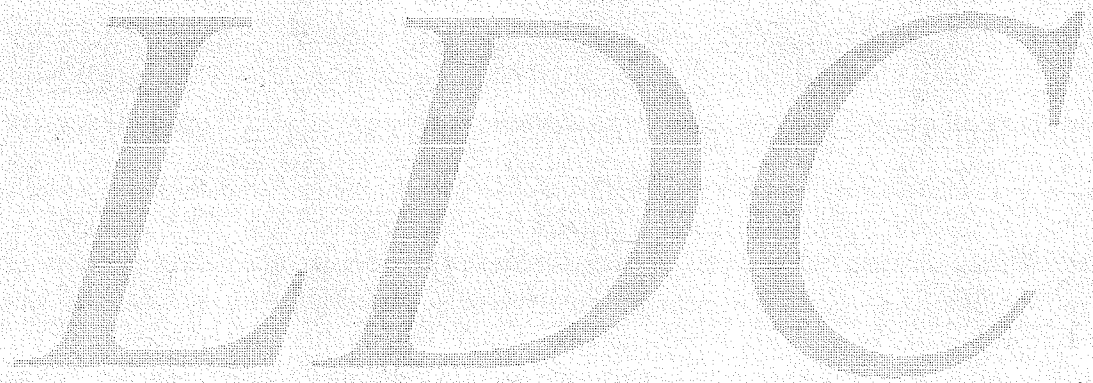
SDG	Sample	Compound	Flag	A or P	Reason
P0600267	MW-24-5 MW-24-4 MW-24-3 MW-24-2 MW-24-1 EB-19-11/28/06	Hexavalent chromium	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0600267

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16078

1,2-Dibromomethane & 1,2-Dibromo-3-chloropropane



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: December 1, 2006

LDC Report Date: January 9, 2007

Matrix: Water

Parameters: 1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600267

Sample Identification

MW-5
TB-22-12/1/06
MW-5MS
MW-5MSD

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 504.1 for 1,2-Dibromoethane and 1,2-Dibromo-3-chloropropane.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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

Initial calibration of compounds was performed as required by method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were within QC limits.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 30.0% QC limits with the following exceptions:

Date	Column	Compound	%D	Associated Samples	Flag	A or P
12/14/06	DB-35MS	1,2-Dibromo-3-chloropropane	32	All samples in SDG P0600267	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.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane was found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

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

b. 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.

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

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 TB-22-12/1/06 was identified as a trip blank. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane contaminants were found in this blank.

NASA JPL
1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane - Data Qualification Summary - SDG P0600267

SDG	Sample	Compound	Flag	A or P	Reason
P0600267	MW-5 TB-22-12/1/06	1,2-Dibromo-3-chloropropane	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

NASA JPL
1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane - Laboratory Blank Data Qualification Summary - SDG P0600267

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16078

Nitrosamines

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: December 1, 2006

LDC Report Date: January 9, 2007

Matrix: Water

Parameters: Nitrosamines

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600267

Sample Identification

MW-5
MW-5MS
MW-5MSD

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 521 for Nitrosamines.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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 30.0% for all compounds.

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.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No nitrosamine 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 with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-5MS/MSD (MW-5)	N-Nitrosodimethylamine	64 (70-130)	64 (70-130)	-	J (all detects) UJ (all non-detects)	A
	N-Nitrosomethylethylamine	66 (70-130)	54 (70-130)	-		
	N-Nitrosopyrrolidine	-	-	32 (≤30)		
	N-Nitrosopiperdine	-	67 (70-130)	33 (≤30)		
	N-Nitrosodiphenylamine	34 (70-130)	20 (70-130)	51 (≤30)		
	N-Nitrosodi-n-butylamine	-	-	44 (≤30)		

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

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

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Nitrosamines - Data Qualification Summary - SDG P0600267

SDG	Sample	Compound	Flag	A or P	Reason
P0600267	MW-5	N-Nitrosodimethylamine N-Nitrosomethylethylamine	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
P0600267	MW-5	N-Nitrosopyrrolidine N-Nitrosodi-n-butylamine	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (RPD)
P0600267	MW-5	N-Nitrosopiperdine N-Nitrosodiphenylamine	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)(RPD)

NASA JPL
Nitrosamines - Laboratory Blank Data Qualification Summary - SDG P0600267

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

January 16, 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 January 12, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 16108:

SDG #	Fraction
P0600280	1,2,3-Trichloropropane, Hexavalent Chromium, 1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane, Nitrosamines

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

1 WEEK TAT

Attachment 1

PO 190288 10/90

LDC #16108 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	1,2,3-TCP (8270C -SIM)		EDB DBCP (504.1)		Nitro-samines (521)		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	P0600280	01/12/07	01/19/07	2	0	3	0	4	0	17	0																								
A	P0600280	01/12/07	01/19/07	0	0	0	0	0	0	1	0																								
Total	B/LR			2	0	3	0	4	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27

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

16108ST.wpd

NASA JPL
Data Validation Reports
LDC# 16108

1,2,3-Trichloropropane

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: December 7, 2006

LDC Report Date: January 15, 2007

Matrix: Water

Parameters: 1,2,3-Trichloropropane

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600280

Sample Identification

MW-10
DUPE-8-4Q06

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA sw 846 Method 8270C using Selected Ion Monitoring (SIM) for 1,2,3-Trichloropropane.

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 30.0% for all compounds.

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 25.0% .

The percent difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,2,3-trichloropropane was 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) and relative percent differences (RPD) 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

Samples MW-10 and DUPE-8-4Q06 were identified as field duplicates. No 1,2,3-trichloropropane was detected in any of the samples.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
1,2,3-Trichloropropane - Data Qualification Summary - SDG P0600280

No Sample Data Qualified in this SDG

NASA JPL
1,2,3-Trichloropropane - Laboratory Blank Data Qualification Summary - SDG P0600280

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16108

Hexavalent Chromium

LDC Report# 16108A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: December 4 through December 7, 2006

LDC Report Date: January 14, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600280

Sample Identification

MW-1
MW-9
MW-15
DUPE-7-4Q06
MW-7
MW-16**
MW-13
MW-8
MW-10
DUPE-8-4Q06
MW-1MS
MW-1MSD
MW-7MS
MW-7MSD
MW-13MS
MW-13MSD
MW-10MS
MW-10MSD

**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 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.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No hexavalent chromium 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) 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-15 and DUPE-7-4Q06 and samples MW-10 and DUPE-8-4Q06 were identified as field duplicates. No hexavalent chromium was detected in any of the samples.

X. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0600280

No Sample Data Qualified in this SDG

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0600280

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16108

1,2-Dibromomethane & 1,2-Dibromo-3-chloropropane

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: December 7, 2006

LDC Report Date: January 15, 2007

Matrix: Water

Parameters: 1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600280

Sample Identification

MW-10
TB-26-12/7/06
DUPE-8-4Q06

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 504.1 for 1,2-Dibromoethane and 1,2-Dibromo-3-chloropropane.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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

Initial calibration of compounds was performed as required by method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were within QC limits.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 30.0% QC limits with the following exceptions:

Date	Column	Compound	%D	Associated Samples	Flag	A or P
12/14/06	DB-35MS	1,2-Dibromo-3-chloropropane	32	All samples in SDG P0600280	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.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane was found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were not required by the method.

b. Matrix Spike/Matrix Spike Duplicates

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

c. Laboratory Control Samples

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

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

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-10 and DUPE-8-4Q06 were identified as field duplicates. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane was detected in any of the samples.

X. Field Blanks

Sample TB-26-12/7/06 was identified as a trip blank. No 1,2-dibromoethane or 1,2-dibromo-3-chloropropane was found in this blank.

NASA JPL
1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane - Data Qualification Summary - SDG P0600280

SDG	Sample	Compound	Flag	A or P	Reason
P0600280	MW-10 TB-26-12/7/06 DUPE-8-4Q06	1,2-Dibromo-3-chloropropane	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

NASA JPL
1,2-Dibromoethane & 1,2-Dibromo-3-chloropropane - Laboratory Blank Data Qualification Summary - SDG P0600280

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 16108

Nitrosamines

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: December 7, 2006

LDC Report Date: January 15, 2007

Matrix: Water

Parameters: Nitrosamines

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0600280

Sample Identification

MW-10
DUPE-8-4Q06
DUPE-8-4Q06MS
DUPE-8-4Q06MSD

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 521 for Nitrosamines.

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 a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical 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 check is not required for this method.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds.

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.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No nitrosamine 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

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
DUPE-8-4Q06MS/MSD (DUPE-8-4Q06)	N-Nitrosodimethylamine	67 (70-130)	63 (70-130)	-	J (all detects) UJ (all non-detects)	A
	N-Nitrosodiphenylamine	24 (70-130)	27 (70-130)	-	J (all detects) UJ (all non-detects)	

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
KWG0700418-3	N-Nitrosodiphenylamine	28 (70-130)	All samples in SDG P0600280	J (all detects) UJ (all non-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

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