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Technical Memorandum for non-BGMP Groundwater Sampling Parcels B, D-1, E, and G

(July 2008 - March 2009)

Hunters Point Shipyard
San Francisco, California

July 2010

Document Control number: CEKA-3001-0000-0015
Contract N62473-07-C-3001

Prepared for:

Department of the Navy
Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, California 92108

Prepared by:

CE2-Kleinfelder Joint Venture
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Pleasanton, CA 94588

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Certification

Technical Memorandum for non-BGMP Groundwater Sampling Parcels B, D-1, E, and G (July 2008 – March 2009)

Hunters Point Shipyard
San Francisco, California

Document Control number: CEKA-3001-0000-0015.R1
Contract N62473-07-C-3001

July 2010

I certify that the work presented in this report was performed under my supervision. To the best of my knowledge, the data contained herein are true and accurate and the work was performed in accordance with professional standards.

Bruce M. Rucker, PG
Senior Geologist
CE2-Kleinfelder Joint Venture

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TRANSMITTAL FORM

CE2 Corporation
4457 Willow Road, Suite 210
Pleasanton, CA 94588
Phone: (925) 463-7301
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Date: 4 August, 2010

To: Hamide Kayaci
BRAC PMO West
1455 Frazee Road, Suite 900
San Diego, CA 92101

Re: Contract No. N62473-07-C-3001

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Remarks: Dear Ms. Kayaci,

Due to an error regarding the use of the term "revision" in the document publishing context, we have revised the prior document of the same name, with the attached document number CEKA-3001-0000-**0015.R1**, and have attached hard copies of the revised pages for your replacement in the original version we previously sent. Also included is a replacement compact disc.

Revised pages to replace include: binder spine and cover, text, Tables 1 and 2, table and plate title pages, Attachment title pages, and Plate 1. This revision does not affect Attachments A or B except the title pages.

This document is not intended for regulatory submittal at this time. Please contact Mr. Bruce Rucker of CE2-Kleinfelder Joint Venture at (925) 463-7301 x112 or via e-mail at rucker@ce2corp.com if you have any questions.

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CE2 Corporation
4457 Willow Road, Suite 210
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Date: 19 July, 2010

To: Hamide Kayaci
BRAC PMO West
1455 Frazee Road, Suite 900
San Diego, CA 92101

Re: Contract No. N62473-07-C-3001

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1.0 Introduction

On behalf of the U.S. Department of the Navy, Naval Facilities Engineering Command, Southwest Division (Navy), the CE2-Kleinfelder Joint Venture (JV) has prepared this Technical Memorandum summarizing groundwater analytical data collected at Parcels B, D-1, E, and G at Hunters Point Shipyard (HPS) located in San Francisco, California. Analytical data included in this Technical Memorandum have been electronically submitted into the Naval Installation Restoration Information Solution (NIRIS) in the Navy Electronic Data Deliverable (NEDD) format.

The data reported herein are additional to the Basewide Groundwater Monitoring Program (BGMP). The BGMP data are discussed in semiannual groundwater monitoring reports. The data presented in this Technical Memorandum were collected from July 2008 through March 2009 (Third Quarter 2008 [3Q2008] through First Quarter 2009 [1Q2009]).

1.1 Background

Sampling, sample management, and laboratory analyses for the data presented was conducted following procedures specified in:

- *Draft Final Sampling and Analysis Plan (SAP) for the Basewide Groundwater Monitoring Program (BGMP)* (CE2-Kleinfelder Joint Venture, June 2008) (for samples collected in 3Q2008 and 4Q2008).
- *Final Sampling and Analysis Plan (SAP) for the Basewide Groundwater Monitoring Program (BGMP)* (CE2-Kleinfelder Joint Venture, March 2009) (for samples collected in 1Q2009).

The data presented in this Technical Memorandum were collected at the request of the Navy to support the following:

- TPH Corrective Action Program (TPH CAP) at HPS.
- Parcel G zero-valent iron (ZVI) Treatability Study (TS).
- Parcel B (IR-26) mercury source area characterization.

Additional data are included that resulted from analyzing for additional, not-requested analytes at wells that were being sampled for requested analytes.

Plate 1 shows the locations of the wells sampled as part of this Technical Memorandum.

1.2 Scope of Work

The sampling and analytical activities discussed herein included the following.

1.2.1 Third Quarter 2008

- Sampling one permanent groundwater monitoring well (IR26MW49A) to assess whether methyl mercury (dissolved) was present.
- Sampling five permanent groundwater monitoring wells and two temporary groundwater monitoring wells to support the TPH CAP.
- Inadvertent sampling of or analysis for non-BGMP target analytes in four permanent groundwater monitoring wells, beyond the requirements of the BGMP SAP documents.

1.2.2 Fourth Quarter 2008

- Collecting a grab-groundwater sample from one temporary borehole (drilled by others) to support the Parcel G ZVI TS.
- Sampling 36 permanent groundwater monitoring wells in Parcels D-1 and G, to support the Parcel G ZVI TS.
- Sampling seven permanent groundwater monitoring wells in Parcel B, to support the TPH CAP.
- Inadvertent sampling of or analysis for non-BGMP target analytes in six permanent groundwater monitoring wells, beyond the requirements of the BGMP SAP documents.

1.2.3 First Quarter 2009

- Sampling 12 permanent groundwater monitoring wells to support the TPH CAP.

1.3 Field Procedures

1.3.1 Permanent Groundwater Monitoring Well Sampling

Samples from permanent groundwater monitoring wells were collected using low-flow methods, with a submersible bladder pump with disposable tubing, with the pump inlet placed in the approximate middle of the well screened interval. The wells were purged of sufficient volume to ensure stability of aquifer parameters (specific conductance, pH and dissolved oxygen). Samples were then collected directly through the pump discharge tubing into the sampling containers in the following order: volatile organic compounds (VOCs) and purgeable hydrocarbons (at a pump discharge rate of 100 ml/minute or less), then non-volatile compounds (polynuclear aromatic hydrocarbons [PAHs] and extractable-range TPH) at a pump discharge rate of 500 ml/min or less.

1.3.2 Temporary Groundwater Monitoring Well and Borehole Sampling

Samples from temporary groundwater monitoring wells and boreholes were collected using low-flow methods, with a peristaltic pump with disposable tubing, with the tubing inlet placed in the approximate middle of the well screened interval. Samples were then collected directly through the pump discharge tubing into the sampling containers in the following order: volatile organic compounds (VOCs) and purgeable hydrocarbons (at a pump discharge rate of 100 ml/minute or less), then non-volatile compounds (polynuclear aromatic hydrocarbons [PAHs] and extractable-range TPH) at a pump discharge rate of 500 ml/min or less.

1.3.3 Field Equipment Decontamination

Non-disposable/non-dedicated sampling equipment was decontaminated prior to and after each use to prevent cross-contamination between sampling locations. Equipment decontaminated included:

- Submersible bladder pump used for sampling wells

Clean sampling equipment was not placed directly on the ground or potentially contaminated surfaces prior to use. Field personnel donned clean, disposable gloves between sampling locations. The decontamination procedure included the following steps:

- Repeatedly flushing the bladder pump with non-phosphate detergent (e.g. Liquinox™ or equivalent).
- Repeated flushing the bladder pump with tap water.
- Repeatedly flushing the bladder pump with distilled or reagent-grade water.

1.3.4 Sample Management

Field samples, including field QC samples, were preserved (if applicable), stored, and transported in coolers with sufficient “wet” ice to maintain sample temperatures at less than six degrees Celsius. One temperature blank was included in every sample cooler. Samples designated for volatiles analyses were accompanied by trip blank samples. The samples evaluated in this technical memorandum were collected as additions to the BGMP, though the majority of samples were collected and submitted for analysis concurrently with BGMP samples.

Sample custody was maintained from the time of sample collection, and custody transfer was documented through laboratory sample receipt. Upon receipt, the laboratory measured the cooler temperatures using temperature blanks. The laboratory did not report temperatures exceeding six degrees Celsius in the sample coolers submitted to the analytical laboratory.

1.4 Analytical Procedures

Seventy-three field samples and 52 quality control (QC) samples were submitted and analyzed by Agriculture and Priority Pollutants Laboratories, Inc. (APPL) located in Clovis, California. Three samples (one field sample and two field QC samples) were submitted

Columbia Analytical Services (CAS) of Kelso, Washington, for low-level mercury and mercury speciation analyses. APPL and CAS are state of California accredited laboratories that maintained Naval Facilities Engineering Services Center (NFESC) approval during the 3Q2008 to 1Q2009 sample analysis period.

The samples were submitted for one or more of the following analyses. Table 1 lists the analytical methods and method reporting limits for each sample.

- Volatile organic compounds (VOCs) (full suite of VOCs per BGMP SAP documents) by EPA Method 8260B. Selected VOCs were analyzed by low-level method EPA Method 8260B- Selected Ion Monitoring (SIM).
- Benzene, toluene, ethylbenzene, xylenes, and methyl tert-butyl ether (MTBE) by EPA Method 8260B. For samples collected to support the TPH CAP, benzene was analyzed by EPA Method 8260B – SIM.
- TPH-purgeables (gasoline-range) by EPA Method 8015B. For samples collected to support the TPH-CAP, gasoline was quantified as carbon ranges C6-C12.
- TPH-extractables (diesel- and motor oil-ranges) by EPA Method 8015B. Selected samples underwent pre-analysis preparation by silica gel cleanup by EPA Method 3630C. For samples collected to support the TPH-CAP, diesel was quantified as carbon ranges C12-C24, and motor oil was quantified as carbon ranges C24-C36.
- Polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270C–SIM.
- Hexavalent chromium by EPA Method 7199.
- Total (dissolved) chromium and nickel by EPA Method 6010B.
- Dissolved mercury by EPA Method 1631E.
- Dissolved methyl mercury by CAS SOP 1630W.
- Polychlorinated biphenyls (PCBs) by EPA Method 8082.

1.5 Field Sample Analytical Data

Table 1 summarizes the data collected, including the following:

- Well ID / sampling location
- HPS parcel
- Aquifer
- Quarter that sample was collected
- Sample ID
- Sampling objective

- Sampling date
- Analyte
- Was analyte detected?
- Analytical result
- Data validation code (i.e. estimated value and/or not detected)
- Analytical unit
- Analytical group
- Analytical method

The enclosed CD contains a Microsoft Excel version of this data table which can be sorted and/or filtered.

1.6 Quality Control

Field and laboratory QC samples were collected in the field and laboratory to evaluate and monitor the quality of both the field and laboratory procedures. Groundwater samples evaluated in this Technical Memorandum were collected during BGMP groundwater events concurrent with BGMP samples. Field QC requirements were applied to the samples collected as a whole during the sampling events, regardless of whether the samples were considered BGMP or additions to the BGMP. Laboratory QC requirements were applied to the samples within each Sample Delivery Group (SDG) by preparation/analytical batch by both APPL and CAS with the frequency consistent with the analytical method requirements. The subset of samples met the field QC type and frequency requirements as specified in the SAP documents. Field QC data for the following types of samples are presented in Table 2:

- Trip blanks
- Field duplicates
- Equipment rinsate blanks
- Field blank (for low-level mercury and mercury speciation analyses).

It should be noted that the sampling procedure for the low-level mercury and methyl mercury analyses were performed using the general guidance of the USEPA Method 1669, *Sampling Ambient Waters for Trace Metals* (July, 1996).

Eight field duplicate pairs were collected at the appropriate frequency of one per 10 field samples, generating a total of 122 field duplicate results. Relative percent differences (RPDs) were calculated using the field duplicate pair results, then evaluated against a RPD criterion of 30 percent. Of the 122 total field duplicate pair results, only one result exceeded the 30 percent RPD criterion. The small number of field duplicate pair results reported above laboratory reporting limits (RL) may misrepresent the precision of field duplicate samples. Analytical data were not qualified based on field duplicate pair results.

Trip blank samples were included in each cooler containing samples for volatile analysis, which is consistent with the BGMP SAP documents. Of the 977 trip blank results, one analyte

(methylene chloride) was reported in three trip blank samples at estimated concentrations (above the method detection limit but below the laboratory reporting limit [RL]). Since methylene chloride was not reported in any field samples above the laboratory RL, no results were qualified during the data validation process due to the trip blank detects.

Equipment rinsate samples were collected at a frequency of one per day per sampling team, when portable sampling equipment that required decontamination was used, which is consistent with the BGMP SAP documents. Of the 60 equipment rinsate results generated, no analytes were reported above laboratory RLs. Since no equipment rinsate results were reported above laboratory RLs, no impact to the data quality was identified during data validation due to equipment decontamination. One field blank sample was collected and submitted for both low-level mercury and methyl mercury analyses. Mercury was not reported above the laboratory RLs, indicating that sampling and processing procedures were sufficient and contributed to the acceptable quality of the data.

During the DQA, organic and inorganic contaminants reported in samples with less than five times the concentrations detected in blanks (or 10 times for common laboratory contaminants) were qualified as not detected and assigned a "U" qualifier. A low percentage of sample results (approximately 0.2 percent) were affected by possible laboratory contamination, increasing some of the quantitation limits for these analytes.

1.7 Data Usability Assessment

The data quality assessment (DQA) process consisted of a systematic review, verification, validation, and usability assessment of the data. The purpose of the DQA is to evaluate the performance of the sampling and analytical procedures and to assess the quality of the data. Data review and verification were performed under the direction of the JV Project Chemist on 100 percent of the data. Laboratory Data Consultants, Inc. (LDC), located in Carlsbad, California, performed the independent, third-party data validation. The data were reviewed, verified and validated in accordance with the following documents:

- USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA, 2008).
- USEPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Third Edition. Updates I, II, IIA, IIB, III, IIIA, IIIB, and IV (USEPA, 2007).
- *Draft Final Sampling and Analysis Plan (SAP) for the Basewide Groundwater Monitoring Program (BGMP)* (CE2-Kleinfelder Joint Venture, July 2008) (for samples collected in 3Q2008 and 4Q2008).
- *Final Sampling and Analysis Plan (SAP) for the Basewide Groundwater Monitoring Program (BGMP)* (CE2-Kleinfelder Joint Venture, March 2009) (for samples collected in 1Q2009).
- Naval Facilities Engineering Command (NAVFAC) Southwest (SW) Environmental Work Instruction (EWI) #1: Chemical Data Validation (Navy, 2001).

Data validation was performed on 100 percent of the data with approximately 80 percent of Level III data deliverable validated and 20 percent of Level IV (full) data deliverable validated, in accordance with the BGMP SAP documents and NAVFAC Southwest EWI #1 (Navy, 2001). A total of 3,034 analytical results were evaluated by LDC during the data validation process.

As a result of the data validation process, 131 analytical results were qualified as estimated (i.e., "J" qualified), or estimated at an elevated quantitation limit (i.e., "UJ" qualified). However, these results qualified as estimated are still considered usable. Results were qualified as estimated for one or more of the following reasons:

- Result reported in between the method detection limit and RL
- Surrogate or matrix spike (MS) percent recoveries outside laboratory acceptance criteria
- Calibration with percent differences outside the acceptable criteria
- Laboratory method blank contamination
- Presence of effervescence in sample container for volatile analysis.

For samples in which more than one analytical result per analyte were generated (i.e. dilutions or reanalyses), the data validators designated the one technically acceptable result for the intended use of the BGMP. One tetrachloride result was rejected due to the presence of the target analyte in the associated method blank. Subsequent reanalysis for carbon tetrachloride was performed and the reanalyzed result was considered acceptable for use by the data validators.

The data quality indicators, including precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS), were evaluated in accordance with the PARCCS parameters defined in the BGMP SAP documents. The PARCCS parameters were met for the data, and were assessed as follows:

- **Precision** was assessed by evaluating the RPDs of the MS/MS duplicate (MSD) samples and sample duplicates for applicable analytical method. The low percentage (less than one percent) of precision exceedances indicates that the analytical methods were performed with precision.
- **Accuracy** was assessed by evaluating percent recoveries of MS samples, laboratory control samples (LCS), and surrogate recoveries for each applicable analytical method. Overall, a low percentage of sample results (less than one percent) were qualified due to spike recoveries, indicating that the methods were consistently accurate.
- **Representativeness** was assessed by the use and consistent application of established field and laboratory procedures. Representativeness was maintained by implementation of defined field and sample procedures, such as chain-of-custody protocol and documentation, equipment decontamination, and maintaining good condition of the samples.
- **Comparability** was assessed by evaluating the use of well-documented, USEPA-approved analytical methods and standard operating procedures (SOPs), standard

reference materials, QC samples, and reporting each data type in consistent units. The use of USEPA analytical methods, specified and well-documented analyses, a California State- and NFESC-accredited laboratories, and a standardized DQA process gives the data a high degree of analytical comparability.

- **Completeness** was assessed by evaluating the validity of data obtained as a result of the DQA process (i.e. amount of valid data obtained as compared to the amount that was expected to be obtained under normal conditions). Estimated data ("J" or "UJ" qualified) are considered valid and usable; however, rejected data ("R" qualified) and missing analyses are considered unusable and incomplete. For samples in which more than one analytical result per analyte were generated (i.e. dilutions or reanalyses), the data validators designated the one technically acceptable result for the intended use of the BGMP. The least technically acceptable results are not considered in the completeness calculation. Of the 3,033 analytical results evaluated in this technical memorandum, 100 percent are considered usable, which meets the completeness goal of 95 percent defined in the BGMP SAP documents.

- **Sensitivity** was assessed by evaluating the use of project RLs. In general, project RLs were low enough to satisfy the action levels being applied and used to evaluate the project data.

As a result of the DQA process, it has been concluded that the data quality indicators (i.e., PARCCS) either met or exceeded the acceptance criteria, as defined in the BGMP SAP documents and applied to this dataset.

1.8 Field Documentation

Attachment A contains field documentation related to the sampling effort, including monitoring well sampling field sheets and field notes.

1.9 Laboratory Reports

The enclosed CD contains chain-of-custody records, and data validation reports (which include analytical data sheets).

Note that the laboratory and data validation reports contain field and QC sample data additional to those discussed in this Technical Memorandum, because additional samples were collected concurrently with BGMP quarterly groundwater monitoring samples, and were included in the same Sample Delivery Groups (SDGs).

The validated analytical results were electronically submitted into the Naval Installation Restoration Information Solution (NIRIS) in the Navy Electronic Data Deliverable (NEDD) format.

Attachments

Tables 1 and 2; Field documentation; Data validation reports (on CD only)

PLATE 1

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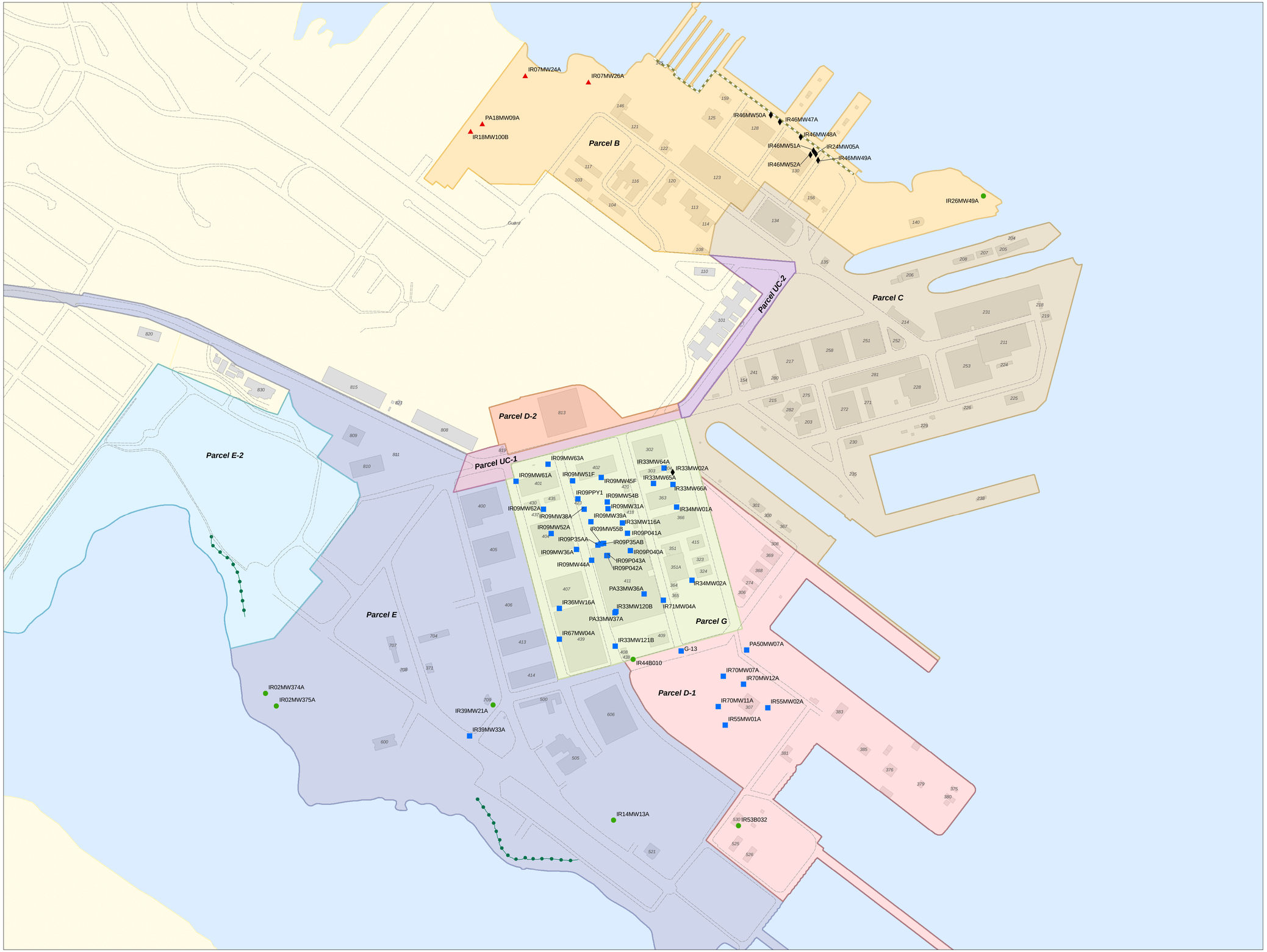

Legend

Well Locations & Sampling Event

- 2009Q1
- 2008Q4
- 2008Q3
- multiple quarters
- Roads
- Parcel B Seawall
- Sheetpile Wall
- Buildings
- Parcel B
- Parcel C
- Parcel D-1
- Parcel D-2
- Parcel E
- Parcel E-2
- Parcel G
- Parcel UC-1
- Parcel UC-2
- Non-Navy Property
- San Francisco Bay

N

0 200 400 600 800 Feet

CE2 KLEINFELDER
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NAVFAC Naval Facilities Engineering Command

Hunters Point Shipyard, San Francisco, California
U.S. Navy, Southwest Division, NAVFAC, San Diego

Plate 1
Locations of Wells with
Non-BGMP Groundwater Analytical Data
3Q2008 to 1Q2009

Hunters Point Shipyard, San Francisco, California

Non-BGMP Groundwater Analytical Data
Technical Memorandum
(July 2008 - March 2009)
July 2010 CEKA-3001-0000-0015

N. Cook, CE2 Corp
06/17/10

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Table 1

Field Sample Groundwater Analytical Data

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Table 1. Non-BGMP Field Sample Groundwater Analytical Data, Hunters Point Shipyard, San Francisco, California (3Q2008 to 1Q2009)

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR24MW05A	B	A	2008 - Q03	0835G013	TPH CAP	8/26/2008	TPH-motor oil range	**Y**	**230**		ug/l	TPH	EPA 8015B-D
IR24MW05A	B	A	2008 - Q03	0835G013	TPH CAP	8/26/2008	TPH-diesel range	**Y**	**300**		ug/l	TPH	EPA 8015B-D
IR24MW05A	B	A	2008 - Q03	0835G013	TPH CAP	8/26/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G
IR24MW05A	B	A	2008 - Q03	0839G032	TPH CAP	9/22/2008	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR24MW05A	B	A	2008 - Q03	0839G032	TPH CAP	9/22/2008	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR24MW05A	B	A	2008 - Q03	0839G032	TPH CAP	9/22/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR26MW49A	B	A	2008 - Q03	0838D012	Parcel B Mercury	9/16/2008	Methyl mercury	N	0.1	U	ng/l	Metals	CAS SOP 1630W
IR26MW49A	B	A	2008 - Q03	0838D012	Parcel B Mercury	9/16/2008	Mercury	**Y**	1,930	U	ng/l	Metals	EPA 1631E
IR46MW47A	B	A	2008 - Q03	0835G011	TPH CAP	8/26/2008	TPH-motor oil range	**Y**	**340**		ug/l	TPH	EPA 8015B-D
IR46MW47A	B	A	2008 - Q03	0835G011	TPH CAP	8/26/2008	TPH-diesel range	**Y**	**220**		ug/l	TPH	EPA 8015B-D
IR46MW47A	B	A	2008 - Q03	0835G011	TPH CAP	8/26/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G
IR46MW47A	B	A	2008 - Q03	0839G030	TPH CAP	9/22/2008	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW47A	B	A	2008 - Q03	0839G030	TPH CAP	9/22/2008	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW47A	B	A	2008 - Q03	0839G030	TPH CAP	9/22/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR46MW48A	B	A	2008 - Q03	0839G029	TPH CAP	9/22/2008	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW48A	B	A	2008 - Q03	0839G029	TPH CAP	9/22/2008	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW48A	B	A	2008 - Q03	0839G029	TPH CAP	9/22/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR46MW49A	B	A	2008 - Q03	0839G040	TPH CAP	9/25/2008	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW49A	B	A	2008 - Q03	0839G040	TPH CAP	9/25/2008	TPH-diesel range	**Y**	**510**	**J**	ug/l	TPH	EPA 8015B-D (4)
IR46MW49A	B	A	2008 - Q03	0839G040	TPH CAP	9/25/2008	TPH-gasoline range	**Y**	**28**		ug/l	TPH	EPA 8015B-G (5)
IR24MW05A	B	A	2008 - Q04	0841D021	TPH CAP	10/9/2008	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR24MW05A	B	A	2008 - Q04	0841D021	TPH CAP	10/9/2008	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR24MW05A	B	A	2008 - Q04	0841D021	TPH CAP	10/9/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR46MW47A	B	A	2008 - Q04	0841B022	TPH CAP	10/9/2008	TPH-motor oil range	**Y**	**560**		ug/l	TPH	EPA 8015B-D (4)
IR46MW47A	B	A	2008 - Q04	0841B022	TPH CAP	10/9/2008	TPH-diesel range	**Y**	**220**		ug/l	TPH	EPA 8015B-D (4)
IR46MW47A	B	A	2008 - Q04	0841B022	TPH CAP	10/9/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR46MW48A	B	A	2008 - Q04	0841B021	TPH CAP	10/9/2008	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW48A	B	A	2008 - Q04	0841B021	TPH CAP	10/9/2008	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW48A	B	A	2008 - Q04	0841B021	TPH CAP	10/9/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR46MW49A	B	A	2008 - Q04	0841D020	TPH CAP	10/9/2008	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW49A	B	A	2008 - Q04	0841D020	TPH CAP	10/9/2008	TPH-diesel range	**Y**	**580**		ug/l	TPH	EPA 8015B-D (4)
IR46MW49A	B	A	2008 - Q04	0841D020	TPH CAP	10/9/2008	TPH-gasoline range	**Y**	**22**		ug/l	TPH	EPA 8015B-G (5)
IR46MW50A	B	A	2008 - Q04	0846G016	TPH CAP	11/11/2008	TPH-motor oil range	N	40	UJ	ug/l	TPH	EPA 8015B-D (4)
IR46MW50A	B	A	2008 - Q04	0846G016	TPH CAP	11/11/2008	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW50A	B	A	2008 - Q04	0846G016	TPH CAP	11/11/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR46MW51A	B	A	2008 - Q04	0846G018	TPH CAP	11/11/2008	TPH-motor oil range	**Y**	**1,600**	**J**	ug/l	TPH	EPA 8015B-D (4)
IR46MW51A	B	A	2008 - Q04	0846G018	TPH CAP	11/11/2008	TPH-diesel range	**Y**	**2,500**		ug/l	TPH	EPA 8015B-D (4)
IR46MW51A	B	A	2008 - Q04	0846G018	TPH CAP	11/11/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR46MW52A	B	A	2008 - Q04	0846G017	TPH CAP	11/11/2008	TPH-motor oil range	N	40	UJ	ug/l	TPH	EPA 8015B-D (4)
IR46MW52A	B	A	2008 - Q04	0846G017	TPH CAP	11/11/2008	TPH-diesel range	**Y**	**160**		ug/l	TPH	EPA 8015B-D (4)
IR46MW52A	B	A	2008 - Q04	0846G017	TPH CAP	11/11/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	2-Methylnaphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Acenaphthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Acenaphthylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Benzene	N	0.2	U	ug/l	VOCs	EPA 8260B-SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Benzo(a)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Benzo(a)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Benzo(b)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Benzo(g,h,i)perylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Benzo(k)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Chrysene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Dibenz(a,h)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Xylene (total) (dimethyl benzene)	**Y**	**2.5**		ug/l	VOCs	EPA 8260B
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Ethylbenzene	**Y**	**0.43**	**J**	ug/l	VOCs	EPA 8260B
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Fluorene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Indeno(1,2,3-c,d)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Naphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Phenanthrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	Toluene	**Y**	**1.1**		ug/l	VOCs	EPA 8260B
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR07MW24A	B	A	2009 - Q01	0912W045	TPH CAP	3/20/2009	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	2-Methylnaphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Acenaphthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Acenaphthylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Benzene	N	0.2	U	ug/l	VOCs	EPA 8260B-SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Benzo(a)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Benzo(a)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Benzo(b)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Benzo(g,h,i)perylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Benzo(k)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Chrysene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Dibenz(a,h)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Xylene (total) (dimethyl benzene)	**Y**	**4**		ug/l	VOCs	EPA 8260B
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Ethylbenzene	**Y**	**0.74**		ug/l	VOCs	EPA 8260B
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Fluorene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Indeno(1,2,3-c,d)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	TPH-motor oil range	N	40	UJ	ug/l	TPH	EPA 8015B-D (4)
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Naphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Phenanthrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	Toluene	**Y**	**2.2**		ug/l	VOCs	EPA 8260B
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR07MW26A	B	A	2009 - Q01	0912W044	TPH CAP	3/20/2009	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	2-Methylnaphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Acenaphthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Acenaphthylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Benzene	N	0.2	U	ug/l	VOCs	EPA 8260B-SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Benzo(a)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Benzo(a)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Benzo(b)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Benzo(g,h,i)perylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Benzo(k)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Chrysene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Dibenz(a,h)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Fluorene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Indeno(1,2,3-c,d)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Naphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Phenanthrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR18MW100B	B	B	2009 - Q01	0913D046	TPH CAP	3/27/2009	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	2-Methylnaphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Acenaphthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Acenaphthylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Benzene	N	0.2	U	ug/l	VOCs	EPA 8260B-SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Benzo(a)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Benzo(a)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Benzo(b)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Benzo(g,h,i)perylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Benzo(k)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Chrysene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Dibenz(a,h)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Fluorene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Indeno(1,2,3-c,d)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Naphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Phenanthrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	TPH-diesel range	**Y**	**53**		ug/l	TPH	EPA 8015B-D (4)
IR24MW05A	B	A	2009 - Q01	0912W046	TPH CAP	3/20/2009	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	2-Methylnaphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Acenaphthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM

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IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Acenaphthylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Benzene	N	0.2	U	ug/l	VOCs	EPA 8260B-SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Benzo(a)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Benzo(a)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Benzo(b)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Benzo(g,h,i)perylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Benzo(k)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Chrysene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Dibenz(a,h)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Fluorene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Indeno(1,2,3-c,d)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Naphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Phenanthrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW47A	B	A	2009 - Q01	0912H038	TPH CAP	3/20/2009	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	2-Methylnaphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Acenaphthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Acenaphthylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Benzene	N	0.2	U	ug/l	VOCs	EPA 8260B-SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Benzo(a)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Benzo(a)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Benzo(b)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Benzo(g,h,i)perylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Benzo(k)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Chrysene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Dibenz(a,h)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Xylene (total) (dimethyl benzene)	N	0.5	UJ	ug/l	VOCs	EPA 8260B
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Fluorene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Indeno(1,2,3-c,d)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Naphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Phenanthrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW48A	B	A	2009 - Q01	0912H037	TPH CAP	3/20/2009	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	2-Methylnaphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Acenaphthene	**Y**	**0.18**	**J**	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Acenaphthylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Benzene	N	0.2	U	ug/l	VOCs	EPA 8260B-SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Benzo(a)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Benzo(a)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Benzo(b)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Benzo(g,h,i)perylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Benzo(k)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Chrysene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Dibenz(a,h)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Fluorene	**Y**	**3.2**		ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Indeno(1,2,3-c,d)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Naphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Phenanthrene	**Y**	**2.3**		ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	TPH-diesel range	**Y**	**420**		ug/l	TPH	EPA 8015B-D (4)
IR46MW49A	B	A	2009 - Q01	0912A005	TPH CAP	3/20/2009	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	2-Methylnaphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Acenaphthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Acenaphthylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Benzene	N	0.2	U	ug/l	VOCs	EPA 8260B-SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Benzo(a)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Benzo(a)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Benzo(b)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Benzo(g,h,i)perylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Benzo(k)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Chrysene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Dibenz(a,h)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Fluorene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Indeno(1,2,3-c,d)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Naphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Phenanthrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW50A	B	A	2009 - Q01	0912H039	TPH CAP	3/20/2009	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	2-Methylnaphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Acenaphthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Acenaphthylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Benzene	N	0.2	U	ug/l	VOCs	EPA 8260B-SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Benzo(a)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Benzo(a)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Benzo(b)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Benzo(g,h,i)perylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Benzo(k)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Chrysene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Dibenz(a,h)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Fluorene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Indeno(1,2,3-c,d)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Naphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Phenanthrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	TPH-diesel range	**Y**	**210**		ug/l	TPH	EPA 8015B-D (4)
IR46MW51A	B	A	2009 - Q01	0912A006	TPH CAP	3/20/2009	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	2-Methylnaphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Acenaphthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Acenaphthylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Benzene	N	0.2	U	ug/l	VOCs	EPA 8260B-SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Benzo(a)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Benzo(a)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Benzo(b)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Benzo(g,h,i)perylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Benzo(k)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Chrysene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Dibenz(a,h)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Fluorene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Indeno(1,2,3-c,d)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Naphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Phenanthrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	TPH-diesel range	**Y**	**110**		ug/l	TPH	EPA 8015B-D (4)
IR46MW52A	B	A	2009 - Q01	0913B035	TPH CAP	3/23/2009	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	2-Methylnaphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Acenaphthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Acenaphthylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Benzene	N	0.2	U	ug/l	VOCs	EPA 8260B-SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Benzo(a)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Benzo(a)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Benzo(b)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Benzo(g,h,i)perylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Benzo(k)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Chrysene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Dibenz(a,h)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Fluorene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Indeno(1,2,3-c,d)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Naphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Phenanthrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
PA18MW09A	B	A	2009 - Q01	0913G007	TPH CAP	3/27/2009	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR44B010 (1)	D-1	A	2008 - Q03	0838T005	TPH CAP	9/19/2008	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR44B010 (1)	D-1	A	2008 - Q03	0838T005	TPH CAP	9/19/2008	TPH-diesel range	N	40	UJ	ug/l	TPH	EPA 8015B-D (4)
IR44B010 (1)	D-1	A	2008 - Q03	0838T005	TPH CAP	9/19/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR53B032 (1)	D-1	A	2008 - Q03	0838T002	TPH CAP	9/18/2008	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR53B032 (1)	D-1	A	2008 - Q03	0838T002	TPH CAP	9/18/2008	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR53B032 (1)	D-1	A	2008 - Q03	0838T002	TPH CAP	9/18/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
G13 (2)	D-1	NA [2]	2008 - Q04	0846G019	Parcel G ZVI TS	11/11/2008	Chloroform	**Y**	**18**		ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW01A	D-1	A	2008 - Q04	0845D030	Parcel G ZVI TS	11/7/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR55MW02A	D-1	A	2008 - Q04	0846B047	Parcel G ZVI TS	11/11/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Chloroform	**Y**	**0.37**	**J**	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Trichloroethylene (TCE)	**Y**	**1.4**	**J**	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW07A	D-1	A	2008 - Q04	0845B032	Parcel G ZVI TS	11/7/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	cis-1,2-Dichloroethene	**Y**	**0.37**	**J**	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Trichloroethylene (TCE)	**Y**	**1.7**		ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW11A	D-1	A	2008 - Q04	0845H035	Parcel G ZVI TS	11/7/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR70MW12A	D-1	A	2008 - Q04	0846B048	Parcel G ZVI TS	11/11/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA50MW07A	D-1	A	2008 - Q04	0845D029	Parcel G ZVI TS	11/7/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR02MW374A	E	A	2008 - Q03	0836G017	NA (3)	9/3/2008	Chromium (hexavalent)	N	0.5	U	ug/l	Metals	EPA 7199
IR02MW375A	E	A	2008 - Q03	0836G016	NA (3)	9/3/2008	Chromium (hexavalent)	N	0.5	U	ug/l	Metals	EPA 7199
IR14MW13A	E	A	2008 - Q03	0830E033	NA (3)	7/23/2008	PCB-1016 (Arochlor 1016)	N	0.5	UJ	ug/l	PCBs	EPA 8082
IR14MW13A	E	A	2008 - Q03	0830E033	NA (3)	7/23/2008	PCB-1221 (Arochlor 1221)	N	0.5	UJ	ug/l	PCBs	EPA 8082
IR14MW13A	E	A	2008 - Q03	0830E033	NA (3)	7/23/2008	PCB-1232 (Arochlor 1232)	N	0.5	UJ	ug/l	PCBs	EPA 8082
IR14MW13A	E	A	2008 - Q03	0830E033	NA (3)	7/23/2008	PCB-1242 (Arochlor 1242)	N	0.5	UJ	ug/l	PCBs	EPA 8082

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR14MW13A	E	A	2008 - Q03	0830E033	NA (3)	7/23/2008	PCB-1248 (Arochlor 1248)	N	0.5	UJ	ug/l	PCBs	EPA 8082
IR14MW13A	E	A	2008 - Q03	0830E033	NA (3)	7/23/2008	PCB-1254 (Arochlor 1254)	N	0.5	UJ	ug/l	PCBs	EPA 8082
IR14MW13A	E	A	2008 - Q03	0830E033	NA (3)	7/23/2008	PCB-1260 (Arochlor 1260)	N	0.5	UJ	ug/l	PCBs	EPA 8082
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Xylene (total) (dimethyl benzene)	**Y**	**0.43**	**J**	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Ethylbenzene	**Y**	**0.40**	**J**	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Toluene	**Y**	**1.0**		ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW21A	E	A	2008 - Q03	0836G021	NA (3)	9/4/2008	Vinyl chloride	N	0.1	UJ	ug/l	VOCs	EPA 8260B-SIM
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Xylene (total) (dimethyl benzene)	**Y**	**0.33**	**J**	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR39MW33A	E	A	2008 - Q04	0841C016	NA (3)	10/9/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW02A	G	A	2008 - Q03	0839G036	TPH CAP	9/23/2008	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR33MW02A	G	A	2008 - Q03	0839G036	TPH CAP	9/23/2008	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D (4)
IR33MW02A	G	A	2008 - Q03	0839G036	TPH CAP	9/23/2008	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Chloromethane	**Y**	**0.31**	**J**	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Chromium (hexavalent)	**Y**	**1.2**		ug/l	Metals	EPA 7199
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW31A	G	A	2008 - Q04	0846B040	Parcel G ZVI TS	11/10/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Chromium (hexavalent)	N	0.5	U	ug/l	Metals	EPA 7199
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Nickel	N	5.4	U	ug/l	Metals	EPA 6010B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW36A	G	A	2008 - Q04	0846B046	Parcel G ZVI TS	11/11/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,2-Dibromo-3-Chloropropane	N	2	UJ	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Chromium (hexavalent)	**Y**	**1.7**		ug/l	Metals	EPA 7199
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW38A	G	A	2008 - Q04	0845B028	Parcel G ZVI TS	11/6/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,2-Dibromo-3-Chloropropane	N	2	UJ	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Chromium (hexavalent)	**Y**	**4.4**		ug/l	Metals	EPA 7199
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Nickel	N	5	U	ug/l	Metals	EPA 6010B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW39A	G	A	2008 - Q04	0845B029	Parcel G ZVI TS	11/6/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,2-Dibromo-3-Chloropropane	N	2	UJ	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Chloroform	**Y**	**0.3**	**J**	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Chromium (hexavalent)	**Y**	**1**		ug/l	Metals	EPA 7199
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Nickel	**Y**	**15.9**		ug/l	Metals	EPA 6010B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	MTBE	**Y**	**0.56**		ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Trichloroethylene (TCE)	**Y**	**0.26**	**J**	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW44A	G	A	2008 - Q04	0845B030	Parcel G ZVI TS	11/6/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Chromium (hexavalent)	**Y**	**9.7**		ug/l	Metals	EPA 7199
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW45F	G	Bedrock	2008 - Q04	0846B042	Parcel G ZVI TS	11/10/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW51F	G	Bedrock	2008 - Q04	0841D007	NA (3)	10/7/2008	Chromium (total)	**Y**	**21**		ug/l	Metals	EPA 6010B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Chromium (hexavalent)	N	0.5	U	ug/l	Metals	EPA 7199
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW52A	G	A	2008 - Q04	0846B045	Parcel G ZVI TS	11/11/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Chromium (hexavalent)	**Y**	**16.4**		ug/l	Metals	EPA 7199
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW54B	G	B	2008 - Q04	0846B041	Parcel G ZVI TS	11/10/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Chromium (hexavalent)	N	0.5	U	ug/l	Metals	EPA 7199
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Nickel	**Y**	**3.3**	**J**	ug/l	Metals	EPA 6010B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW55B	G	B	2008 - Q04	0846N005	Parcel G ZVI TS	11/10/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,1,1-Trichloroethane	**Y**	**0.33**	**J**	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Chromium (hexavalent)	**Y**	**6.6**		ug/l	Metals	EPA 7199
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09MW61A	G	A	2008 - Q04	0846B044	Parcel G ZVI TS	11/11/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09MW62A	G	A	2008 - Q04	0841C002	NA (3)	10/7/2008	Chromium (total)	**Y**	**9.1**		ug/l	Metals	EPA 6010B
IR09MW63A	G	A	2008 - Q04	0841D006	NA (3)	10/7/2008	Chromium (total)	**Y**	**57**		ug/l	Metals	EPA 6010B
IR09P040A	G	A	2008 - Q04	0845H030	Parcel G ZVI TS	11/6/2008	Chromium (hexavalent)	**Y**	**2.9**		ug/l	Metals	EPA 7199
IR09P040A	G	A	2008 - Q04	0845H030	NA (3)	11/6/2008	Nickel	N	5	U	ug/l	Metals	EPA 6010B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Chromium (hexavalent)	N	0.5	U	ug/l	Metals	EPA 7199
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Nickel	**Y**	**8.4**		ug/l	Metals	EPA 6010B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P041A	G	A	2008 - Q04	0846G013	Parcel G ZVI TS	11/11/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Chromium (hexavalent)	N	0.5	U	ug/l	Metals	EPA 7199
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	cis-1,3-dichloropropene	N	0.5	UJ	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Nickel	N	5	U	ug/l	Metals	EPA 6010B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	MTBE	N	0.5	UJ	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Tetrachloroethylene (PCE)	N	0.5	UJ	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	trans-1,3-Dichloropropene	N	0.5	UJ	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P042A	G	A	2008 - Q04	0845H031	Parcel G ZVI TS	11/6/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Chromium (hexavalent)	N	0.5	U	ug/l	Metals	EPA 7199
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	cis-1,3-dichloropropene	N	0.5	UJ	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	NA (3)	11/6/2008	Nickel	**Y**	**67.2**		ug/l	Metals	EPA 6010B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	MTBE	N	0.5	UJ	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Tetrachloroethylene (PCE)	N	0.5	UJ	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	trans-1,3-Dichloropropene	N	0.5	UJ	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P043A	G	A	2008 - Q04	0845H032	Parcel G ZVI TS	11/6/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AA	G	A	2008 - Q04	0845H036	Parcel G ZVI TS	11/7/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR09P35AB	G	A	2008 - Q04	0845H037	Parcel G ZVI TS	11/7/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR09PPY1	G	A	2008 - Q04	0841D005	Parcel G ZVI TS	10/7/2008	Chromium (total)	**Y**	**85.8**		ug/l	Metals	EPA 6010B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Chloromethane	**Y**	**0.45**	**J**	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Chromium (hexavalent)	N	0.5	U	ug/l	Metals	EPA 7199
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Nickel	**Y**	**10.7**		ug/l	Metals	EPA 6010B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW116A	G	A	2008 - Q04	0846G012	Parcel G ZVI TS	11/11/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Chloromethane	**Y**	**2.2**		ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	cis-1,3-dichloropropene	N	0.5	UJ	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	MTBE	N	0.5	UJ	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Tetrachloroethylene (PCE)	N	0.5	UJ	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	trans-1,3-Dichloropropene	N	0.5	UJ	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW120B	G	B	2008 - Q04	0845D025	Parcel G ZVI TS	11/6/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW121B	G	B	2008 - Q04	0845B034	Parcel G ZVI TS	11/7/2008	Vinyl chloride	**Y**	**0.064**	**J**	ug/l	VOCs	EPA 8260B-SIM
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Carbon tetrachloride	**Y**	**0.72**		ug/l	VOCs	EPA 8260B-SIM
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Chloroform	**Y**	**5**		ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Chromium (hexavalent)	**Y**	**4.6**		ug/l	Metals	EPA 7199
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Tetrachloroethylene (PCE)	**Y**	**0.22**	**J**	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW64A	G	A	2008 - Q04	0846N004	Parcel G ZVI TS	11/10/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Chloroform	**Y**	**1.9**		ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Chromium (hexavalent)	**Y**	**6.8**		ug/l	Metals	EPA 7199
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW65A	G	A	2008 - Q04	0846N003	Parcel G ZVI TS	11/10/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Chloromethane	**Y**	**0.53**		ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Chromium (hexavalent)	N	0.5	U	ug/l	Metals	EPA 7199
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW66A	G	A	2008 - Q04	0846N002	Parcel G ZVI TS	11/10/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Chloroform	**Y**	**0.28**	**J**	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Chloromethane	**Y**	**0.32**	**J**	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Chromium (hexavalent)	**Y**	**2.5**		ug/l	Metals	EPA 7199
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW01A	G	A	2008 - Q04	0846B036	Parcel G ZVI TS	11/10/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Chloromethane	**Y**	**0.49**	**J**	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Chromium (hexavalent)	N	0.5	U	ug/l	Metals	EPA 7199
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Nickel	N	5	U	ug/l	Metals	EPA 6010B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR34MW02A	G	A	2008 - Q04	0846G008	Parcel G ZVI TS	11/10/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Trichloroethylene (TCE)	**Y**	**0.2**	**J**	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR36MW16A	G	A	2008 - Q04	0845H039	Parcel G ZVI TS	11/7/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR67MW04A	G	A	2008 - Q04	0845B033	Parcel G ZVI TS	11/7/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Chromium (hexavalent)	**Y**	**3**		ug/l	Metals	EPA 7199
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Nickel	**Y**	**6.8**		ug/l	Metals	EPA 6010B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
IR71MW04A	G	A	2008 - Q04	0846G010	Parcel G ZVI TS	11/10/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Chloromethane	**Y**	**0.56**		ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Chromium (hexavalent)	**Y**	**0.47**	**J**	ug/l	Metals	EPA 7199
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	cis-1,3-dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Nickel	**Y**	**3.6**	**J**	ug/l	Metals	EPA 6010B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Tetrachloroethylene (PCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	trans-1,3-Dichloropropene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW36A	G	A	2008 - Q04	0846G009	Parcel G ZVI TS	11/10/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,1,1,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,1,1-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,1,2,2-Tetrachloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Freon 113	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,1,2-Trichloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethane	N	1	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,1-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,2,3-Trichloropropane	N	1	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,2,4-Trichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,2-Dibromo-3-Chloropropane	N	2	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,2-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,2-Dichloroethane	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,2-Dichloropropane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,3-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	1,4-Dichlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Benzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Bromobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Bromodichloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Bromoform	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Bromomethane	N	1	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Carbon tetrachloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Chlorobenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Chloroethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Chloroform	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Chloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	cis-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	cis-1,3-dichloropropene	N	0.5	UJ	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Dibromochloromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Dibromomethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Dichlorodifluoromethane	N	1	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Methylene chloride	N	5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	MTBE	N	0.5	UJ	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Tetrachloroethylene (PCE)	N	0.5	UJ	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	trans-1,2-Dichloroethene	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	trans-1,3-Dichloropropene	N	0.5	UJ	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Trichloroethylene (TCE)	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Trichlorofluoromethane	N	0.5	U	ug/l	VOCs	EPA 8260B
PA33MW37A	G	A	2008 - Q04	0845D024	Parcel G ZVI TS	11/6/2008	Vinyl chloride	N	0.1	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	2-Methylnaphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Acenaphthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Acenaphthylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Benzene	N	0.2	U	ug/l	VOCs	EPA 8260B-SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Benzo(a)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Benzo(a)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Benzo(b)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Benzo(g,h,i)perylene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Benzo(k)fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Chrysene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Dibenz(a,h)anthracene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Xylene (total) (dimethyl benzene)	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Ethylbenzene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Fluoranthene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Fluorene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Indeno(1,2,3-c,d)pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	TPH-motor oil range	N	40	U	ug/l	TPH	EPA 8015B-D [(4)]
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Naphthalene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Phenanthrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Pyrene	N	0.2	U	ug/l	PAHs	EPA 8270C SIM
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	MTBE	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	Toluene	N	0.5	U	ug/l	VOCs	EPA 8260B
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	TPH-diesel range	N	40	U	ug/l	TPH	EPA 8015B-D [(4)]

Well ID / Location	Parcel	Aquifer	Quarter	Sample ID	Sampling Objective	Sample Date	Analyte	Detect (Y/N)	Result	Validation Code	Unit	Analytical Group	Analytical Method
IR33MW02A	G	A	2009 - Q01	0912D043	TPH CAP	3/20/2009	TPH-gasoline range	N	20	U	ug/l	TPH	EPA 8015B-G (5)

Notes

All metals results are for dissolved concentrations.
(1) Temporary groundwater monitoring well.
(2) Sample collected from a temporary borehole.
(3) Sampling objective for this analyte not applicable. This non-required extra analyte was analyzed along with requested analytes.
(4) Sample underwent silica gel cleanup (EPA 3630C) prior to analysis. Diesel quantified as carbon ranges C12-C24. Motor oil quantified as carbon ranges C24-C36.
(5) Gasoline quanitied as carbon ranges C6-C12.

Abbreviations

BGMP: Basewide Groundwater Monitoring Program
CAP: Corrective Action Program
DCA: Dichloroethane
EPA: U.S. Environmental Protection Agency
Freon 113 = 1,1,2-Trichloro-1,2,2-Trifluoroethane
MTBE: Methyl tert-butyl ether
NA: Not applicable
ng/L: nanograms per liter
PAHs: Polynuclear Aromatic Hydrocarbons
PCBs: Polychlorinated biphenyls
SIM: Selective Ion Monitoring
TPH: Total petroleum hydrocarbons
ug/L: micrograms per liter
VOCs: volatile organic compounds
ZVI TS: Zero-valent iron treatability study

Validation Codes

J: Detected below the practical quantitation limit but above the method detection limit; estimated value
U: not detected above method detection limit

Table 2

Summary of Quality Control Sample Information

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Table 2. Summary of quality control sample information.

Borehole / Well ID	Parcel	Sample ID	Sample Date	Quarter	Matrix	QC Sample Type	EPA 8260B: BTEX & MTBE (1)	EPA 8260B: VOCs (2)	EPA 8270C-SIM: PAHs	EPA 8015B-G: Gasoline	EPA 8015B-D: Diesel and Motor Oil	EPA 7196: Chromium (Hexavalent)	EPA 6010B: Chromium (Total)	EPA 1631E: Mercury	CAS SOP 1630W: Methyl Mercury	EPA 6010B: Nickel	EPA 8082: PCBs
IR14MW13A	E	0830E034	7/23/2008	2008-Q3	Water	FD											X
NA	*NA*	0835G010	8/26/2008	2008-Q3	Water	TB				X							
IR46MW47A	B	0835G012	8/26/2008	2008-Q3	Water	FD				X	X						
NA	*NA*	0835X002	8/27/2008	2008-Q3	Water	TB				X							
NA	*NA*	0836G018	9/4/2008	2008-Q3	Water	TB		X		X							
NA	*NA*	0836X005	9/4/2008	2008-Q3	Water	TB		X		X							
IR26MW49A	B	0838D011	9/16/2008	2008-Q3	Water	ERB								X	X		
IR26MW49A	B	0838D013	9/16/2008	2008-Q3	Water	FD								X	X		
NA	*NA*	0838T001	9/18/2008	2008-Q3	Water	TB				X (3)							
IR53B032	D-1	0838T003	9/18/2008	2008-Q3	Water	FD				X (3)	X (4)						
NA	*NA*	0838T004	9/19/2008	2008-Q3	Water	TB				X (3)							
NA	*NA*	0839G028	9/22/2008	2008-Q3	Water	TB				X (3)							
NA	*NA*	0839G033	9/23/2008	2008-Q3	Water	TB		X		X (3)							
IR33MW02	G	0839G037	9/23/2008	2008-Q3	Water	FD				X (3)	X (4)						
NA	*NA*	0839X007	9/23/2008	2008-Q3	Water	TB		X		X (3)							
NA	*NA*	0839G038	9/25/2008	2008-Q3	Water	TB				X (3)							
NA	*NA*	0839X008	9/25/2008	2008-Q3	Water	TB				X (3)							
IR09MW62A	G	0841C003	10/7/2008	2008-Q4	Water	FD							X				
NA	*NA*	0841B018	10/9/2008	2008-Q4	Water	TB		X									
NA	*NA*	0841C012	10/9/2008	2008-Q4	Water	TB		X		X (3)							
NA	*NA*	0841D017	10/9/2008	2008-Q4	Water	TB		X		X (3)							
IR24MW05A	B	0841D022	10/9/2008	2008-Q4	Water	FD				X (3)	X (4)						
NA	*NA*	0841X005	10/9/2008	2008-Q4	Water	TB				X (3)							
NA	*NA*	0841X006	10/9/2008	2008-Q4	Water	TB		X									
NA	*NA*	0845B027	11/6/2008	2008-Q4	Water	TB		X									
NA	*NA*	0845D023	11/6/2008	2008-Q4	Water	TB		X									
NA	*NA*	0845H029	11/6/2008	2008-Q4	Water	TB		X									
IR09P043A	G	0845H033	11/6/2008	2008-Q4	Water	FD		X				X				X	
NA	*NA*	0845X010	11/6/2008	2008-Q4	Water	TB		X									
NA	*NA*	0845B031	11/7/2008	2008-Q4	Water	TB		X									
NA	*NA*	0845D028	11/7/2008	2008-Q4	Water	TB		X									
NA	*NA*	0845H034	11/7/2008	2008-Q4	Water	TB		X									
NA	*NA*	0845X011	11/7/2008	2008-Q4	Water	TB		X									
NA	*NA*	0846B035	11/10/2008	2008-Q4	Water	TB		X									
NA	*NA*	0846G007	11/10/2008	2008-Q4	Water	TB		X									
NA	*NA*	0846N001	11/10/2008	2008-Q4	Water	TB		X									
NA	*NA*	0846X012	11/10/2008	2008-Q4	Water	TB		X									
NA	*NA*	0846B043	11/11/2008	2008-Q4	Water	TB		X									
NA	*NA*	0846G011	11/11/2008	2008-Q4	Water	TB		X									
IR09P041A	G	0846G014	11/11/2008	2008-Q4	Water	FD		X				X				X	
NA	*NA*	0846G015	11/11/2008	2008-Q4	Water	TB				X (3)							
NA	*NA*	0912A004	3/20/2009	2009-Q1	Water	TB	X (1)			X (3)							
NA	*NA*	0912D042	3/20/2009	2009-Q1	Water	TB	X (1)			X (3)							
NA	*NA*	0912H035	3/20/2009	2009-Q1	Water	TB	X (1)			X (3)							

Borehole / Well ID	Parcel	Sample ID	Sample Date	Quarter	Matrix	QC Sample Type	EPA 8260B: BTEX & MTBE (1)	EPA 8260B: VOCs (2)	EPA 8270C-SIM: PAHs	EPA 8015B-G: Gasoline	EPA 8015B-D: Diesel and Motor Oil	EPA 7196: Chromium (Hexavalent)	EPA 6010B: Chromium (Total)	EPA 1631E: Mercury	CAS SOP 1630W: Methyl Mercury	EPA 6010B: Nickel	EPA 8082: PCBs
NA	*NA*	0912W043	3/20/2009	2009-Q1	Water	TB	X (1)			X (3)							
IR24MW05A	B	0912W047	3/20/2009	2009-Q1	Water	FD	X (1)		X	X (3)	X (4)						
NA	*NA*	0912X010	3/20/2009	2009-Q1	Water	TB	X (1)			X (3)							
NA	*NA*	0912X011	3/20/2009	2009-Q1	Water	TB	X (1)			X (3)							
NA	*NA*	0913B032	3/23/2009	2009-Q1	Water	TB	X (1)			X (3)							
NA	*NA*	0913D045	3/23/2009	2009-Q1	Water	TB	X (1)			X (3)							
NA	*NA*	0913G006	3/23/2009	2009-Q1	Water	TB	X (1)			X (3)							
NA	*NA*	0913X016	3/23/2009	2009-Q1	Water	TB	X (1)			X (3)							
IR18MW100B	B	0913D047	3/27/2009	2009-Q1	Water	FD	X (1)		X	X (3)	X (4)						
PA18MW09A	B	0913G008	3/27/2009	2009-Q1	Water	FD	X (1)		X	X (3)	X (4)						

Notes:

(1) Benzene analyzed by EPA 8260B-SIM.

(2) Full suite of VOCs per BGMP SAP (June, 2008). 1,2-DCA, carbon tetrachloride, and vinyl chloride analyzed by EPA 8260B-SIM.

(3) TPH-gasoline was quantified as carbon range C6-C12.

(5) Sample underwent silica gel cleanup (EPA 3630C) prior to analysis. TPH-diesel was quantified as carbon range C12-C24. TPH-motor oil was quantified as carbon range C24-C36.

Abbreviations:

BTEX: Benzene, toluene, ethylbenzene, and xylenes
DCA: Dichloroethane
EPA: U.S. Environmental Protection Agency
ERB: Equipment rinsate blank
FD: Field duplicate
MTBE: Methyl tertiary butyl ether
NA: Not Assigned
PAHs: Polynuclear aromatic hydrocarbons (see Table 1 for list of PAHs).
PCBs: Polychlorinated biphenys
QC: Quality control
SIM: Selective Ion Monitoring
TB: Trip Blank

ATTACHMENT A

FIELD DOCUMENTATION

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Field Logbook Notes and Groundwater Monitoring Well Field Data Sheets

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3Q2008 Sampling Event

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Monitoring Well Sampling Sheet

Well ID: IR02MW374A	Parcel: E	Sampling Event: 3rd Quarter 2008
Sampling By: Gabe Fuson	Helper: Devant Walker	Sampling Date: 9/3/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 15.77	Total Depth (feet): 23.65	Pump Intake Depth: 18.235

Well Physical Inspection

Well Completion Type: Monument

Height above ground/road surface (inches): 44 **Number of Bollards: 3**

Difficulty opening? NO

Well locked upon arrival: YES **Condition of lock: Usable**

External Well ID: IR02MW374A **Internal Well ID: IR02MW374A**

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Protective casing and cover: OK **Well cap: OK**

PVC / inner casing: OK

Odor: NO **Stain: NO**

Casing diameter: 4" **Casing Type: PVC**

Type of Well Cap: Rubber Slip Cap **PVC Casing distinct mark/notch: Mark**

PVC casing orientation: North **Air venting hole on PVC / inner casing: NO**

Obstructions: NO **Immiscible phases present: NO**

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Groundwater Parameters

Well ID: IR02MW374A

Initial Depth to Water: 15.77 **Total Depth: 23.65**

Maximum Drawdown: 16.39 **Pump Intake Depth: 18.235**

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
9/3/2008	1446	500		15.77						
9/3/2008	1448	500	**1,000**	15.77	19.09	34.50	1.59	7.56	-199.00	98.00
9/3/2008	1450	500	**2,000**	15.77	18.99	34.50	1.61	7.60	-203.00	90.70
9/3/2008	1452	500	**3,000**	15.77	18.81	33.80	1.41	7.62	-205.00	66.10
9/3/2008	1454	500	**4,000**	15.77	18.61	33.40	1.10	7.64	-207.00	64.70
9/3/2008	1456	500	**5,000**	15.76	18.56	32.80	0.88	7.66	-208.00	61.90
9/3/2008	1458	500	**6,000**	15.76	18.45	31.60	0.73	7.68	-210.00	60.00

9/3/2008	1500	500	**7,000**	15.76	18.43	30.60	0.61	7.68	-208.00	58.90
9/3/2008	1502	500	**8,000**	15.76	18.39	28.30	0.53	7.69	-210.00	47.20
9/3/2008	1504	500	**9,000**	15.75	18.36	26.70	0.45	7.68	-211.00	48.00
9/3/2008	1506	500	**10,000**	15.75	18.35	24.90	0.38	7.69	-217.00	49.10
9/3/2008	1508	500	**11,000**	15.75	18.35	23.70	0.34	7.71	-225.00	48.10
9/3/2008	1510	500	**12,000**	15.75	18.36	22.80	0.30	7.74	-233.00	46.20
9/3/2008	1512	500	**13,000**	15.74	18.37	22.50	0.26	7.77	-238.00	41.50
9/3/2008	1514	500	**14,000**	15.74	18.32	21.90	0.23	7.80	-242.00	34.50
						Stability:	**NO**	**YES**		**YES**

QED Start Index: 25 **QED End Index: 25** **Final PSI: 19** **Final Flow ID: 165**

Groundwater Samples Analytes List for Well: IR02MW374A

TPH-p (gas) / TPH-e (diesel, motor oil) / PCBs / Diss Mercury / Diss Metals / Hex Chrom / Rad Cs-137 / Rad Ra-226 / Rad Sr-90

Sample ID: 0836G017 Sample Time: 15:16

QA/QC Samples

This well requires the following samples: None

After Sampling, depth to bottom of well: (ft. below TOC): 23.65 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR02MW375A	Parcel: E	Sampling Event: 3rd Quarter 2008
Sampling By: Gabe Fuson	Helper: Devant Walker	Sampling Date: 9/3/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 17.60	Total Depth (feet): 23.11	Pump Intake Depth: 19.17

Well Physical Inspection

Well Completion Type: Monument

Height above ground/road surface (inches): 39.5 **Number of Bollards: 3**

Difficulty opening? NO

Well locked upon arrival: YES **Condition of lock: Usable**

External Well ID: None **Internal Well ID: IR02MW375A**

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Protective casing and cover: OK **Well cap: OK**

PVC / inner casing: OK

Odor: NO **Stain: NO**

Casing diameter: 4" **Casing Type: PVC**

Type of Well Cap: Rubber Slip Cap **PVC Casing distinct mark/notch: Mark**

PVC casing orientation: North **Air venting hole on PVC / inner casing: NO**

Obstructions: NO **Immiscible phases present: NO**

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Groundwater Parameters

Well ID: IR02MW375A

Initial Depth to Water: 17.60 **Total Depth: 23.11**

Maximum Drawdown: 17.99 **Pump Intake Depth: 19.17**

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
9/3/2008	1000	500								
9/3/2008	1002	500	**1,000**	17.71	18.07	30.00	2.44	7.11	-172.00	11.60
9/3/2008	1004	500	**2,000**	17.71	17.97	28.80	2.14	7.14	-180.00	11.30
9/3/2008	1006	500	**3,000**	17.71	17.94	26.40	1.87	7.20	-187.00	11.90
9/3/2008	1008	500	**4,000**	17.71	17.91	22.00	1.51	7.26	-190.00	16.00
9/3/2008	1010	500	**5,000**	17.72	17.86	19.70	1.33	7.27	-190.00	16.60
9/3/2008	1012	500	**6,000**	17.72	17.86	17.00	1.11	7.27	-186.00	16.70

9/3/2008	1014	500	**7,000**	17.72	17.88	15.10	0.95	7.26	-181.00	15.00
9/3/2008	1016	500	**8,000**	17.73	17.91	14.28	0.73	7.23	-177.00	14.10
9/3/2008	1018	500	**9,000**	17.73	17.92	14.10	0.61	7.21	-170.00	14.10
9/3/2008	1020	500	**10,000**	17.73	17.91	13.47	0.52	7.18	-166.00	16.10
9/3/2008	1022	500	**11,000**	17.74	17.93	13.45	0.42	7.16	-163.00	15.90
9/3/2008	1024	500	**12,000**	17.74	17.92	13.61	0.33	7.16	-161.00	15.60
						Stability:	**YES**		**YES**	**YES**

QED Start Index: 20 **QED End Index: 20** **Final PSI: 18** **Final Flow ID: 165**

Groundwater Samples Analytes List for Well: IR02MW375A

TPH-p (gas) / TPH-e (diesel, motor oil) / PCBs / Diss Mercury / Diss Metals / Hex Chrom / Rad Cs-137 / Rad Ra-226 / Rad Sr-90

Sample ID: 0836G016 Sample Time: 10:28

QA/QC Samples

This well requires the following samples: None

Trip Blank Sample Data: Sample ID: 0836G017, Sample Time: 10:27

After Sampling, depth to bottom of well: (ft. below TOC): 23.11 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

Insufficient water. Pump intake depth set at 22.5 feet below TOC per conversation with Tom Sayre.

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR14MW13A	Parcel: E	Sampling Event: 3rd Quarter 2008
Sampling By: Erik Bluvas	Helper: Erik Bluvas	Sampling Date: 7/23/2008
PID DATA: Top of Casing: 0.10		Background: 0.10
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 9.34	Total Depth (feet): 21.92	Pump Intake Depth:

Well Physical Inspection

Well Completion Type: Monument

Height above ground/road surface (inches): 26 **Number of Bollards: NONE**

Difficulty opening? NO

Well locked upon arrival: YES **Condition of lock: Usable**

External Well ID: IR14MW13A **Internal Well ID: None**

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Protective casing and cover: Rusted **Well cap: OK**

PVC / inner casing: OK

Odor: YES **Stain: YES**

Casing diameter: 2" **Casing Type: PVC**

Type of Well Cap: Expandable **PVC Casing distinct mark/notch: Mark**

PVC casing orientation: North **Air venting hole on PVC / inner casing: NO**

Obstructions: NO **Immiscible phases present: NO**

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Groundwater Parameters

Well ID: IR14MW13A

Initial Depth to Water: 9.34 **Total Depth: 21.92**

Maximum Drawdown: N/A **Pump Intake Depth:**

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
7/23/2008	1010	500		9.34						
7/23/2008	1012	500	**1,000**	9.40	18.74	13.54	2.50	7.12	-167.00	86.20
7/23/2008	1014	500	**2,000**	9.41	18.44	17.60	1.80	7.04	-216.00	62.00
7/23/2008	1016	500	**3,000**	9.40	18.34	18.00	0.55	7.02	-239.00	44.50
7/23/2008	1018	500	**4,000**	9.39	18.35	17.70	0.86	7.00	-245.00	31.70
7/23/2008	1020	500	**5,000**	9.41	18.34	17.20	0.45	6.97	-244.00	24.20
7/23/2008	1022	500	**6,000**	9.39	18.37	15.80	0.37	6.93	-239.00	18.10

TPH Cal 1

Monitoring Well Sampling Sheet

Sheet __ of __

Well No.: IR24MW05A	Day of Week: Tue.	Date: 8/26/08
Personnel: G. Fusan, D. Wilkin	Initial depth to water: 9.06	ft. below top of casing

Organic Vapor Concentrations

PID — Top of Casing: 0.0 Background: 0.0

Landfill Gas Meter (if applicable to well) — LEL: NA Methane: NA O2: NA

Groundwater Parameters

Time	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temperature (degrees C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
1136	500	0	9.06						
1138	500	1.0	9.27	18.35	42.3	0.39	6.72	-243	12.0
1140	500	2.0	9.34	18.20	41.3	0.36	6.72	-253	14.0
1142	500	3.0	9.40	18.17	41.2	0.32	6.72	-263	16.7
1144	500	4.0	9.42	18.17	41.3	0.28	6.72	-275	13.9
1146	500	5.0	9.40	18.16	41.4	0.26	6.72	-275	12.9
1148	500	6.0	9.40	18.18	41.4	0.21	6.72	-282	11.9
1150	500	7.0	9.40	18.13	41.4	0.19	6.73	-284	9.3
1152	500	8.0	9.40	18.12	41.4	0.19	6.73	-289	7.8

After Sampling Depth to Bottom of Well: 22.07 ft. below TOC Purged Dry? NO

Field Measurement Equipment Used

Equipment	Model	Serial Number	Equipment	Model	Serial Number
Water Quality Meter	YSI 556		PID	MiniRae	
Turbidity Meter	LaMotte		Filter Apparatus	Disposable	
Water Level Meter	Heron-style		Other:		
Pump	Grundfos RF2		Other:		

Groundwater Samples Collected (check all that apply)

Metals		Organotins		NH3	
PCBs		Oil / Grease		TKN	
Pesticides		Cyanide		Salinity	
VOCs		Anions		TDS	
SVOCs		Sulfide		TSS	
TPH-e	X	Dioxane			
TPH-p	X	OP Cmpds			
Hexavalent Chromium		Organo Cl Pesticides			

SAMPLE INFORMATION

Sample Number: 0835G013

Sample Date: 8/26/08 Time: 1154

Middle of Saturated Screen

Sample Depth (ft. below TOC): _____

Method of Extraction: Submersible Pump

Method of Sampling: Submersible Pump

QA/QC Samples:

None? X Field Dupe MS/MSD? ____ Rinsate

(FD) Sample Time _____ (Rinsate) Sample Time _____

(FD) Sample Number _____ (Rinsate) Sample Number _____

QA/QC Checked by: _____ Date: _____

QED Index: 16 ~ E.F 103 PST: 11

7/23/2008	1024	500	**7,000**	9.40	18.34	15.40	0.32	6.93	-240.00	16.60
7/23/2008	1026	500	**8,000**	9.40	18.38	14.32	0.25	6.94	-241.00	15.50
7/23/2008	1028	500	**9,000**	9.41	18.42	13.46	0.21	6.97	-242.00	15.70
7/23/2008	1030	500	**10,000**	9.40	18.43	12.82	0.19	6.98	-242.00	12.70
7/23/2008	1032	500	**11,000**	9.39	18.44	12.16	0.17	7.00	-241.00	11.30
7/23/2008	1034	500	**12,000**	9.38	18.51	11.66	0.15	7.01	-242.00	9.40
7/23/2008	1036	500	**13,000**	9.39	18.50	11.50	0.14	7.02	-243.00	9.00
7/23/2008	1038	500	**14,000**	9.39	18.49	11.37	0.13	7.02	-247.00	8.70
7/23/2008	1040	500	**15,000**	9.38	18.51	11.24	0.12	7.03	-251.00	8.20
						Stability:	**YES**		**YES**	**YES**

QED Start Index: 0 **QED End Index: 0** **Final PSI: 25** **Final Flow ID: 155**

Groundwater Samples Analytes List for Well: IR14MW13A
TPH-p (gas) / TPH-e (diesel, motor oil)

Sample ID: 0830E033 Sample Time: 10:55

QA/QC Samples

This well requires the following samples: / Rinsate
Rinsate Sample Data: Sample ID: 0830E034, Sample Time: 11:15
Trip Blank Sample Data: Sample ID: 0830E032, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 21.92 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR24MW05A	Parcel: B	Sampling Event: TPH Cap Program 3Q08B
Sampling By: Gabe Fuson	Helper: Shannon MacKenzie	Sampling Date: 9/22/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 9.47	Total Depth (feet): 22.07	Pump Intake Depth: 17

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR24MW05A

Internal Well ID: IR24MW05A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: YES
Explain conditions:
Trench nearby.

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO
Was Dedicated Pump Used? NO
How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR24MW05A

Initial Depth to Water: 9.47

Total Depth: 22.07

Maximum Drawdown: 11.35

Pump Intake Depth: 17

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
9/22/2008	1358	500		9.47						
9/22/2008	1400	500	**1,000**	9.86	19.28	43.40	1.62	6.77	-278.00	0.90
9/22/2008	1402	500	**2,000**	9.94	19.17	43.40	0.95	6.79	-286.00	1.00
9/22/2008	1404	500	**3,000**	9.96	19.14	43.40	0.51	6.79	-291.00	0.90
9/22/2008	1406	500	**4,000**	10.01	19.30	43.40	0.64	6.80	-296.00	0.40
9/22/2008	1408	500	**5,000**	10.02	19.31	43.40	0.56	6.80	-299.00	0.20
9/22/2008	1410	500	**6,000**	10.03	19.34	43.40	0.57	6.80	-303.00	0.30

9/22/2008	1412	500	**7,000**	10.01	19.31	43.40	0.50	6.81	-306.00	0.20
9/22/2008	1414	500	**8,000**	10.01	19.29	43.50	0.38	6.81	-310.00	0.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 0 **QED End Index: 73** **Final PSI: 14** **Final Flow ID: 165**

Groundwater Samples Analytes List for Well: IR24MW05A
TPH-p (gas) / TPH-e (diesel, motor oil) /

Sample ID: 0839G032 Sample Time: 14:16

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 22.07 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR26MW49A	Parcel: B	Sampling Event: 3rd Quarter 2008 resample
Sampling By: Gabe Fuson	Helper: Shannon MacKenzie	Sampling Date: 9/16/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 7.46	Total Depth (feet): 15.04	Pump Intake Depth: 11.43

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO
Well locked upon arrival: YES
Condition of lock: Usable
External Well ID: none
Internal Well ID: IR26MW49A

Describe Conditions as Applicable:

Concrete pad and surrounding area: Soil/Dirt
Vault lid, rubber seal, and vault: OK
Protective casing and cover: OK
Well cap: OK
PVC / inner casing: OK
Odor: NO
Stain: NO
Casing diameter: 4"
Casing Type: PVC
Type of Well Cap: Expandable
PVC Casing distinct mark/notch: Mark
PVC casing orientation: North
Air venting hole on PVC / inner casing: NO
Obstructions: NO
Immiscible phases present: NO
Photograph taken: NO
Any Unusual Conditions: NO
Any Maintenance Performed: NO
Was Dedicated Pump Available? NO
Was Dedicated Pump Used? NO
How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR26MW49A

Initial Depth to Water: 7.46
Total Depth: 15.04
Maximum Drawdown: 8.45
Pump Intake Depth: 11.43

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
9/16/2008	1133	500		7.46						
9/16/2008	1135	500	**1,000**	6.90	18.98	44.30	5.81	7.31	170.00	0.00
9/16/2008	1137	500	**2,000**	6.96	18.85	44.30	5.89	7.35	159.00	0.00
9/16/2008	1139	500	**3,000**	6.96	18.74	44.40	5.97	7.36	150.00	0.00
							Stability:	YES	YES	YES

QED Start Index: 0 QED End Index: 0 Final PSI: 12 Final Flow ID: 103

Groundwater Samples Analytes List for Well: IR26MW49A

Diss Mercury /

Sample ID: 0838G028 Sample Time: 11:42

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 15.04 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	Model	Serial Number	Equipment	Model	Serial Number
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Sheet __ of __

Well No.: 1R33MW02

Personnel: Q FUSON, S MACKENZIE

Day of Week: TUES

Date: 9-23-08

Initial depth to water: 6.90 ft. below top of casing

Organic Vapor Concentrations

PID — Top of Casing: 0.0 Background: 0.0

Landfill Gas Meter (if applicable to well) — LEL: NA Methane: NA O2: NA

Groundwater Parameters

Time	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temperature (degrees C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
1334	500	0	6.90						
1336	500	1000	6.99	20.48	3.06	1.22	7.74	22	5.2
1338	500	2000	6.99	20.34	2.93	0.79	7.75	21	6.2
1340	500	3000	7.00	20.30	2.72	0.55	7.76	23	7.3
1342	500	4000	7.00	20.37	2.43	0.45	7.76	25	7.7
1344	500	5000	7.00	20.42	2.29	0.40	7.74	29	8.2
1346	500	6000	7.00	20.49	2.16	0.36	7.72	34	8.3
1348	500	7000	7.00	20.54	2.03	0.30	7.69	38	8.9
1350	500	8000	7.00	20.54	1.94	0.26	7.66	44	9.1
1352	500	9000	7.00	20.64	1.83	0.25	7.62	49	8.2
1354	500	10000	7.00	20.67	1.75	0.22	7.61	54	7.6
1356	500	11000	7.00	20.70	1.71	0.20	7.58	59	7.8

After Sampling Depth to Bottom of Well: 21.23 ft. below TOC Purged Dry? NO

Field Measurement Equipment Used

Equipment	Model	Serial Number	Equipment	Model	Serial Number
Water Quality Meter	YSI 556		PID	MiniRae	
Turbidity Meter	LaMotte		Filter Apparatus	Disposable	
Water Level Meter	Heron-style		Other:		
Pump	Grundfos RF2		Other:		

Groundwater Samples Collected (check all that apply)

Metals		Organotins		NH3	
PCBs		Oil / Grease		TKN	
Pesticides		Cyanide		Salinity	
VOCs		Anions		TDS	
SVOCs		Sulfide		TSS	
TPH-e	✓	Dioxane			
TPH-p	✓	OP Cmpds			
Hexavalent Chromium		Organo Cl Pesticides			

SAMPLE INFORMATION

Sample Number: 0839G036

Sample Date: 9-23-08 Time: 1404

Middle of Saturated Screen

Sample Depth (ft. below TOC): _____

Method of Extraction: Submersible Pump

Method of Sampling: Submersible Pump

QA/QC Samples:

Blank? ____ Field Dupe MS/MSD? ____ Rinsate

(FD) Sample Time _____ (Rinsate) Sample Time 1419

(FD) Sample Number _____ (Rinsate) Sample Number 0839G037

QC Checked by: _____ Date: _____

PUMP 14' INDEX 92 PC120 ID 1/2

Monitoring Well Sampling Sheet

Sheet __ of __

Well No.: 1R33mW02

Personnel: G EVISON, SMACKENZIE

Day of Week: TUES

Date: 9-23-08

Initial depth to water: ft. below top of casing

Organic Vapor Concentrations

PID

Top of Casing: Background:

Landfill Gas Meter (if applicable to well)

LEL: Methane: O2:

Groundwater Parameters

Time	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temperature (degrees C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
		0							
1358	500	12000	7.00	20.76	1.66	0.19	7.56	64	8.6
1400	500	13000	7.01	20.78	1.60	0.17	7.57	67	9.0
1402	500	14000	7.01	20.83	1.55	0.19	7.55	72	9.1

After Sampling Depth to Bottom of Well: ft. below TOC Purged Dry? NO

Field Measurement Equipment Used

Equipment	Model	Serial Number	Equipment	Model	Serial Number
Water Quality Meter	YSI 556		PID	MiniRae	
Turbidity Meter	LaMotte		Filter Apparatus	Disposable	
Water Level Meter	Heron-style		Other:		
Pump	Grundfos RF2		Other:		

Groundwater Samples Collected (check all that apply)

Metals		Organotins		NH3	
PCBs		Oil / Grease		TKN	
Pesticides		Cyanide		Salinity	
VOCs		Anions		TDS	
SVOCs		Sulfide		TSS	
TPH-e		Dioxane			
TPH-p		OP Cmpds			
Hexavalent Chromium		Organo Cl Pesticides			

SAMPLE INFORMATION

Sample Number: 08396036

Sample Date: 9-23-08 Time: 1404

Middle of Saturated Screen

Sample Depth (ft. below TOC):

Method of Extraction:	Method of Sampling:
Submersible Pump	Submersible Pump

QA/QC Samples:

None? ____ Field Dupe MS/MSD? ____ Rinsate

(FD) Sample Time ____ (Rinsate) Sample Time 1419

(FD) Sample Number (Rinsate) Sample Number 08396037

QA/QC Checked by: ____ Date: ____

Monitoring Well Sampling Sheet

Well ID: IR39MW21A	Parcel: E	Sampling Event: 3rd Quarter 2008
Sampling By: Gabe Fuson	Helper: Devant Walker	Sampling Date: 9/4/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 8.45	Total Depth (feet): 15.2	Pump Intake Depth:

Well Physical Inspection

Well Completion Type: Monument

Height above ground/road surface (inches): 24 Number of Bollards: NONE

Difficulty opening? NO

Well locked upon arrival: YES Condition of lock: Usable

External Well ID: MW21A Internal Well ID: IR39MW21A

Describe Conditions as Applicable:

Concrete pad and surrounding area: Eroded

Protective casing and cover: OK Well cap: OK

PVC / inner casing: OK

Odor: YES Stain: YES

Casing diameter: 4" Casing Type: PVC

Type of Well Cap: Expandable PVC Casing distinct mark/notch: Mark

PVC casing orientation: North Air venting hole on PVC / inner casing: NO

Obstructions: NO Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Groundwater Parameters

Well ID: IR39MW21A

Initial Depth to Water: 8.45 Total Depth: 15.2

Maximum Drawdown: N/A Pump Intake Depth:

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
7/18/2008	1354	500		5.90						

Stability:

QED Start Index: QED End Index: Final PSI: Final Flow ID:

Groundwater Samples Analytes List for Well: IR39MW21A

VOCs-Benz

Sample ID: 0836G023 Sample Time: 11:14

QA/QC Samples

This well requires the following samples: None

After Sampling, depth to bottom of well: (ft. below TOC): 15.2 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

3 well volumes purged.

Unusual Events/Problems:

General Comments:

TPH CAP 1

Monitoring Well Sampling Sheet

Sheet __ of __

Well No.: IR46MW47A	Day of Week: TUE.	Date: 8/26/08
Personnel: G. Fusion, D. Walker	Initial depth to water: 8.24 ft. below top of casing	

Organic Vapor Concentrations

PID — Top of Casing: 0.0 Background: 0.0

Landfill Gas Meter (if applicable to well) — LEL: NA Methane: NA O2: NA

Groundwater Parameters

Time	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	9.93 MAX Depth to water (ft. below TOC)	Temperature (degrees C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
1024	500	0	8.24						
1026	500	1.0	8.09	17.20	19.2	1.88	6.92	43	0.5
1028	500	2.0	8.06	17.07	19.3	1.28	6.94	4	0.1
1030	500	3.0	8.04	17.00	19.4	0.78	6.94	-15	0.1
1032	500	4.0	8.03	16.99	19.5	0.55	6.95	-36	0.0
1034	500	5.0	8.02	16.96	19.5	0.45	6.96	-48	0.0
1036	500	6.0	8.01	16.94	19.6	0.36	6.96	-60	0.1
1038	500	7.0	8.00	16.95	19.5	0.31	6.97	-67	0.3
1040	500	8.0	7.99	16.93	19.6	0.25	6.97	-74	0.1

After Sampling
Depth to Bottom of Well: 20.81 ft. below TOC Purged Dry? NO

Field Measurement Equipment Used

Equipment	Model	Serial Number	Equipment	Model	Serial Number
Water Quality Meter	YSI 556		PID	MiniRae	
Turbidity Meter	LaMotte		Filter Apparatus	Disposable	
Water Level Meter	Heron-style		Other:		
Pump	Grundfos RF2		Other:		

Groundwater Samples Collected (check all that apply)

Metals		Organotins		NH3			
PCBs		Oil / Grease		TKN			
Pesticides		Cyanide		Salinity			
VOCs		Anions		TDS			
SVOCs		Sulfide		TSS			
TPH-e	X	Dioxane					
TPH-p	X	OP Cmpds					
Hexavalent Chromium		Organo Cl Pesticides					

SAMPLE INFORMATION

Sample Number: 08356011

Sample Date: 8/26/08 Time: 1046

Middle of Saturated Screen

Sample Depth (ft. below TOC): 15

Method of Extraction: Submersible Pump — Method of Sampling: Submersible Pump

QA/QC Samples:

None? DW — Field Dupe — MS/MSD? ____ Rinsate

(FD) Sample Time 1051 (Rinsate) Sample Time ____

(FD) Sample Number 08356051 (Rinsate) Sample Number ____

QA/QC Checked by: ____ Date: ____

QED [illegible] 08 [illegible] FE

Monitoring Well Sampling Sheet

Well ID: IR46MW47A	Parcel: B	Sampling Event: TPH Cap Program 3Q08B
Sampling By: Gabe Fuson	Helper: Shannon MacKenzie	Sampling Date: 9/22/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 8.44	Total Depth (feet): 20.84	Pump Intake Depth: 15

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: 47A

Internal Well ID: IR46MW47A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR46MW47A

Initial Depth to Water: 8.44

Total Depth: 20.84

Maximum Drawdown: 10.08

Pump Intake Depth: 15

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
9/22/2008	1103	500		8.44						
9/22/2008	1105	500	**1,000**	8.45	17.65	20.50	0.75	6.98	-226.00	1.20
9/22/2008	1107	500	**2,000**	8.46	17.56	20.60	0.53	7.00	-228.00	0.80
9/22/2008	1109	500	**3,000**	8.47	17.55	20.60	0.46	7.01	-229.00	0.80
9/22/2008	1111	500	**4,000**	8.48	17.53	20.70	0.40	7.01	-230.00	0.40
9/22/2008	1113	500	**5,000**	8.49	17.50	20.70	0.33	7.01	-231.00	0.10
9/22/2008	1115	500	**6,000**	8.48	17.46	20.80	0.29	7.01	-231.00	0.30
9/22/2008	1117	500	**7,000**	8.49	17.45	20.80	0.30	7.01	-231.00	0.30

9/22/2008	1119	500	**8,000**	8.50	17.44	20.80	0.26	7.01	-232.00	0.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 0 **QED End Index: 64** **Final PSI: 14** **Final Flow ID: 165**

Groundwater Samples Analytes List for Well: IR46MW47A
TPH-p (gas) / TPH-e (diesel, motor oil) /

Sample ID: 0839G030 Sample Time: 11:21

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 20.84 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR46MW48A	Parcel: B	Sampling Event: TPH Cap Program 3Q08B
Sampling By: Gabe Fuson	Helper: Shannon MacKenzie	Sampling Date: 9/22/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 7.37	Total Depth (feet): 21.08	Pump Intake Depth: 14.185

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR46MW48A

Internal Well ID: IR46MW48A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR46MW48A

Initial Depth to Water: 7.37

Total Depth: 21.08

Maximum Drawdown: 9.07

Pump Intake Depth: 14.185

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
9/22/2008	1008	500		7.37						
9/22/2008	1010	500	**1,000**	7.47	17.88	24.20	1.00	7.07	-278.00	3.60
9/22/2008	1012	500	**2,000**	7.48	17.82	24.60	0.64	7.03	-286.00	4.00
9/22/2008	1014	500	**3,000**	7.49	17.79	25.00	0.50	7.01	-288.00	3.60
9/22/2008	1016	500	**4,000**	7.50	17.77	25.40	0.40	7.00	-290.00	3.10
9/22/2008	1018	500	**5,000**	7.51	17.75	25.80	0.29	7.00	-294.00	3.00
9/22/2008	1020	500	**6,000**	7.52	17.70	26.10	0.25	7.01	-296.00	2.40
9/22/2008	1022	500	**7,000**	7.52	17.69	26.30	0.22	7.01	-298.00	2.80

9/22/2008	1024	500	**8,000**	7.53	17.68	26.40	0.20	7.01	-300.00	2.50
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 0 **QED End Index: 59** **Final PSI: 12** **Final Flow ID: 165**

Groundwater Samples Analytes List for Well: IR46MW48A
TPH-p (gas) / TPH-e (diesel, motor oil) /

Sample ID: 0839G029 Sample Time: 10:26

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 21.08 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR46MW49A	Parcel: B	Sampling Event: TPH Cap Program 3Q08B
Sampling By: Gabe Fuson	Helper: Devant Walker	Sampling Date: 9/25/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 9.85	Total Depth (feet): 19.8	Pump Intake Depth: 15

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR46MW49A

Internal Well ID: IR46MW49A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR46MW49A

Initial Depth to Water: 9.85

Total Depth: 19.8

Maximum Drawdown: 11.14

Pump Intake Depth: 15

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
9/25/2008	1133	500		9.85						
9/25/2008	1135	500	**1,000**	9.92	17.96	24.10	3.21	7.00	126.00	8.20
9/25/2008	1137	500	**2,000**	9.93	17.94	24.20	3.19	7.00	123.00	8.10
9/25/2008	1139	500	**3,000**	9.93	17.91	24.20	3.16	7.00	119.00	7.70
9/25/2008	1141	500	**4,000**	9.94	17.91	24.20	3.18	7.00	114.00	7.90
9/25/2008	1143	500	**5,000**	9.94	17.89	24.20	3.15	7.00	109.00	7.50
9/25/2008	1145	500	**6,000**	9.94	17.87	24.20	3.14	7.00	103.00	7.30
9/25/2008	1147	500	**7,000**	9.94	17.87	24.20	3.12	7.01	98.00	7.50

9/25/2008	1149	500	**8,000**	9.94	17.86	24.20	3.09	7.01	92.00	8.10
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 103 **QED End Index: 103** **Final PSI: 12** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR46MW49A
TPH-p (gas) / TPH-e (diesel, motor oil) /

Sample ID: 0839G040 Sample Time: 11:51

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 19.8 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

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4Q2008 Sampling Event

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Gabriel Fuson 103

Location H.P.S. Date 11/11/08

Project / Client US Navy - BGMP, TPH CAP, DIMR

1316 - arrived @ IR46MW50A
PID reading @ TOC = 3.2 ppm
1319 - measured TD: 19.74'
DTW: 8.89'
1331 - collected groundwater sample @ IR46MW50A w/ peristaltic
1404 - arrived @ IR46MW52A
PID reading @ TOC: 4.3 ppm
1408 - measured TD: 19.50'
DTW: 10.22'
1416 - collected groundwater sample @ IR46MW52A w/ peristaltic
1436 - set up @ IR46MW51A
PID reading @ TOC: 7.6
1439 - measured TD: 19.70'
DTW: 10.28'
1446 - collected groundwater sample @ IR46MW51A w/ peristaltic
1526 - arrived @ borehole G13 where Pneumatic Fracturing was currently boring.
1531 - measured TD: 20.41'
DTW: 8.37
1537 - collected grab-groundwater sample @ G13
1548 - left location G13.

Monitoring Well Sampling Sheet

Well ID: IR09MW31A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Shannon MacKenzie	Sampling Date: 11/10/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.40	Total Depth (feet): 12.5	Pump Intake Depth: 10

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	15/16"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: NO

Condition of lock: Usable

External Well ID: IR09MW31A

Internal Well ID: IR09MW31A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: Rusted

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09MW31A

Initial Depth to Water: 6.40

Total Depth: 12.5

Maximum Drawdown: 7.30

Pump Intake Depth: 10

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/10/2008	1125	500		6.40						
11/10/2008	1127	500	**1,000**	6.72	20.10	0.91	3.66	7.19	-81.00	5.50
11/10/2008	1129	500	**2,000**	6.82	20.06	0.87	3.78	7.22	-69.00	6.30
11/10/2008	1131	200	**3,000**	6.95	20.22	0.84	4.86	7.23	-64.00	6.90
11/10/2008	1136	200	**4,000**	6.95	20.04	0.85	3.82	7.24	-35.00	6.50
11/10/2008	1141	200	**5,000**	6.99	20.07	0.85	3.32	7.20	-18.00	7.90
11/10/2008	1146	200	**6,000**	6.99	20.00	0.84	2.96	7.23	-15.00	9.50
11/10/2008	1151	200	**7,000**	6.99	20.00	0.84	2.84	7.19	-14.00	10.30

11/10/2008	1156	200	**8,000**	6.99	20.00	0.84	3.02	7.22	-15.00	11.10
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 54 **QED End Index: 54** **Final PSI: 18** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09MW31A
VOCs / Hex Chrom /

Sample ID: 0846B040 Sample Time: 11:57

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 12.5 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09MW36A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Shannon MacKenzie	Sampling Date: 11/11/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.48	Total Depth (feet): 21	Pump Intake Depth: 15

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover: 1
Size of Bolts: 15/16"
Bolts Missing: 0
Bolts Replaced: 0
Reason for not Replacing: N/A
Standing water in vault: NO
Water pumped out: NO
Difficulty opening?: NO
Well locked upon arrival: YES
Condition of lock: Usable
External Well ID: IR09MW36A
Internal Well ID: IR09MW36A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK
Vault lid, rubber seal, and vault: Rusted
Protective casing and cover: OK
Well cap: OK
PVC / inner casing: OK
Odor: NO
Stain: NO
Casing diameter: 4"
Casing Type: PVC
Type of Well Cap: Expandable
PVC Casing distinct mark/notch: Mark
PVC casing orientation: North
Air venting hole on PVC / inner casing: NO
Obstructions: NO
Immiscible phases present: NO
Photograph taken: NO
Any Unusual Conditions: NO
Any Maintenance Performed: NO
Was Dedicated Pump Available? NO
Was Dedicated Pump Used? NO
How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09MW36A

Initial Depth to Water: 6.48
Total Depth: 21
Maximum Drawdown: 8.61
Pump Intake Depth: 15

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/11/2008	1104	500		6.48						
11/11/2008	1106	500	**1,000**	6.59	19.19	9.79	3.11	7.26	-67.00	1.20
11/11/2008	1108	500	**2,000**	6.69	19.19	11.61	1.02	7.19	-67.00	0.00
11/11/2008	1110	500	**3,000**	6.72	19.31	10.91	0.60	7.18	-68.00	0.00
11/11/2008	1112	500	**4,000**	6.73	19.40	10.41	0.48	7.19	-67.00	0.00
11/11/2008	1114	500	**5,000**	6.73	19.45	9.88	0.41	7.20	-65.00	0.00
11/11/2008	1116	500	**6,000**	6.73	19.41	9.52	0.29	7.20	-63.00	0.20
11/11/2008	1118	500	**7,000**	6.73	19.41	8.75	0.29	7.21	-61.00	0.00

11/11/2008	1120	500	**8,000**	6.73	19.49	8.25	0.31	7.22	-58.00	0.00
11/11/2008	1122	500	**9,000**	6.78	19.47	7.72	0.34	7.23	-54.00	0.20
11/11/2008	1124	500	**10,000**	6.80	19.53	7.27	0.43	7.23	-49.00	0.00
11/11/2008	1126	500	**11,000**	6.80	19.55	7.15	0.53	7.24	-45.00	0.00
11/11/2008	1128	500	**12,000**	6.81	19.58	7.13	0.54	7.24	-45.00	0.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 14 **QED End Index: 14** **Final PSI: 15** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09MW36A
VOCs / Diss Metals / Hex Chrom /

Sample ID: 0846B046 Sample Time: 11:30

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 21 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09MW38A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Erik Bluvas	Sampling Date: 11/6/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.52	Total Depth (feet): 13	Pump Intake Depth: 11

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR09MW38A

Internal Well ID: 38A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09MW38A

Initial Depth to Water: 6.52

Total Depth: 13

Maximum Drawdown: 7.64

Pump Intake Depth: 11

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/6/2008	1122	500		6.52						
11/6/2008	1124	500	**1,000**	6.57	19.31	0.72	0.66	6.96	153.00	10.20
11/6/2008	1126	500	**2,000**	6.57	19.17	0.72	3.50	6.97	145.00	9.10
11/6/2008	1128	500	**3,000**	6.57	19.13	0.72	0.26	6.94	139.00	9.30
11/6/2008	1130	500	**4,000**	6.57	19.11	0.72	0.23	6.98	136.00	9.00
11/6/2008	1132	500	**5,000**	6.57	19.11	0.72	0.21	6.93	136.00	10.40
11/6/2008	1134	500	**6,000**	6.57	19.10	0.72	0.19	6.97	134.00	9.50
11/6/2008	1136	500	**7,000**	6.57	19.08	0.72	0.18	6.98	132.00	9.20

11/6/2008	1138	500	**8,000**	6.57	19.11	0.72	0.17	6.98	132.00	9.30
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 0 **QED End Index: 0** **Final PSI: 18** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09MW38A
VOCs / Hex Chrom /

Sample ID: 0845B028 Sample Time: 11:45

QA/QC Samples

This well has the following QA/QC sample types:
Trip Blank Sample Data: Sample ID: 0845B027, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 13 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09MW39A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Donevan Noordzee	Sampling Date: 11/6/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 5.19	Total Depth (feet): 22.97	Pump Intake Depth: 18

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR09MW39A

Internal Well ID: IR09MW39A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: Rusted

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09MW39A

Initial Depth to Water: 5.19

Total Depth: 22.97

Maximum Drawdown: 8.39

Pump Intake Depth: 18

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/6/2008	1411	500		5.19						
11/6/2008	1413	500	**1,000**	6.30	18.75	1.16	2.66	8.47	43.00	10.70
11/6/2008	1415	500	**2,000**	6.52	18.68	1.16	0.90	8.46	43.00	9.80
11/6/2008	1417	500	**3,000**	6.53	18.67	1.16	0.59	8.44	42.00	9.90
11/6/2008	1419	500	**4,000**	6.65	18.69	1.16	0.61	8.45	42.00	10.20
11/6/2008	1421	500	**5,000**	6.80	18.69	1.16	0.52	8.45	41.00	9.70
11/6/2008	1423	500	**6,000**	6.90	18.70	1.16	0.42	8.45	42.00	10.20
11/6/2008	1425	500	**7,000**	7.00	18.72	1.16	0.41	8.45	41.00	9.40

11/6/2008	1427	500	**8,000**	7.20	18.71	1.16	0.32	8.45	41.00	9.70
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 6 **QED End Index: 6** **Final PSI: 15** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09MW39A
VOCs / Diss Metals / Hex Chrom /

Sample ID: 0845B029 Sample Time: 14:28

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 22.97 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09MW44A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Donevan Noordzee	Sampling Date: 11/6/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.28	Total Depth (feet): 17	Pump Intake Depth: 12.5

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover: 1
Size of Bolts: 15/16"
Bolts Missing: 0
Bolts Replaced: 0
Reason for not Replacing: N/A
Standing water in vault: NO
Water pumped out: NO
Difficulty opening?: NO
Well locked upon arrival: NO
Condition of lock: Usable
External Well ID: IR09MW44A
Internal Well ID: IR09MW44A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK
Vault lid, rubber seal, and vault: OK
Protective casing and cover: OK
Well cap: OK
PVC / inner casing: OK
Odor: NO
Stain: NO
Casing diameter: 4"
Casing Type: PVC
Type of Well Cap: Expandable
PVC Casing distinct mark/notch: Mark
PVC casing orientation: North
Air venting hole on PVC / inner casing: NO
Obstructions: NO
Immiscible phases present: NO
Photograph taken: NO
Any Unusual Conditions: NO
Any Maintenance Performed: NO
Was Dedicated Pump Available? NO
Was Dedicated Pump Used? NO
How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09MW44A

Initial Depth to Water: 6.28
Total Depth: 17
Maximum Drawdown: 7.84
Pump Intake Depth: 12.5

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/7/2008	1509	500		6.28						
11/7/2008	1511	500	**1,000**	6.48	18.98	20.10	0.77	7.36	17.00	9.50
11/7/2008	1513	500	**2,000**	6.52	18.98	19.20	0.59	7.38	14.00	11.50
11/7/2008	1515	500	**3,000**	6.60	18.93	18.90	0.51	7.34	14.00	12.90
11/7/2008	1517	500	**4,000**	6.62	18.93	18.70	0.43	7.34	14.00	13.90
11/7/2008	1519	500	**5,000**	6.62	18.93	18.60	0.41	7.40	14.00	14.80
11/7/2008	1521	500	**6,000**	6.62	18.88	18.50	0.38	7.40	14.00	15.40
11/7/2008	1523	500	**7,000**	6.62	18.87	18.40	0.36	7.40	13.00	15.30

11/7/2008	1525	500	**8,000**	6.62	18.88	18.80	0.35	7.40	12.00	17.20
11/7/2008	1527	500	**9,000**	6.62	18.80	18.20	0.34	7.41	12.00	17.70
11/7/2008	1529	500	**10,000**	6.62	18.80	18.00	0.44	7.41	5.00	20.20
11/7/2008	1531	500	**11,000**	6.62	18.80	18.00	0.34	7.41	5.00	21.40
11/7/2008	1533	500	**12,000**	6.62	18.82	17.90	0.34	7.41	4.00	21.60
11/7/2008	1535	500	**13,000**	6.62	18.85	17.80	0.36	7.41	3.00	22.60
							Stability:			

QED Start Index: **QED End Index:** **Final PSI: 20** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09MW44A
VOCs / Diss Metals / Hex Chrom /

Sample ID: 0845B030 Sample Time: 15:45

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 17 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

Lost data in field on 11/6, Re-entered data on 11/7, sample time and number is incorrect. Should read Sample ID: o845B030

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09MW45F	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Shannon MacKenzie	Sampling Date: 11/10/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 5.82	Total Depth (feet): 17.62	Pump Intake Depth: 12.5

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: 45F

Internal Well ID: IR09MW45F

Describe Conditions as Applicable:

Concrete pad and surrounding area: Cracked

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09MW45F

Initial Depth to Water: 5.82

Total Depth: 17.62

Maximum Drawdown: 7.49

Pump Intake Depth: 12.5

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/10/2008	1423	500		5.82						
11/10/2008	1425	500	**1,000**	5.73	20.22	1.07	6.36	7.56	-2.00	6.30
11/10/2008	1427	500	**2,000**	6.05	20.36	1.02	6.22	7.54	4.00	5.90
11/10/2008	1429	500	**3,000**	6.35	20.38	1.02	6.28	7.53	14.00	6.10
11/10/2008	1431	334	**4,000**	6.60	20.50	1.01	6.30	7.53	20.00	5.60
11/10/2008	1434	334	**5,002**	6.81	20.39	1.01	6.24	7.52	30.00	4.60
11/10/2008	1437	200	**6,004**	7.09	20.43	1.00	6.23	7.51	39.00	4.60
11/10/2008	1442	200	**7,004**	7.13	20.13	1.01	5.57	7.52	45.00	5.00

11/10/2008	1447	200	**8,004**	7.20	20.02	1.01	5.57	7.52	51.00	4.50
11/10/2008	1452	200	**9,004**	7.30	20.01	1.01	5.62	7.52	55.00	4.60
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 67 **QED End Index: 67** **Final PSI: 20** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09MW45F
VOCs / Hex Chrom /

Sample ID: 0846B042 Sample Time: 14:53

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 17.62 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09MW51F	Parcel: D	Sampling Event: 4th Quarter 2008
Sampling By: Dan Eldredge	Helper: Shannon MacKenzie	Sampling Date: 10/7/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.96	Total Depth (feet): 21.17	Pump Intake Depth: 14.5

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover: 3
Size of Bolts: Unknown
Bolts Missing: 3
Bolts Replaced: 0
Reason for not Replacing: Tab Broken
Standing water in vault: NO
Water pumped out: NO
Difficulty opening?: NO
Well locked upon arrival: YES
Condition of lock: Usable
External Well ID: None
Internal Well ID: IR09MW51F

Describe Conditions as Applicable:

Concrete pad and surrounding area: Cracked
Vault lid, rubber seal, and vault: Cracked
Protective casing and cover: OK
Well cap: OK
PVC / inner casing: OK
Odor: NO
Stain: NO
Casing diameter: 4"
Casing Type: PVC
Type of Well Cap: Expandable
PVC Casing distinct mark/notch: Mark
PVC casing orientation: North
Air venting hole on PVC / inner casing: NO
Obstructions: NO
Immiscible phases present: NO
Photograph taken: NO
Any Unusual Conditions: NO
Any Maintenance Performed: NO

Groundwater Parameters

Well ID: IR09MW51F

Initial Depth to Water: 6.96
Total Depth: 21.17
Maximum Drawdown: 8.85
Pump Intake Depth: 14.5

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
10/7/2008	1340	500		6.96						
10/7/2008	1342	500	**1,000**	7.26	20.00	3.06	2.90	7.24	133.00	0.90
10/7/2008	1344	500	**2,000**	7.38	19.86	3.09	1.99	7.19	131.00	0.90
10/7/2008	1346	500	**3,000**	7.53	19.84	3.08	1.56	7.18	130.00	0.90
10/7/2008	1348	500	**4,000**	7.68	19.88	3.06	1.04	7.16	127.00	1.00

10/7/2008	1350	500	**5,000**	7.75	19.90	3.05	0.96	7.15	125.00	1.10
10/7/2008	1352	500	**6,000**	7.91	19.93	3.04	0.96	7.13	123.00	0.90
10/7/2008	1354	500	**7,000**	7.98	19.94	3.02	1.06	7.14	122.00	1.50
10/7/2008	1356	500	**8,000**	8.09	19.95	3.02	1.16	7.14	122.00	1.40
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 12 **QED End Index: 103** **Final PSI: 15** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09MW51F
VOCs / Diss Metals / Hex Chrom

Sample ID: 0841D007 Sample Time: 13:58

QA/QC Samples

This well requires the following samples: None

After Sampling, depth to bottom of well: (ft. below TOC): 21.17 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1581	PID	MiniRae	013767
Drawdown Meter	QED	1436	4-gas meter		
Water Level Meter	Heron-style	13952	Pump Controller	QED	2290

Additional Field Notes

Sampling/Well Location Information:
BROKEN TRAFFIC BOX AND CONCRETE.

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09MW52A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Shannon MacKenzie	Sampling Date: 11/11/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 8.18	Total Depth (feet): 20	Pump Intake Depth: 15

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	3	Size of Bolts:	5/8"
Bolts Missing:	3	Bolts Replaced:	0
Reason for not Replacing:	Tab Broken		
Standing water in vault:	YES	Water pumped out:	YES

Difficulty opening?: NO

Well locked upon arrival: NO

Condition of lock: Usable

External Well ID: IR09MW52A

Internal Well ID: IR09MW52A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 2"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09MW52A

Initial Depth to Water: 8.18

Total Depth: 20

Maximum Drawdown: 9.89

Pump Intake Depth: 15

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/11/2008	1022	500		8.18						
11/11/2008	1024	500	**1,000**	8.15	17.03	8.79	1.41	7.12	-93.00	14.20
11/11/2008	1026	500	**2,000**	8.19	17.06	8.43	1.22	7.14	-96.00	11.40
11/11/2008	1028	500	**3,000**	8.18	17.07	8.32	1.40	7.14	-98.00	9.60
11/11/2008	1030	500	**4,000**	8.18	17.09	8.15	1.13	7.15	-101.00	7.20
11/11/2008	1032	500	**5,000**	8.18	17.10	8.15	0.48	7.16	-105.00	5.20
11/11/2008	1034	500	**6,000**	8.18	17.12	8.10	0.30	7.17	-108.00	4.40
11/11/2008	1036	500	**7,000**	8.18	17.12	8.24	0.30	7.17	-109.00	5.00

11/11/2008	1038	500	**8,000**	8.18	17.17	8.38	0.24	7.18	-112.00	9.40
11/11/2008	1040	500	**9,000**	8.18	17.13	8.25	0.24	7.18	-113.00	7.30
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 6 **QED End Index: 6** **Final PSI: 20** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09MW52A
VOCs / Hex Chrom /

Sample ID: 0846B045 Sample Time: 10:41

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 20 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09MW54B	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Shannon MacKenzie	Sampling Date: 11/10/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 7.11	Total Depth (feet): 28.3	Pump Intake Depth: 27.5

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: NONE

Internal Well ID: IR09MW54B

Describe Conditions as Applicable:

Concrete pad and surrounding area: Cracked

Vault lid, rubber seal, and vault: Rusted

Protective casing and cover: Rusted

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09MW54B

Initial Depth to Water: 7.11

Total Depth: 28.3

Maximum Drawdown: 12.21

Pump Intake Depth: 27.5

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/10/2008	1334	500		7.11						
11/10/2008	1336	500	**1,000**	7.11	19.00	6.28	3.40	7.37	62.00	44.10
11/10/2008	1338	500	**2,000**	7.32	18.96	7.50	2.53	7.43	66.00	38.40
11/10/2008	1340	500	**3,000**	7.60	18.85	7.88	1.35	7.40	68.00	28.10
11/10/2008	1342	500	**4,000**	7.74	18.85	7.68	0.70	7.38	67.00	23.60
11/10/2008	1344	500	**5,000**	7.81	18.87	7.44	0.95	7.37	67.00	18.60
11/10/2008	1346	500	**6,000**	7.93	18.88	6.87	0.70	7.40	64.00	14.40
11/10/2008	1348	500	**7,000**	7.98	18.88	6.25	0.57	7.43	57.00	12.10

11/10/2008	1350	500	**8,000**	8.05	18.90	5.17	0.46	7.51	42.00	11.10
11/10/2008	1351	500	**8,500**	8.11	18.89	4.88	0.26	7.55	33.00	10.70
11/10/2008	1352	500	**9,000**	8.11	18.83	4.66	0.26	7.57	28.00	10.30
11/10/2008	1353	500	**9,500**	8.15	18.82	4.53	0.25	7.58	25.00	10.30
11/10/2008	1354	500	**10,000**	8.18	18.83	4.42	0.25	7.59	21.00	9.70
11/10/2008	1355	500	**10,500**	8.20	18.82	4.26	0.24	7.61	17.00	9.20
11/10/2008	1356	500	**11,000**	8.21	18.80	4.13	0.23	7.61	14.00	8.80
11/10/2008	1358	500	**12,000**	8.23	18.78	4.00	0.23	7.63	7.00	8.00
11/10/2008	1400	500	**13,000**	8.28	18.77	3.94	0.22	7.64	4.00	7.50
11/10/2008	1402	500	**14,000**	8.30	18.76	3.91	0.20	7.64	2.00	7.60
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 61 **QED End Index: 61** **Final PSI: 30** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09MW54B
VOCs / Hex Chrom /

Sample ID: 0846B041 Sample Time: 14:03

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 28.3 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09MW55B	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Nicki Cook	Helper: Tom Sayre	Sampling Date: 11/10/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.80	Total Depth (feet): 43.85	Pump Intake Depth: 40

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	Tab Stripped		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR09MW55B

Internal Well ID: IR09MW55B

Describe Conditions as Applicable:

Concrete pad and surrounding area: None

Vault lid, rubber seal, and vault: OK

Protective casing and cover: None

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Notch

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09MW55B

Initial Depth to Water: 6.80

Total Depth: 43.85

Maximum Drawdown: 15.10

Pump Intake Depth: 40

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/10/2008	1425	500		7.01						
11/10/2008	1427	500	**1,000**	7.18	15.61	5.47	2.57	7.24	139.00	5.90
11/10/2008	1429	500	**2,000**	7.32	15.11	5.50	1.95	7.30	156.00	7.50
11/10/2008	1431	500	**3,000**	7.36	15.13	5.50	1.54	7.31	164.00	7.70
11/10/2008	1433	500	**4,000**	7.44	15.15	5.50	1.16	7.33	164.00	8.00
11/10/2008	1435	500	**5,000**	7.50	15.14	5.50	1.08	7.34	155.00	8.30
11/10/2008	1437	500	**6,000**	7.54	15.15	5.50	0.54	7.34	160.00	7.30
11/10/2008	1439	500	**7,000**	7.56	15.16	5.50	0.73	7.35	152.00	9.00

11/10/2008	1441	500	**8,000**	7.58	15.16	5.50	0.72	7.35	144.00	9.20
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 174 **QED End Index: 178** **Final PSI: 30** **Final Flow ID: 165**

Groundwater Samples Analytes List for Well: IR09MW55B
VOCs / Diss Metals / Hex Chrom /

Sample ID: 0846N005 Sample Time: 14:43

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 43.85 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED		PID	MiniRae	
Drawdown Meter	QED		4-gas meter		
Water Level Meter	Heron-style		Pump Controller	QED	

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09MW61A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Shannon MacKenzie	Sampling Date: 11/11/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.42	Total Depth (feet): 19.33	Pump Intake Depth: 14.5

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR09MW61A

Internal Well ID: IR09MW61A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: Rusted

Protective casing and cover: Rusted

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09MW61A

Initial Depth to Water: 6.42

Total Depth: 19.33

Maximum Drawdown: 8.44

Pump Intake Depth: 14.5

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/11/2008	0922	250		6.42						
11/11/2008	0926	250	**1,000**	6.50	17.61	0.18	7.86	7.72	180.00	0.10
11/11/2008	0930	250	**2,000**	6.90	17.59	0.18	7.69	7.76	153.00	0.00
11/11/2008	0934	250	**3,000**	7.09	17.64	0.18	7.21	7.79	149.00	0.00
11/11/2008	0938	250	**4,000**	7.24	17.65	0.18	7.21	7.81	146.00	0.00
11/11/2008	0942	250	**5,000**	7.40	17.67	0.18	7.09	7.81	145.00	0.00
11/11/2008	0946	250	**6,000**	7.52	17.68	0.18	7.04	7.82	142.00	0.00
11/11/2008	0950	250	**7,000**	7.58	17.74	0.18	6.97	7.83	141.00	0.00

11/11/2008	0954	250	**8,000**	7.63	17.73	0.18	6.90	7.83	140.00	0.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 0 **QED End Index: 0** **Final PSI: 12** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09MW61A
VOCs / Hex Chrom /

Sample ID: 0846B044 Sample Time: 09:56

QA/QC Samples

This well has the following QA/QC sample types:
Trip Blank Sample Data: Sample ID: 0846B043, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 19.33 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09MW62A	Parcel: D	Sampling Event: 4th Quarter 2008
Sampling By: Chris Noland	Helper: Devant Walker	Sampling Date: 10/7/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 7.31	Total Depth (feet): 18.72	Pump Intake Depth: 14.5

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover: 2
Size of Bolts: 3/4"
Bolts Missing: 0
Bolts Replaced: 0
Reason for not Replacing: N/A
Standing water in vault: NO
Water pumped out: NO
Difficulty opening?: NO
Well locked upon arrival: YES
Condition of lock: Usable
External Well ID: IR09MW62A
Internal Well ID: IR09MW62A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK
Vault lid, rubber seal, and vault: OK
Protective casing and cover: Rusted
Well cap: OK
PVC / inner casing: OK
Odor: NO
Stain: NO
Casing diameter: 4"
Casing Type: PVC
Type of Well Cap: Expandable
PVC Casing distinct mark/notch: Mark
PVC casing orientation: North
Air venting hole on PVC / inner casing: NO
Obstructions: NO
Immiscible phases present: NO
Photograph taken: NO
Any Unusual Conditions: NO
Any Maintenance Performed: NO

Groundwater Parameters

Well ID: IR09MW62A

Initial Depth to Water: 7.31
Total Depth: 18.72
Maximum Drawdown: 9.11
Pump Intake Depth: 14.5

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
10/7/2008	0921	400								
10/7/2008	0923	400	**800**	7.31	19.69	12.48	1.66	7.20	185.00	25.40
10/7/2008	0925	400	**1,600**	7.29	19.88	11.03	0.56	7.15	185.00	25.60
10/7/2008	0927	400	**2,400**	7.29	20.19	8.56	0.48	7.12	182.00	34.10
10/7/2008	0929	400	**3,200**	7.29	20.26	7.81	0.40	7.13	178.00	50.90

10/7/2008	0931	400	**4,000**	7.29	20.30	7.44	0.35	7.15	177.00	53.80
10/7/2008	0933	400	**4,800**	7.29	20.31	7.33	0.33	7.16	176.00	55.20
10/7/2008	0935	400	**5,600**	7.29	20.37	7.20	0.35	7.15	175.00	23.30
10/7/2008	0937	400	**6,400**	7.29	20.37	7.15	0.33	7.16	174.00	26.10
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 103 **QED End Index: 103** **Final PSI: 20** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09MW62A
VOCs / Diss Metals / Hex Chrom

Sample ID: 0841C002 Sample Time: 09:41

QA/QC Samples

This well requires the following samples: Field Duplicate
Field Duplicate Data: Sample ID: 0841C003, Sample Time: 09:46
Trip Blank Sample Data: Sample ID: 0841C001, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 7.29 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1566	PID	MiniRae	012374
Drawdown Meter	QED	1423	4-gas meter		
Water Level Meter	Heron-style	Missing	Pump Controller	QED	2217

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09MW63A	Parcel: D	Sampling Event: 4th Quarter 2008
Sampling By: Dan Eldredge	Helper: Shannon MacKenzie	Sampling Date: 10/7/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.96	Total Depth (feet): 19.7	Pump Intake Depth: 14.5

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover: 2
Size of Bolts: 3/4"
Bolts Missing: 0
Bolts Replaced: 0
Reason for not Replacing: N/A
Standing water in vault: NO
Water pumped out: NO
Difficulty opening?: NO
Well locked upon arrival: YES
Condition of lock: Usable
External Well ID: None
Internal Well ID: IR09MW63A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK
Vault lid, rubber seal, and vault: OK
Protective casing and cover: OK
Well cap: OK
PVC / inner casing: OK
Odor: NO
Stain: NO
Casing diameter: 4"
Casing Type: PVC
Type of Well Cap: Expandable
PVC Casing distinct mark/notch: Mark
PVC casing orientation: North
Air venting hole on PVC / inner casing: NO
Obstructions: NO
Immiscible phases present: NO
Photograph taken: NO
Any Unusual Conditions: NO
Any Maintenance Performed: NO

Groundwater Parameters

Well ID: IR09MW63A

Initial Depth to Water: 6.96
Total Depth: 19.7
Maximum Drawdown: 8.85
Pump Intake Depth: 14.5

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
10/7/2008	1046	500		6.96						
10/7/2008	1048	500	**1,000**	6.96	19.42	0.97	5.53	7.64	131.00	0.90
10/7/2008	1050	500	**2,000**	6.96	19.50	0.97	5.12	7.72	130.00	0.30
10/7/2008	1052	250	**3,000**	8.28	19.58	0.97	4.81	7.73	131.00	0.00
10/7/2008	1056	250	**4,000**	8.49	19.62	0.97	4.69	7.73	131.00	0.00

10/7/2008	1100	250	**5,000**	8.61	19.65	0.98	4.61	7.73	132.00	0.00
10/7/2008	1104	100	**6,000**	8.75	19.66	0.98	4.55	7.74	132.00	0.00
10/7/2008	1114	100	**7,000**	8.66	19.58	0.98	4.47	7.75	129.00	0.00
10/7/2008	1124	100	**8,000**	8.32	19.65	0.98	4.33	7.75	126.00	0.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 7 **QED End Index: 7** **Final PSI: 15** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09MW63A
VOCs / Diss Metals / Hex Chrom

Sample ID: 0841D006 Sample Time: 11:27

QA/QC Samples

This well requires the following samples: None

After Sampling, depth to bottom of well: (ft. below TOC): 19.7 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1581	PID	MiniRae	013767
Drawdown Meter	QED	1436	4-gas meter		
Water Level Meter	Heron-style	13952	Pump Controller	QED	2290

Additional Field Notes

Sampling/Well Location Information:
WELL IS NOW A SLOW RECHARGING WELL SAMPLE ID 0841D006

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09P040A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Harry Leung	Helper: Devant Walker	Sampling Date: 11/6/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 7.01	Total Depth (feet): 14.97	Pump Intake Depth: 12.5

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	3	Size of Bolts:	3/4"
Bolts Missing:	3	Bolts Replaced:	0
Reason for not Replacing:	Tab Broken		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR09PO40A

Internal Well ID: IR09PO40A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 2"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09P040A

Initial Depth to Water: 7.01

Total Depth: 14.97

Maximum Drawdown: 8.38

Pump Intake Depth: 12.5

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/6/2008	1101	500		7.01						
11/6/2008	1103	500	**1,000**	7.01	15.31	3.94	2.78	6.66	221.00	22.90
11/6/2008	1105	500	**2,000**	7.01	15.25	5.18	2.31	6.68	202.00	18.30
11/6/2008	1107	500	**3,000**	7.01	15.26	3.82	2.67	6.77	193.00	13.10
11/6/2008	1109	500	**4,000**	7.01	15.26	3.43	2.80	6.78	192.00	8.60
11/6/2008	1111	500	**5,000**	7.01	15.25	3.33	2.84	6.78	189.00	7.80
11/6/2008	1113	500	**6,000**	7.01	15.25	3.26	2.94	6.80	175.00	6.40
11/6/2008	1115	500	**7,000**	7.01	15.25	3.19	2.99	6.78	165.00	4.70

11/6/2008	1117	500	**8,000**	7.01	15.24	3.20	2.91	6.76	164.00	3.70
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 97 **QED End Index: 97** **Final PSI: 20** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09P040A
VOCs / Diss Metals / Hex Chrom /

Sample ID: 0845H030 Sample Time: 11:27

QA/QC Samples

This well has the following QA/QC sample types:
Trip Blank Sample Data: Sample ID: 0845H029, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 14.97 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	CE2	PID	MiniRae	012396
Drawdown Meter	QED	CE2	4-gas meter		
Water Level Meter	Heron-style	13961	Pump Controller	QED	CE2

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09P041A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Gabe Fuson	Helper: Devant Walker	Sampling Date: 11/11/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.16	Total Depth (feet): 16.68	Pump Intake Depth: 13

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	Tab Stripped		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO
Well locked upon arrival: NO
Condition of lock: Missing
Lock Replaced? YES
External Well ID: none
Internal Well ID: IR09PO41A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK
Vault lid, rubber seal, and vault: OK
Protective casing and cover: Rusted
Well cap: OK
PVC / inner casing: OK
Odor: NO
Stain: NO
Casing diameter: 2"
Casing Type: PVC
Type of Well Cap: Expandable
PVC Casing distinct mark/notch: Mark
PVC casing orientation: North
Air venting hole on PVC / inner casing: NO
Obstructions: NO
Immiscible phases present: NO
Photograph taken: NO
Any Unusual Conditions: NO
Any Maintenance Performed: NO
Was Dedicated Pump Available? NO
Was Dedicated Pump Used? NO
How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09P041A

Initial Depth to Water: 6.16
Total Depth: 16.68
Maximum Drawdown: 7.87
Pump Intake Depth: 13

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/11/2008	1035	500		6.16						
11/11/2008	1037	500	**1,000**	6.30	16.71	6.05	3.19	6.85	88.00	28.20
11/11/2008	1039	500	**2,000**	6.30	16.67	6.05	1.66	6.81	86.00	37.30
11/11/2008	1041	500	**3,000**	6.30	16.67	5.55	1.26	6.82	79.00	32.60
11/11/2008	1043	500	**4,000**	6.30	16.67	5.37	1.08	6.86	73.00	26.60
11/11/2008	1045	500	**5,000**	6.30	16.65	5.36	0.89	6.87	64.00	19.40
11/11/2008	1047	500	**6,000**	6.30	16.64	5.37	0.76	6.87	58.00	16.00

11/11/2008	1049	500	**7,000**	6.30	16.63	5.37	0.63	6.87	50.00	13.40
11/11/2008	1051	500	**8,000**	6.30	16.63	5.39	0.49	6.86	43.00	11.80
11/11/2008	1053	500	**9,000**	6.30	16.63	5.39	0.40	6.86	38.00	10.90
11/11/2008	1055	500	**10,000**	6.30	16.63	5.40	0.34	6.86	34.00	10.20
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 5 **QED End Index: 5** **Final PSI: 15** **Final Flow ID: 105**

Groundwater Samples Analytes List for Well: IR09P041A
VOCs / Diss Metals / Hex Chrom /

Sample ID: 0846G013 Sample Time: 10:57

QA/QC Samples

This well has the following QA/QC sample types:
Field Duplicate Data: Sample ID: 0846G014, Sample Time: 11:02

After Sampling, depth to bottom of well: (ft. below TOC): 16.68 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:
duplicate sampe collected at this location

Unusual Events/Problems:

tabs stripped - need to be tapped, bolts need to be replaced

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09P042A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Harry Leung	Helper: Bruce Rucker	Sampling Date: 11/6/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.81	Total Depth (feet): 39.65	Pump Intake Depth: 37

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	Tab Broken		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock:

External Well ID: IR09PO42A

Internal Well ID: IR09PO42A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Notch

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09P042A

Initial Depth to Water: 6.81

Total Depth: 39.65

Maximum Drawdown: 14.36

Pump Intake Depth: 37

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/6/2008	1237	500		6.81						
11/6/2008	1239	500	**1,000**	6.89	15.71	5.22	2.35	6.17	-35.00	1,098.00
11/6/2008	1241	500	**2,000**	6.95	15.71	5.45	0.97	6.95	-68.00	1,042.00
11/6/2008	1243	500	**3,000**	7.13	15.71	5.44	0.57	6.93	-79.00	926.00
11/6/2008	1245	500	**4,000**	7.21	15.71	5.44	0.48	6.93	-82.00	777.00
11/6/2008	1247	500	**5,000**	7.25	15.71	5.43	0.42	6.93	-83.00	694.00
11/6/2008	1249	500	**6,000**	7.29	15.72	5.43	0.36	6.93	-83.00	513.00
11/6/2008	1251	500	**7,000**	7.29	15.73	5.42	0.32	6.93	-82.00	353.00

11/6/2008	1253	500	**8,000**	7.29	15.73	5.42	0.26	6.93	-81.00	228.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 103 **QED End Index: 103** **Final PSI: 35** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09P042A
VOCs / Diss Metals / Hex Chrom /

Sample ID: 0845H031 Sample Time: 12:58

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 39.65 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	CE2	PID	MiniRae	012396
Drawdown Meter	QED	CE2	4-gas meter		
Water Level Meter	Heron-style	13961	Pump Controller	QED	CE2

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09P043A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Harry Leung	Helper: Devant Walker	Sampling Date: 11/6/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 7.82	Total Depth (feet): 15.1	Pump Intake Depth: 13

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR09PO43A

Internal Well ID: IR09PO43A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09P043A

Initial Depth to Water: 7.82

Total Depth: 15.1

Maximum Drawdown: 9.12

Pump Intake Depth: 13

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/6/2008	1314	500		7.82						
11/6/2008	1316	500	**1,000**	8.10	15.60	10.60	0.82	6.65	-22.00	79.40
11/6/2008	1318	500	**2,000**	8.10	15.58	10.14	0.71	6.67	-9.00	50.00
11/6/2008	1320	500	**3,000**	8.10	15.58	9.67	0.64	6.69	0.00	34.30
11/6/2008	1322	500	**4,000**	8.10	15.58	9.40	0.60	6.69	7.00	25.20
11/6/2008	1324	500	**5,000**	8.10	15.58	9.25	0.48	6.70	15.00	18.00
11/6/2008	1326	500	**6,000**	8.10	15.57	9.21	0.41	6.70	20.00	14.80
11/6/2008	1328	500	**7,000**	8.10	15.56	9.15	0.36	6.70	25.00	11.40

11/6/2008	1330	500	**8,000**	8.10	15.56	9.16	0.33	6.70	30.00	9.50
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 105 **QED End Index: 105** **Final PSI: 20** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09P043A
VOCs / Diss Metals / Hex Chrom /

Sample ID: 0845H032 Sample Time: 13:34

QA/QC Samples

This well has the following QA/QC sample types:
Field Duplicate Data: Sample ID: 0845H033, Sample Time: 13:39

After Sampling, depth to bottom of well: (ft. below TOC): 15.1 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	CE2	PID	MiniRae	012396
Drawdown Meter	QED	CE2	4-gas meter		
Water Level Meter	Heron-style	13961	Pump Controller	QED	CE2

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09P35AA	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Harry Leung	Helper: Devant Walker	Sampling Date: 11/7/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.00	Total Depth (feet): 24.55	Pump Intake Depth: 20

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	5/8"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: 35AA

Internal Well ID: IR09MW35AA

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09P35AA

Initial Depth to Water: 6.00

Total Depth: 24.55

Maximum Drawdown: 9.50

Pump Intake Depth: 20

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/7/2008	1025	500		6.00						
11/7/2008	1027	500	**1,000**	6.23	16.11	9.79	3.81	7.64	152.00	102.00
11/7/2008	1029	500	**2,000**	6.53	15.44	8.32	2.10	7.50	152.00	109.00
11/7/2008	1031	500	**3,000**	6.62	15.43	8.34	1.71	7.49	152.00	118.00
11/7/2008	1033	500	**4,000**	6.68	15.34	8.30	1.32	7.49	152.00	128.00
11/7/2008	1035	500	**5,000**	6.74	15.36	8.30	1.15	7.48	151.00	138.00
11/7/2008	1037	500	**6,000**	6.80	15.36	8.30	1.01	7.48	151.00	146.00
11/7/2008	1039	500	**7,000**	6.84	15.34	8.28	0.96	7.48	151.00	155.00

11/7/2008	1041	500	**8,000**	6.90	15.34	8.25	0.98	7.48	151.00	156.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 123 **QED End Index: 123** **Final PSI: 20** **Final Flow ID: 105**

Groundwater Samples Analytes List for Well: IR09P35AA
VOCs /

Sample ID: 0845H036 Sample Time: 10:43

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 24.55 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	CE2	PID	MiniRae	012396
Drawdown Meter	QED	CE2	4-gas meter		
Water Level Meter	Heron-style	13961	Pump Controller	QED	CE2

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09P35AB	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Harry Leung	Helper: Devant Walker	Sampling Date: 11/7/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.13	Total Depth (feet): 24.55	Pump Intake Depth: 20

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	5/8"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR09P035AB

Internal Well ID: IR09P035AB

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 2"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR09P35AB

Initial Depth to Water: 6.13

Total Depth: 24.55

Maximum Drawdown: 9.60

Pump Intake Depth: 20

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/7/2008	1110	500		6.13						
11/7/2008	1112	500	**1,000**	6.28	15.43	2.63	1.92	7.94	151.00	56.80
11/7/2008	1114	500	**2,000**	6.42	15.38	2.60	0.84	7.94	150.00	61.30
11/7/2008	1116	500	**3,000**	6.51	15.36	2.56	0.89	7.91	149.00	63.30
11/7/2008	1118	500	**4,000**	6.50	15.34	2.54	0.68	7.91	147.00	63.70
11/7/2008	1120	500	**5,000**	6.50	15.34	2.55	0.59	7.90	147.00	51.10
11/7/2008	1122	500	**6,000**	6.50	15.34	2.56	0.56	7.90	147.00	34.10
11/7/2008	1124	500	**7,000**	6.50	15.34	2.58	0.38	7.89	146.00	25.10

11/7/2008	1126	500	**8,000**	6.50	15.34	2.58	0.43	7.89	146.00	20.10
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 127 **QED End Index: 127** **Final PSI: 20** **Final Flow ID: 105**

Groundwater Samples Analytes List for Well: IR09P35AB
VOCs /

Sample ID: 0845H037 Sample Time: 11:27

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 24.55 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	CE2	PID	MiniRae	012396
Drawdown Meter	QED	CE2	4-gas meter		
Water Level Meter	Heron-style	13961	Pump Controller	QED	CE2

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR09PPY1	Parcel: D	Sampling Event: 4th Quarter 2008
Sampling By: Dan Eldredge	Helper: Shannon MacKenzie	Sampling Date: 10/7/2008
PID DATA: Top of Casing: 0.20		Background: 0.30
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 7.40	Total Depth (feet): 12.93	Pump Intake Depth: 10.5

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover: 1
Size of Bolts: 9/16"
Bolts Missing: 0
Bolts Replaced: 0
Reason for not Replacing: N/A
Standing water in vault: NO
Water pumped out: NO
Difficulty opening?: NO
Well locked upon arrival: YES
Condition of lock: Usable
External Well ID: IR09PPY1
Internal Well ID: None

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK
Vault lid, rubber seal, and vault: OK
Protective casing and cover: OK
Well cap: OK
PVC / inner casing: OK
Odor: NO
Stain: NO
Casing diameter: 2"
Casing Type: PVC
Type of Well Cap: Expandable
PVC Casing distinct mark/notch: Mark
PVC casing orientation: North
Air venting hole on PVC / inner casing: NO
Obstructions: NO
Immiscible phases present: NO
Photograph taken: NO
Any Unusual Conditions: NO
Any Maintenance Performed: NO

Groundwater Parameters

Well ID: IR09PPY1

Initial Depth to Water: 7.40
Total Depth: 12.93
Maximum Drawdown: 8.18
Pump Intake Depth: 10.5

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
10/7/2008	0927	500		7.40						
10/7/2008	0929	500	**1,000**	7.50	17.46	1.44	3.14	6.80	212.00	1.20
10/7/2008	0931	500	**2,000**	7.48	17.58	1.41	2.60	6.80	209.00	0.40
10/7/2008	0933	500	**3,000**	7.49	17.60	1.37	1.73	6.80	206.00	0.60
10/7/2008	0935	500	**4,000**	7.50	17.61	1.32	1.23	6.80	204.00	0.00

10/7/2008	0937	500	**5,000**	7.54	17.62	1.31	1.02	6.79	203.00	0.00
10/7/2008	0939	500	**6,000**	7.51	17.63	1.29	0.76	6.77	200.00	0.00
10/7/2008	0941	500	**7,000**	7.51	17.63	1.27	0.61	6.76	199.00	0.00
10/7/2008	0943	500	**8,000**	7.50	17.64	1.25	0.48	6.75	197.00	0.70
10/7/2008	0945	500	**9,000**	7.50	17.64	1.25	0.42	6.75	196.00	0.10
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 0 **QED End Index: 0** **Final PSI: 20** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR09PPY1
VOCs / Diss Metals / Hex Chrom

Sample ID: 0841D005 Sample Time: 09:48

QA/QC Samples

This well requires the following samples: None
Trip Blank Sample Data: Sample ID: 0841D004, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 12.93 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1581	PID	MiniRae	013767
Drawdown Meter	QED	1436	4-gas meter		
Water Level Meter	Heron-style	13952	Pump Controller	QED	2290

Additional Field Notes

Sampling/Well Location Information:
Sample ID is 0841D005

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR24MW05A	Parcel: B	Sampling Event: TPH Cap Program 4Q08
Sampling By: Dan Eldredge	Helper: Shannon MacKenzie	Sampling Date: 10/9/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 9.52	Total Depth (feet): 22.08	Pump Intake Depth: 17

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover: 1
Size of Bolts: 3/4"
Bolts Missing: 1
Bolts Replaced: 0
Reason for not Replacing: Tab Broken
Standing water in vault: NO
Water pumped out: NO
Difficulty opening?: NO
Well locked upon arrival: NO
Condition of lock: Missing
Lock Replaced? NO
Reason lock not replaced: NO SPACE (VAULT)
External Well ID: 05A
Internal Well ID: IR24MW05A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK
Vault lid, rubber seal, and vault: OK
Protective casing and cover: None
Well cap: OK
PVC / inner casing: OK
Odor: NO
Stain: NO
Casing diameter: 4"
Casing Type: PVC
Type of Well Cap: Expandable
PVC Casing distinct mark/notch: Mark
PVC casing orientation: North
Air venting hole on PVC / inner casing: NO
Obstructions: NO
Immiscible phases present: NO
Photograph taken: NO
Any Unusual Conditions: NO
Any Maintenance Performed: NO
Was Dedicated Pump Available? NO
Was Dedicated Pump Used? NO
How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR24MW05A

Initial Depth to Water: 9.52
Total Depth: 22.08
Maximum Drawdown: 11.39
Pump Intake Depth: 17

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
10/9/2008	1422	500		9.52						
10/9/2008	1424	500	**1,000**	9.98	19.97	43.60	1.21	6.70	-248.00	4.10
10/9/2008	1426	500	**2,000**	10.08	19.23	44.70	1.01	6.71	-275.00	4.70
10/9/2008	1428	500	**3,000**	10.18	19.12	44.60	0.72	6.70	-278.00	4.10
10/9/2008	1430	500	**4,000**	10.30	19.12	44.60	0.61	6.69	-280.00	3.90
10/9/2008	1432	500	**5,000**	10.36	19.09	44.60	0.46	6.68	-283.00	2.90
10/9/2008	1434	500	**6,000**	10.42	19.13	44.70	0.34	6.68	-287.00	1.60

10/9/2008	1436	500	**7,000**	10.43	19.07	44.60	0.27	6.68	-291.00	1.10
10/9/2008	1438	500	**8,000**	10.46	19.07	44.70	0.25	6.68	-293.00	1.10
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 46 **QED End Index: 46** **Final PSI: 20** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR24MW05A
TPH-p (gas) /

Sample ID: 0841D021 Sample Time: 14:40

QA/QC Samples

This well has the following QA/QC sample types:
Field Duplicate Data: Sample ID: 0841D022, Sample Time: 14:45

After Sampling, depth to bottom of well: (ft. below TOC): 22.08 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1581	PID	MiniRae	013767
Drawdown Meter	QED	1436	4-gas meter		
Water Level Meter	Heron-style	13952	Pump Controller	QED	2290

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR33MW116A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Gabe Fuson	Helper: Devant Walker	Sampling Date: 11/11/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.07	Total Depth (feet): 21.12	Pump Intake Depth: 14

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	15/16"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR33MW116A

Internal Well ID: IR33MW116A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: Lid Missing

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR33MW116A

Initial Depth to Water: 6.07

Total Depth: 21.12

Maximum Drawdown: 8.05

Pump Intake Depth: 14

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/11/2008	0947	500		6.07						
11/11/2008	0949	500	**1,000**	6.45	18.82	2.26	1.75	7.21	172.00	0.80
11/11/2008	0951	500	**2,000**	6.48	18.83	2.27	1.32	7.22	169.00	0.30
11/11/2008	0953	500	**3,000**	6.54	18.86	2.27	0.91	7.23	167.00	0.30
11/11/2008	0955	500	**4,000**	6.67	18.89	2.27	0.64	7.23	165.00	0.40
11/11/2008	0957	500	**5,000**	6.71	18.91	2.27	0.65	7.24	163.00	0.10
11/11/2008	0959	500	**6,000**	6.77	18.97	2.26	0.45	7.24	158.00	0.00
11/11/2008	1001	500	**7,000**	6.81	19.00	2.26	0.33	7.23	151.00	0.00

11/11/2008	1003	500	**8,000**	6.85	19.03	2.26	0.29	7.23	144.00	0.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 0 **QED End Index: 0** **Final PSI: 15** **Final Flow ID: 107**

Groundwater Samples Analytes List for Well: IR33MW116A
VOCs / Diss Metals / Hex Chrom /

Sample ID: 0846G012 Sample Time: 10:05

QA/QC Samples

This well has the following QA/QC sample types:
Trip Blank Sample Data: Sample ID: 0846G011, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 21.12 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR33MW120B	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Dan Eldredge	Helper: Shannon MacKenzie	Sampling Date: 11/11/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.37	Total Depth (feet): 72.15	Pump Intake Depth: 69

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	15/16"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR33MW120B

Internal Well ID: IR33MW120B

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR33MW120B

Initial Depth to Water: 6.37

Total Depth: 72.15

Maximum Drawdown: 22.03

Pump Intake Depth: 69

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/6/2008	1252	400		6.37						
11/6/2008	1254	400	**800**	6.40	16.26	1.25	0.48	7.62	-141.00	5,995.00
11/6/2008	1256	400	**1,600**	6.42	16.26	1.27	0.36	7.60	-155.00	2,000.00
11/6/2008	1258	400	**2,400**	6.42	16.26	1.30	0.22	7.56	-155.00	2,000.00
11/6/2008	1300	400	**3,200**	6.42	16.34	1.30	0.16	7.48	-151.00	1,550.00
11/6/2008	1302	400	**4,000**	6.42	16.33	1.30	0.12	7.48	-152.00	1,501.00
11/6/2008	1304	400	**4,800**	6.42	16.36	1.29	0.12	7.46	-152.00	809.00
11/6/2008	1306	400	**5,600**	6.42	16.32	1.27	0.12	7.45	-150.00	637.00

11/6/2008	1308	400	**6,400**	6.42	16.34	1.26	0.13	7.44	-148.00	441.00
11/6/2008	1310	400	**7,200**	6.42	16.34	1.26	0.14	7.44	-147.00	376.00
11/6/2008	1312	400	**8,000**	6.42	16.34	1.27	0.13	7.42	-146.00	308.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: **QED End Index:** **Final PSI: 50** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR33MW120B
VOCs /

Sample ID: 0845D025 Sample Time: 13:37

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 72.15 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1581	PID	MiniRae	013767
Drawdown Meter	QED	1436	4-gas meter		
Water Level Meter	Heron-style	13952	Pump Controller	QED	2290

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR33MW121B	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Donevan Noordzee	Sampling Date: 11/7/2008
PID DATA: Top of Casing:		Background:
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 4.10	Total Depth (feet): 76.8	Pump Intake Depth: 71

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	2	Bolts Replaced:	0
Reason for not Replacing:	Tab Broken		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR33MW121B

Internal Well ID: IR33MW121B

Describe Conditions as Applicable:

Concrete pad and surrounding area: Cracked

Vault lid, rubber seal, and vault: Rusted

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Notch

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR33MW121B

Initial Depth to Water: 4.10

Total Depth: 76.8

Maximum Drawdown: 20.83

Pump Intake Depth: 71

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/7/2008	1357	500		4.23						
11/7/2008	1359	500	**1,000**	4.23	18.48	0.59	0.74	7.55	-2.00	34.00
11/7/2008	1401	500	**2,000**	4.37	18.44	0.59	0.42	7.53	-1.00	34.10
11/7/2008	1403	500	**3,000**	4.30	18.44	0.59	0.33	7.54	4.00	32.20
11/7/2008	1405	500	**4,000**	4.43	18.43	0.59	0.29	7.53	5.00	29.10
11/7/2008	1407	500	**5,000**	4.46	18.44	0.59	0.27	7.58	0.00	26.50
11/7/2008	1409	500	**6,000**	4.45	18.44	0.59	0.24	7.59	-9.00	25.00
11/7/2008	1411	500	**7,000**	4.48	18.37	0.59	0.21	7.60	-40.00	21.40

11/7/2008	1413	500	**8,000**	4.52	18.39	0.59	0.17	7.55	-54.00	20.20
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 32 **QED End Index: 32** **Final PSI: 50** **Final Flow ID: 165**

Groundwater Samples Analytes List for Well: IR33MW121B
VOCs /

Sample ID: 0845B034 Sample Time: 14:15

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 76.8 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR33MW64A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Nicki Cook	Helper: Devant Walker	Sampling Date: 11/10/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.88	Total Depth (feet): 12.16	Pump Intake Depth: 12

Well Physical Inspection

Well Completion Type: Monument

Height above ground/road surface (inches): 10
Number of Bollards: NONE
Difficulty opening?: NO
Well locked upon arrival: YES
Condition of lock: Usable
External Well ID: IR33MW64A
Internal Well ID: IR33MW64A

Describe Conditions as Applicable:

Concrete pad and surrounding area: Soil/Dirt
Protective casing and cover: OK
Well cap: OK
PVC / inner casing: OK
Odor: NO
Stain: NO
Casing diameter: 4"
Casing Type: PVC
Type of Well Cap: Expandable
PVC Casing distinct mark/notch: Mark
PVC casing orientation: North
Air venting hole on PVC / inner casing: NO
Obstructions: NO
Immiscible phases present: NO
Photograph taken: NO
Any Unusual Conditions: NO
Any Maintenance Performed: NO
Was Dedicated Pump Available? NO
Was Dedicated Pump Used? NO
How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR33MW64A

Initial Depth to Water: 6.88
Total Depth: 12.16
Maximum Drawdown: 8.16
Pump Intake Depth: 12

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/10/2008	1142	500		6.98						
11/10/2008	1144	500	**1,000**	7.03	18.29	4.08	1.45	7.50	86.00	0.00
11/10/2008	1146	500	**2,000**	7.16	18.30	3.15	1.19	7.46	88.00	0.00
11/10/2008	1148	500	**3,000**	7.19	18.29	2.74	1.33	7.43	89.00	0.00
11/10/2008	1150	300	**4,000**	7.19	18.16	1.99	1.60	7.34	92.00	0.00
11/10/2008	1153	300	**4,900**	7.15	18.17	1.94	1.60	7.33	92.00	0.00
11/10/2008	1156	300	**5,800**	7.15	18.17	1.75	1.69	7.30	93.00	0.00
11/10/2008	1159	300	**6,700**	7.17	18.12	1.58	1.91	7.28	94.00	0.00
11/10/2008	1201	300	**7,300**	7.17	18.13	1.46	2.07	7.25	94.00	0.00
11/10/2008	1203	300	**7,900**	7.18	18.11	1.43	2.17	7.24	95.00	0.00

11/10/2008	1205	300	**8,500**	7.18	18.12	1.42	2.24	7.24	95.00	0.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 161 **QED End Index: 169** **Final PSI: 10** **Final Flow ID: 107**

Groundwater Samples Analytes List for Well: IR33MW64A
VOCs / Hex Chrom /

Sample ID: 0846N004 Sample Time: 12:07

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 12.16 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	CE2	PID	MiniRae	012396
Drawdown Meter	QED	CE2	4-gas meter		
Water Level Meter	Heron-style	13961	Pump Controller	QED	CE2

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR33MW65A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Nicki Cook	Helper: Devant Walker	Sampling Date: 11/10/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 5.96	Total Depth (feet): 15.54	Pump Intake Depth: 12

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	15/16"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR33MW65A

Internal Well ID: IR33MW65A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR33MW65A

Initial Depth to Water: 5.96

Total Depth: 15.54

Maximum Drawdown: 7.47

Pump Intake Depth: 12

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/10/2008	1046	500		5.95						
11/10/2008	1048	500	**1,000**	5.95	18.39	4.68	1.02	7.08	52.00	7.00
11/10/2008	1050	500	**2,000**	5.95	18.42	3.45	0.67	7.16	53.00	9.50
11/10/2008	1052	500	**3,000**	5.95	18.31	2.28	1.20	7.11	62.00	19.40
11/10/2008	1054	500	**4,000**	5.95	18.38	2.10	0.99	7.17	62.00	15.20
11/10/2008	1056	500	**5,000**	5.95	18.37	2.06	0.79	7.18	62.00	13.50
11/10/2008	1058	500	**6,000**	5.95	18.39	2.03	1.24	7.18	62.00	9.40
11/10/2008	1100	500	**7,000**	5.95	18.39	1.98	1.25	7.19	64.00	7.40

11/10/2008	1102	500	**8,000**	5.95	18.40	1.93	1.18	7.19	65.00	5.80
11/10/2008	1104	500	**9,000**	5.95	18.29	1.92	1.21	7.16	69.00	4.30
11/10/2008	1106	500	**10,000**	5.95	18.38	1.90	1.24	7.19	71.00	2.60
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 155 **QED End Index: 160** **Final PSI: 15** **Final Flow ID: 105**

Groundwater Samples Analytes List for Well: IR33MW65A
VOCs / Hex Chrom /

Sample ID: 0846N003 Sample Time: 11:08

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 15.54 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	CE2	PID	MiniRae	012396
Drawdown Meter	QED	CE2	4-gas meter		
Water Level Meter	Heron-style	13961	Pump Controller	QED	CE2

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR33MW66A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Nicki Cook	Helper: Devant Walker	Sampling Date: 11/10/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.65	Total Depth (feet): 20.51	Pump Intake Depth: 13

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	15/16"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: 66A

Internal Well ID: IR33MW66A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR33MW66A

Initial Depth to Water: 6.65

Total Depth: 20.51

Maximum Drawdown: 8.24

Pump Intake Depth: 13

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/10/2008	0940	500		6.85						
11/10/2008	0942	500	**1,000**	6.70	17.62	4.41	3.40	6.73	-28.00	5.30
11/10/2008	0944	500	**2,000**	6.70	17.69	3.70	3.10	6.72	-19.00	6.50
11/10/2008	0946	500	**3,000**	6.70	17.75	3.26	2.79	6.69	-10.00	7.70
11/10/2008	0948	0	**4,000**	6.70	17.77	3.01	2.25	6.67	3.00	10.40
11/10/2008	0958	500	**4,000**	6.70	17.74	3.17	2.40	6.63	15.00	10.20
11/10/2008	1000	500	**5,000**	6.70	17.69	3.35	2.15	6.62	5.00	12.40
11/10/2008	1002	500	**6,000**	6.70	17.76	3.31	2.08	6.63	3.00	13.30

11/10/2008	1004	500	**7,000**	6.70	17.79	2.84	2.26	6.63	13.00	14.10
11/10/2008	1006	500	**8,000**	6.70	17.81	2.76	2.07	6.63	16.00	13.70
11/10/2008	1008	500	**9,000**	6.70	17.77	2.65	1.99	6.62	21.00	13.30
11/10/2008	1010	500	**10,000**	6.70	17.79	2.58	1.74	6.61	28.00	12.10
11/10/2008	1012	500	**11,000**	6.70	17.82	2.55	1.72	6.61	32.00	11.20
11/10/2008	1014	500	**12,000**	6.70	17.82	2.54	1.71	6.60	33.00	10.90
11/10/2008	1016	500	**13,000**	6.70	17.83	2.53	1.68	6.60	34.00	10.20
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 140 **QED End Index: 150** **Final PSI: 20** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR33MW66A

VOCs / Hex Chrom /

Sample ID: 0846N002 Sample Time: 10:19

QA/QC Samples

This well has the following QA/QC sample types:

Trip Blank Sample Data: Sample ID: 0846N001, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 20.51 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	CE2	PID	MiniRae	012396
Drawdown Meter	QED	CE2	4-gas meter		
Water Level Meter	Heron-style	13961	Pump Controller	QED	CE2

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

COMPUTER NOT CALCULATNG CUMULATIVE VOLUME OR PARAMETER STABILITY CORRECTLY, BUT AFTER SAVING AND REOPENING THE VALUES ARE CORRECT.

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR34MW01A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Shannon MacKenzie	Sampling Date: 11/10/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.40	Total Depth (feet): 15.34	Pump Intake Depth: 12

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	1	Bolts Replaced:	0
Reason for not Replacing:	Tab Broken		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: none

Internal Well ID: IR34MW01A

Describe Conditions as Applicable:

Concrete pad and surrounding area: Eroded

Vault lid, rubber seal, and vault: Rusted

Protective casing and cover: Rusted

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR34MW01A

Initial Depth to Water: 6.40

Total Depth: 15.34

Maximum Drawdown: 7.80

Pump Intake Depth: 12

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/10/2008	0906	500		6.40						
11/10/2008	0908	500	**1,000**	6.41	19.46	1.15	2.46	6.87	132.00	1.40
11/10/2008	0910	500	**2,000**	6.41	19.37	1.15	2.22	6.85	128.00	1.20
11/10/2008	0912	500	**3,000**	6.42	19.45	1.15	2.45	6.83	127.00	1.20
11/10/2008	0914	500	**4,000**	6.42	19.49	1.15	2.43	6.83	126.00	1.30
11/10/2008	0916	500	**5,000**	6.42	19.48	1.14	2.13	6.84	126.00	1.10
11/10/2008	0918	500	**6,000**	6.42	19.59	1.14	2.05	6.83	126.00	0.90
11/10/2008	0920	500	**7,000**	6.42	19.63	1.14	1.94	6.83	126.00	0.60

11/10/2008	0922	500	**8,000**	6.42	19.63	1.14	1.90	6.83	126.00	0.30
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 37 **QED End Index: 37** **Final PSI: 18** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR34MW01A
VOCs / Hex Chrom /

Sample ID: 0846B036 Sample Time: 09:24

QA/QC Samples

This well has the following QA/QC sample types:
Trip Blank Sample Data: Sample ID: 0846B035, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 15.34 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

SAMPLE ID SHOULD READ; 084B036

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR34MW02A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Gabe Fuson	Helper: Tom Sayre	Sampling Date: 11/10/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 7.14	Total Depth (feet): 20.96	Pump Intake Depth: 13

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	15/16"
Bolts Missing:	2	Bolts Replaced:	0
Reason for not Replacing:	Tab Broken		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: none

Internal Well ID: IR34MW02A

Describe Conditions as Applicable:

Concrete pad and surrounding area: Cracked

Vault lid, rubber seal, and vault: Cracked

Protective casing and cover: Rusted

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: YES

Explain conditions:

Vault lid and ring are cracked/broken. Concrete pad needs repair.

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR34MW02A

Initial Depth to Water: 7.14

Total Depth: 20.96

Maximum Drawdown: 8.61

Pump Intake Depth: 13

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/10/2008	0928	500		7.14						
11/10/2008	0930	500	**1,000**	7.10	16.57	4.62	1.81	7.03	202.00	5.30
11/10/2008	0932	500	**2,000**	6.98	16.38	4.67	1.79	7.03	197.00	5.40
11/10/2008	0934	500	**3,000**	6.96	16.36	4.69	1.06	7.03	187.00	5.60
11/10/2008	0936	500	**4,000**	6.96	16.30	4.70	1.33	7.03	183.00	5.40
11/10/2008	0938	500	**5,000**	6.96	16.26	4.68	1.02	7.03	177.00	4.90
11/10/2008	0940	500	**6,000**	6.96	16.37	4.68	0.98	7.03	172.00	5.00

11/10/2008	0942	500	**7,000**	6.96	16.40	4.70	0.74	7.03	166.00	4.80
11/10/2008	0944	500	**8,000**	6.96	16.36	4.69	0.64	7.04	160.00	4.40
11/10/2008	0946	500	**9,000**	6.96	16.34	4.69	0.44	7.04	153.00	3.60
11/10/2008	0948	500	**10,000**	6.96	16.30	4.69	0.38	7.04	148.00	3.40
11/10/2008	0950	500	**11,000**	6.96	16.33	4.68	0.27	7.04	142.00	3.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 0 **QED End Index: 1** **Final PSI: 15** **Final Flow ID: 165**

Groundwater Samples Analytes List for Well: IR34MW02A
VOCs / Diss Metals / Hex Chrom /

Sample ID: 0846G008 Sample Time: 09:52

QA/QC Samples

This well has the following QA/QC sample types:
Trip Blank Sample Data: Sample ID: 0846G007, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 20.96 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Actual helper: Tom Sayre.

Monitoring Well Sampling Sheet

Well ID: IR36MW16A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Harry Leung	Helper: Devant Walker	Sampling Date: 11/7/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.87	Total Depth (feet): 25.47	Pump Intake Depth: 16

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	15/16"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR36MW16A

Internal Well ID: IR36MW16A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR36MW16A

Initial Depth to Water: 6.87

Total Depth: 25.47

Maximum Drawdown: 9.15

Pump Intake Depth: 16

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/7/2008	1341	500		6.87						
11/7/2008	1343	500	**1,000**	7.02	18.56	15.30	2.36	6.86	15.00	22.70
11/7/2008	1345	500	**2,000**	7.02	18.11	14.90	1.14	6.80	5.00	10.50
11/7/2008	1347	500	**3,000**	7.02	17.91	15.10	0.71	6.78	25.00	7.90
11/7/2008	1349	500	**4,000**	7.02	17.85	15.20	0.50	6.78	37.00	8.30
11/7/2008	1351	500	**5,000**	7.02	17.88	15.30	0.33	6.78	43.00	7.90
11/7/2008	1353	500	**6,000**	7.02	17.80	15.40	0.27	6.77	48.00	8.70
11/7/2008	1355	500	**7,000**	7.02	17.78	15.50	0.23	6.77	52.00	9.70

Stability:

QED Start Index: 137 | QED End Index: 137 | Final PSI: 20 | Final Flow ID: 105

Groundwater Samples Analytes List for Well: IR36MW16A

VOCs /

Sample ID: 0845H039 Sample Time: 13:56

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 25.47 Purged Dry? NO

Field Measurement Equipment Used					
Equipment	Model	Serial Number	Equipment	Model	Serial Number
Water Quality Meter	QED	CE2	PID	MiniRae	012396
Drawdown Meter	QED	CE2	4-gas meter		
Water Level Meter	Heron-style	13961	Pump Controller	QED	CE2

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR46MW47A	Parcel: B	Sampling Event: TPH Cap Program 4Q08
Sampling By: Erik Bluvas	Helper: Christopher Sims	Sampling Date: 10/9/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 8.88	Total Depth (feet): 20.85	Pump Intake Depth: 15

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: 47A

Internal Well ID: IR46MW47A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: Rusted

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: YES
Distance from inner TOC (inches): 0

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO
Was Dedicated Pump Used? NO
How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR46MW47A

Initial Depth to Water: 8.88

Total Depth: 20.85

Maximum Drawdown: 10.41

Pump Intake Depth: 15

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
10/9/2008	1402	500		8.88						
10/9/2008	1404	500	**1,000**	8.92	18.16	21.90	1.92	6.73	-222.00	1.90
10/9/2008	1406	500	**2,000**	8.96	18.13	21.90	1.59	7.00	-233.00	1.40
10/9/2008	1408	500	**3,000**	8.97	18.01	21.90	0.90	7.01	-234.00	0.00
10/9/2008	1410	500	**4,000**	8.98	18.00	22.00	0.67	7.02	-236.00	0.00
10/9/2008	1412	500	**5,000**	8.98	17.95	22.10	1.29	7.02	-236.00	0.00
10/9/2008	1414	500	**6,000**	8.98	17.84	22.20	1.27	7.02	-237.00	0.00

10/9/2008	1416	500	**7,000**	8.98	17.85	22.20	0.19	7.02	-237.00	0.00
10/9/2008	1418	500	**8,000**	8.98	17.74	22.20	0.18	7.03	-237.00	0.00
10/9/2008	1420	500	**9,000**	8.98	17.81	22.20	0.30	7.03	-237.00	0.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 45 **QED End Index: 45** **Final PSI: 18** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR46MW47A
TPH-p (gas) / TPH-e (diesel, motor oil) /

Sample ID: 0841B022 Sample Time: 14:21

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 20.85 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR46MW48A	Parcel: B	Sampling Event: TPH Cap Program 4Q08
Sampling By: Erik Bluvas	Helper: Christopher Sims	Sampling Date: 10/9/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 7.83	Total Depth (feet): 21.12	Pump Intake Depth: 14.185

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR46MW48A

Internal Well ID: IR46MW48A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: YES

Stain: YES

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR46MW48A

Initial Depth to Water: 7.83

Total Depth: 21.12

Maximum Drawdown: 9.42

Pump Intake Depth: 14.185

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
10/9/2008	1324	500		7.83						
10/9/2008	1326	500	**1,000**	8.02	18.83	25.40	0.32	7.06	-278.00	5.00
10/9/2008	1328	500	**2,000**	8.03	18.29	25.50	0.26	7.06	-288.00	3.70
10/9/2008	1330	500	**3,000**	7.97	18.22	26.00	0.18	7.05	-292.00	1.50
10/9/2008	1332	500	**4,000**	7.98	18.24	26.40	0.15	7.05	-296.00	0.00
10/9/2008	1334	500	**5,000**	7.99	18.23	26.80	0.12	7.04	-297.00	0.00
10/9/2008	1336	500	**6,000**	8.00	18.22	27.10	0.11	7.04	-298.00	0.00
10/9/2008	1338	500	**7,000**	8.00	18.15	27.30	0.10	7.04	-301.00	0.00

10/9/2008	1340	500	**8,000**	8.01	18.15	27.40	0.10	7.04	-304.00	0.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 38 **QED End Index: 38** **Final PSI: 18** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR46MW48A
TPH-p (gas) / TPH-e (diesel, motor oil) /

Sample ID: 0841B021 Sample Time: 13:41

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 21.12 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

Maximum drawdown calculation is incorrect

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR46MW49A	Parcel: B	Sampling Event: TPH Cap Program 4Q08
Sampling By: Dan Eldredge	Helper: Shannon MacKenzie	Sampling Date: 10/9/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 9.54	Total Depth (feet): 19.8	Pump Intake Depth: 15

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	7/8"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR46MW49A

Internal Well ID: IR46MW49A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: None

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR46MW49A

Initial Depth to Water: 9.54

Total Depth: 19.8

Maximum Drawdown: 10.91

Pump Intake Depth: 15

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
10/9/2008	1330	500		9.54						
10/9/2008	1332	500	**1,000**	10.03	21.44	14.25	3.21	7.03	-7.00	18.70
10/9/2008	1334	500	**2,000**	10.10	18.60	23.40	1.15	6.91	-4.00	2.90
10/9/2008	1336	500	**3,000**	10.12	18.13	23.90	0.68	6.95	-5.00	1.70
10/9/2008	1338	500	**4,000**	10.18	18.06	23.90	0.60	6.96	-3.00	1.60
10/9/2008	1340	500	**5,000**	10.15	18.02	23.90	0.44	6.97	-3.00	1.20
10/9/2008	1342	500	**6,000**	10.15	18.01	23.90	0.40	6.97	-4.00	1.50
10/9/2008	1344	500	**7,000**	10.15	18.03	23.90	0.35	6.97	-7.00	1.40

Stability:

QED Start Index: 42 | QED End Index: 42 | Final PSI: 20 | Final Flow ID: 103

Groundwater Samples Analytes List for Well: IR46MW49A

TPH-p (gas) / TPH-e (diesel, motor oil) /

Sample ID: 0841D020 Sample Time: 13:46

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 19.8 Purged Dry? NO

Field Measurement Equipment Used					
Equipment	Model	Serial Number	Equipment	Model	Serial Number
Water Quality Meter	QED	1581	PID	MiniRae	013767
Drawdown Meter	QED	1436	4-gas meter		
Water Level Meter	Heron-style	13952	Pump Controller	QED	2290

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Location HPS Date 11/11/08

Project / Client US Navy

1316 - arrived @ IR46MW50A
PID reading @ TOC = 3.2 ppm
1319 - measured TD: 19.74'
DTW: 8.89'
1331 - collected groundwater sample @ IR46MW50A w/ peristaltic
1404 - arrived @ IR46MW52A
PID reading @ TOC : 4.3 ppm
1408 - measured TD: 19.50'
DTW: 10.22'
1416 - collected groundwater sample @ IR46MW52A w/ peristaltic
1436 - set up @ IR46MW51A
PID reading @ TOC: 7.6
1439 - measured TD: 19.70'
DTW: 10.28'
1446 - collected groundwater sample @ IR46MW51A w/ peristaltic
1526 - arrived @ borehole G13 where Pneumatic Fracturing was currently boring.
1531 - measured TD: 20.41'
DTW: 8.37
1537 - collected grab groundwater sample @ G13
1548 - left location G13.

Monitoring Well Sampling Sheet

Well ID: IR55MW01A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Dan Eldredge	Helper: Shannon MacKenzie	Sampling Date: 11/7/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 4.62	Total Depth (feet): 14.02	Pump Intake Depth: 9

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	15/16"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	YES	Water pumped out:	YES

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: NONE

Internal Well ID: NONE

Describe Conditions as Applicable:

Concrete pad and surrounding area: Soil/Dirt

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: YES

Stain: YES

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: YES

Explain conditions:
RECENT RAIN PRODUCED CONSTANT WATER SEEPING INTO VAULT SO NEEDED CONSTANT BILDGE PUMPING THROUGHOUT WELL PURGING AND SAMPLING

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR55MW01A

Initial Depth to Water: 4.62

Total Depth: 14.02

Maximum Drawdown: 5.72

Pump Intake Depth: 9

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/7/2008	1146	500		4.62						
11/7/2008	1148	500	**1,000**	4.62	19.54	22.90	1.14	7.52	-132.00	22.00
11/7/2008	1150	500	**2,000**	4.62	19.43	22.70	0.94	7.54	-137.00	22.00
11/7/2008	1152	500	**3,000**	5.09	19.32	21.30	0.76	7.58	-137.00	15.70
11/7/2008	1154	500	**4,000**	5.09	19.20	19.20	0.49	7.60	-129.00	12.20
11/7/2008	1156	500	**5,000**	5.09	19.20	18.80	0.44	7.61	-127.00	10.10

11/7/2008	1158	500	**6,000**	5.09	19.20	17.30	0.33	7.65	-122.00	7.10
11/7/2008	1200	500	**7,000**	5.09	19.24	16.50	0.27	7.67	-121.00	6.10
11/7/2008	1202	500	**8,000**	5.09	19.19	15.70	0.23	7.70	-122.00	4.10
11/7/2008	1204	500	**9,000**	5.09	19.21	15.10	0.20	7.71	-121.00	3.40
11/7/2008	1206	500	**10,000**	5.09	19.26	14.50	0.17	7.74	-120.00	2.10
11/7/2008	1208	500	**11,000**	5.09	19.27	14.22	0.14	7.76	-118.00	2.00
11/7/2008	1210	500	**12,000**	5.09	19.21	14.00	0.12	7.77	-118.00	1.40
11/7/2008	1212	500	**13,000**	5.09	19.20	13.79	0.11	7.78	-118.00	1.00
11/7/2008	1214	500	**14,000**	5.09	19.22	13.70	0.10	7.78	-118.00	1.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 87 **QED End Index: 87** **Final PSI: 18** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR55MW01A
VOCs /

Sample ID: 0845D030 Sample Time: 12:16

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 14.02 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1581	PID	MiniRae	013767
Drawdown Meter	QED	1436	4-gas meter		
Water Level Meter	Heron-style	13952	Pump Controller	QED	2290

Additional Field Notes

Sampling/Well Location Information:
0845D030 SAMPLE TIME IS 1216

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR55MW02A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Shannon MacKenzie	Sampling Date: 11/11/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.94	Total Depth (feet): 20.95	Pump Intake Depth: 13

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	15/16"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: None

Internal Well ID: IR55MW02A

Describe Conditions as Applicable:

Concrete pad and surrounding area: Soil/Dirt

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR55MW02A

Initial Depth to Water: 6.94

Total Depth: 20.95

Maximum Drawdown: 8.46

Pump Intake Depth: 13

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/11/2008	1338	500		6.94						
11/11/2008	1340	500	**1,000**	6.91	18.44	21.70	0.64	7.30	14.00	21.60
11/11/2008	1342	500	**2,000**	6.91	18.41	21.90	0.51	7.30	12.00	18.70
11/11/2008	1344	500	**3,000**	6.91	18.40	21.90	0.40	7.31	10.00	16.30
11/11/2008	1346	500	**4,000**	6.91	18.38	21.90	0.32	7.31	7.00	16.40
11/11/2008	1348	500	**5,000**	6.91	18.36	21.90	0.27	7.31	4.00	12.90
11/11/2008	1350	500	**6,000**	6.91	18.35	21.90	0.23	7.31	2.00	12.60
11/11/2008	1352	500	**7,000**	6.91	18.37	21.90	0.17	7.31	-2.00	10.70

11/11/2008	1354	500	**8,000**	6.91	18.36	21.90	0.15	7.32	-5.00	10.80
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 24 **QED End Index: 24** **Final PSI: 18** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR55MW02A
VOCs /

Sample ID: 0846B047 Sample Time: 13:56

QA/QC Samples

This well has the following QA/QC sample types:
Trip Blank Sample Data: Sample ID: 0846D032, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 20.95 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1581	PID	MiniRae	013767
Drawdown Meter	QED	1436	4-gas meter		
Water Level Meter	Heron-style	13952	Pump Controller	QED	2290

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

Sample ID should read; 0846B047

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR67MW04A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Donevan Noordzee	Sampling Date: 11/7/2008
PID DATA: Top of Casing:		Background:
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.75	Total Depth (feet): 21.45	Pump Intake Depth: 13

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	15/16"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: 04A

Internal Well ID: IR67MW04A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Notch

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR67MW04A

Initial Depth to Water: 6.75

Total Depth: 21.45

Maximum Drawdown: 8.31

Pump Intake Depth: 13

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/7/2008	1134	500		6.73						
11/7/2008	1136	500	**1,000**	6.73	18.06	13.68	0.98	6.73	-22.00	32.50
11/7/2008	1138	500	**2,000**	6.71	17.90	13.81	0.43	6.66	-22.00	32.40
11/7/2008	1140	500	**3,000**	6.73	17.81	13.81	0.54	6.66	-23.00	32.40
11/7/2008	1142	500	**4,000**	6.73	17.85	13.81	0.66	6.66	-22.00	29.80
11/7/2008	1144	500	**5,000**	6.73	17.85	13.80	0.63	6.66	-23.00	28.40
11/7/2008	1146	500	**6,000**	6.73	18.08	13.75	0.27	6.65	-23.00	28.40
11/7/2008	1148	500	**7,000**	6.73	17.89	13.77	0.24	6.64	-23.00	15.20

11/7/2008	1150	500	**8,000**	6.73	17.86	13.86	0.22	6.65	-23.00	17.70
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 27 **QED End Index: 27** **Final PSI: 20** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR67MW04A
VOCs /

Sample ID: 0845B033 Sample Time: 11:53

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 21.45 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR70MW07A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Donevan Noordzee	Sampling Date: 11/7/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 7.30	Total Depth (feet): 18.8	Pump Intake Depth: 13

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	15/16"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: NONE

Internal Well ID: IR70MW70A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR70MW07A

Initial Depth to Water: 7.30

Total Depth: 18.8

Maximum Drawdown: 8.73

Pump Intake Depth: 13

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/7/2008	0956	500		7.30						
11/7/2008	0958	500	**1,000**	7.35	18.15	28.80	1.31	7.30	196.00	147.00
11/7/2008	1000	500	**2,000**	7.40	18.24	28.80	1.24	7.29	193.00	142.00
11/7/2008	1002	500	**3,000**	7.40	18.15	28.80	0.79	7.28	189.00	131.00
11/7/2008	1004	500	**4,000**	7.40	18.13	28.80	0.60	7.30	188.00	129.00
11/7/2008	1006	500	**5,000**	7.38	18.11	28.80	1.00	7.30	185.00	117.00
11/7/2008	1008	500	**6,000**	7.38	18.11	28.70	1.14	7.31	183.00	113.00
11/7/2008	1010	500	**7,000**	7.38	18.10	28.70	1.12	7.31	182.00	111.00

11/7/2008	1012	500	**8,000**	7.38	18.10	28.60	0.95	7.31	180.00	103.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 22 **QED End Index: 22** **Final PSI: 20** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR70MW07A
VOCs /

Sample ID: 0845B032 Sample Time: 10:16

QA/QC Samples

This well has the following QA/QC sample types:
Trip Blank Sample Data: Sample ID: 0845B031, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 18.8 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR70MW11A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Harry Leung	Helper: Devant Walker	Sampling Date: 11/7/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 3.39	Total Depth (feet): 19.49	Pump Intake Depth: 14

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	15/16"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	YES	Water pumped out:	YES

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: NONE

Internal Well ID: IR70MW11A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: YES

Describe maintenance:
PUMP WATER OUT OF WELL.

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR70MW11A

Initial Depth to Water: 3.39

Total Depth: 19.49

Maximum Drawdown: 6.04

Pump Intake Depth: 14

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/7/2008	0931	500		3.39						
11/7/2008	0933	500	**1,000**	3.39	18.50	21.70	3.48	7.31	216.00	218.00
11/7/2008	0935	500	**2,000**	3.39	18.22	26.30	1.04	7.43	209.00	253.00
11/7/2008	0937	500	**3,000**	3.39	18.19	26.40	0.76	7.47	202.00	299.00
11/7/2008	0939	500	**4,000**	3.39	18.20	26.40	0.60	7.49	197.00	471.00
11/7/2008	0941	500	**5,000**	3.39	18.18	26.40	0.44	7.50	193.00	530.00
11/7/2008	0943	500	**6,000**	3.39	18.17	26.40	0.36	7.50	189.00	437.00

11/7/2008	0945	500	**7,000**	3.39	18.18	26.40	0.29	7.51	186.00	311.00
							Stability:			

QED Start Index: 119 **QED End Index: 119** **Final PSI: 15** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR70MW11A
VOCs /

Sample ID: 0845H035 Sample Time: 09:48

QA/QC Samples

This well has the following QA/QC sample types:
Trip Blank Sample Data: Sample ID: 0845H034, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 19.49 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	CE2	PID	MiniRae	012396
Drawdown Meter	QED	CE2	4-gas meter		
Water Level Meter	Heron-style	13961	Pump Controller	QED	CE2

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR70MW12A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Erik Bluvas	Helper: Shannon MacKenzie	Sampling Date: 11/11/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 8.11	Total Depth (feet): 21.05	Pump Intake Depth: 14

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover: 1
Size of Bolts: 15/16"
Bolts Missing: 0
Bolts Replaced: 0
Reason for not Replacing: N/A
Standing water in vault: NO
Water pumped out: NO
Difficulty opening?:
Explain difficulty: YES
Well locked upon arrival: NO
Condition of lock: Usable
External Well ID: None
Internal Well ID: IR70MW12A

Describe Conditions as Applicable:

Concrete pad and surrounding area: Soil/Dirt
Vault lid, rubber seal, and vault: OK
Protective casing and cover: OK
Well cap: OK
PVC / inner casing: OK
Odor: NO
Stain: NO
Casing diameter: 4"
Casing Type: PVC
Type of Well Cap: Expandable
PVC Casing distinct mark/notch: Mark
PVC casing orientation: North
Air venting hole on PVC / inner casing: NO
Obstructions: NO
Immiscible phases present: NO
Photograph taken: NO
Any Unusual Conditions: NO
Any Maintenance Performed: NO
Was Dedicated Pump Available? NO
Was Dedicated Pump Used? NO
How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR70MW12A

Initial Depth to Water: 8.11
Total Depth: 21.05
Maximum Drawdown: 9.58
Pump Intake Depth: 14

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/11/2008	1439	500		8.11						
11/11/2008	1441	500	**1,000**	8.11	18.96	8.46	1.49	7.41	-109.00	5.90
11/11/2008	1443	500	**2,000**	8.11	18.92	9.46	1.06	7.40	-115.00	5.60
11/11/2008	1445	500	**3,000**	8.11	18.90	9.55	0.76	7.41	-117.00	4.60
11/11/2008	1447	500	**4,000**	8.12	18.90	9.46	0.51	7.41	-118.00	4.30
11/11/2008	1449	500	**5,000**	8.11	18.94	9.30	0.39	7.41	-118.00	4.10
11/11/2008	1451	500	**6,000**	8.11	18.97	9.00	0.26	7.42	-119.00	4.30

11/11/2008	1453	500	**7,000**	8.11	19.00	8.80	0.21	7.42	-120.00	4.30
11/11/2008	1455	500	**8,000**	8.11	19.05	8.62	0.19	7.43	-122.00	4.90
11/11/2008	1457	500	**9,000**	8.11	19.05	8.56	0.18	7.43	-123.00	4.40
11/11/2008	1459	500	**10,000**	8.11	19.05	8.50	0.17	7.43	-125.00	4.40
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 29 **QED End Index: 29** **Final PSI: 20** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR70MW12A
VOCs /

Sample ID: 0846B048 Sample Time: 14:60

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 21.05 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

Sample time should read 1500

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR71MW04A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Gabe Fuson	Helper: Tom Sayre	Sampling Date: 11/10/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.34	Total Depth (feet): 19.56	Pump Intake Depth: 14.5

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	2	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: none

Internal Well ID: IR71MW04A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR71MW04A

Initial Depth to Water: 6.34

Total Depth: 19.56

Maximum Drawdown: 8.38

Pump Intake Depth: 14.5

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/10/2008	1342	500		6.34						
11/10/2008	1344	500	**1,000**	6.34	17.57	5.05	2.56	6.89	54.00	6.70
11/10/2008	1346	500	**2,000**	6.34	17.58	5.06	2.44	6.87	62.00	7.10
11/10/2008	1348	500	**3,000**	6.34	17.60	5.06	2.37	6.86	66.00	7.60
11/10/2008	1350	500	**4,000**	6.35	17.61	5.06	2.26	6.86	70.00	7.00
11/10/2008	1352	500	**5,000**	6.35	17.62	5.06	2.17	6.86	74.00	6.40
11/10/2008	1354	500	**6,000**	6.34	17.61	5.07	2.08	6.86	77.00	5.90
11/10/2008	1356	500	**7,000**	6.35	17.63	5.06	2.12	6.86	80.00	6.10

11/10/2008	1358	500	**8,000**	6.34	17.61	5.05	2.13	6.86	82.00	5.60
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 11 **QED End Index: 11** **Final PSI: 15** **Final Flow ID: 101**

Groundwater Samples Analytes List for Well: IR71MW04A
VOCs / Diss Metals / Hex Chrom /

Sample ID: 0846G010 Sample Time: 14:00

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 19.56 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: PA33MW36A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Gabe Fuson	Helper: Tom Sayre	Sampling Date: 11/10/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 7.43	Total Depth (feet): 21.65	Pump Intake Depth: 18

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: none

Internal Well ID: PA33MW36A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: Lid Missing

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: PA33MW36A

Initial Depth to Water: 7.43

Total Depth: 21.65

Maximum Drawdown: 10.07

Pump Intake Depth: 18

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/10/2008	1036	500		7.43						
11/10/2008	1038	500	**1,000**	7.88	14.78	2.14	1.00	7.62	-128.00	2.90
11/10/2008	1040	500	**2,000**	8.09	14.75	1.87	0.69	7.67	-127.00	2.70
11/10/2008	1042	500	**3,000**	8.25	14.74	1.53	0.52	7.70	-117.00	2.00
11/10/2008	1044	500	**4,000**	8.48	14.75	1.28	0.39	7.70	-106.00	1.90
11/10/2008	1046	500	**5,000**	8.63	14.75	1.23	0.43	7.70	-101.00	2.30
11/10/2008	1048	500	**6,000**	8.72	14.74	1.13	0.35	7.70	-93.00	2.70
11/10/2008	1050	500	**7,000**	8.83	14.74	1.10	0.27	7.69	-88.00	2.90

11/10/2008	1052	500	**8,000**	8.90	14.74	1.06	0.74	7.68	-80.00	2.40
11/10/2008	1054	0	**9,000**	9.06	14.74	1.04	0.37	7.67	-77.00	2.70
11/10/2008	1106	280	**9,000**	8.88	14.00	1.00	1.00	7.00	-44.00	1.00
11/10/2008	1110	250	**10,120**	8.96	14.76	1.01	0.21	7.62	-65.00	1.10
11/10/2008	1112	250	**10,620**	9.02	14.75	0.99	0.16	7.61	-71.00	1.60
11/10/2008	1114	250	**11,120**	9.05	14.76	0.96	0.13	7.61	-72.00	1.40
11/10/2008	1116	250	**11,620**	9.11	14.76	0.93	0.13	7.61	-71.00	1.40
11/10/2008	1118	250	**12,120**	9.18	14.76	0.91	0.12	7.58	-70.00	2.00
11/10/2008	1120	250	**12,620**	9.22	14.77	0.89	0.12	7.57	-68.00	2.00
11/10/2008	1122	250	**13,120**	9.25	14.79	0.87	0.11	7.57	-67.00	2.30
11/10/2008	1124	250	**13,620**	9.29	14.79	0.85	0.11	7.55	-66.00	2.00
11/10/2008	1126	250	**14,120**	9.35	14.79	0.84	0.10	7.54	-64.00	2.10
							Stability:	**NO**	**YES**	**YES**

QED Start Index: 6 **QED End Index: 6** **Final PSI: 6** **Final Flow ID: 165**

Groundwater Samples Analytes List for Well: PA33MW36A
VOCs / Diss Metals / Hex Chrom /

Sample ID: 0846G009 Sample Time: 11:28

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 21.65 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

1106 readings to be deleted - entered in order to save.

General Comments:

Atual helper: Tom Sayre.

Monitoring Well Sampling Sheet

Well ID: PA33MW37A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Dan Eldredge	Helper: Shannon MacKenzie	Sampling Date: 11/6/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 7.49	Total Depth (feet): 21.97	Pump Intake Depth: 18

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	2	Bolts Replaced:	0
Reason for not Replacing:	Tab Broken		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: PA33MW37A

Internal Well ID: PA33MW37A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: No Gasket

Protective casing and cover: Rusted

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: PA33MW37A

Initial Depth to Water: 7.49

Total Depth: 21.97

Maximum Drawdown: 10.12

Pump Intake Depth: 18

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/6/2008	1115	300		7.49						
11/6/2008	1118	300	**900**	7.38	16.89	5.29	5.30	7.15	-61.00	2.10
11/6/2008	1121	300	**1,800**	7.45	16.48	10.29	2.54	7.10	-118.00	0.50
11/6/2008	1124	300	**2,700**	7.56	16.15	12.06	1.93	7.10	-135.00	0.30
11/6/2008	1127	300	**3,600**	7.71	16.11	12.10	1.45	7.10	-139.00	0.50
11/6/2008	1130	300	**4,500**	7.80	16.06	11.99	1.11	7.11	-141.00	0.30
11/6/2008	1133	300	**5,400**	7.93	16.07	11.89	0.90	7.12	-143.00	0.20
11/6/2008	1136	300	**6,300**	8.13	16.04	11.71	0.69	7.12	-145.00	0.30

11/6/2008	1139	300	**7,200**	8.22	16.04	11.60	0.56	7.12	-147.00	0.60
11/6/2008	1142	300	**8,100**	8.30	16.04	11.42	0.43	7.13	-149.00	0.50
11/6/2008	1145	300	**9,000**	8.43	16.04	10.87	0.37	7.14	-151.00	0.80
11/6/2008	1148	300	**9,900**	8.50	16.05	9.19	0.34	7.20	-153.00	1.00
11/6/2008	1151	300	**10,800**	8.65	16.07	8.05	0.34	7.26	-154.00	1.00
11/6/2008	1154	300	**11,700**	8.71	16.08	7.76	0.31	7.29	-155.00	1.90
11/6/2008	1157	300	**12,600**	8.80	16.11	7.56	0.29	7.32	-156.00	1.60
11/6/2008	1200	300	**13,500**	8.90	16.11	7.40	0.27	7.34	-156.00	1.60
11/6/2008	1203	300	**14,400**	8.90	16.11	7.45	0.24	7.34	-157.00	2.40
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 54 **QED End Index: 60** **Final PSI: 18** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: PA33MW37A
VOCs /

Sample ID: 0845D024 Sample Time: 12:06

QA/QC Samples

This well has the following QA/QC sample types:
Trip Blank Sample Data: Sample ID: 0845D023, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 21.79 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1581	PID	MiniRae	013767
Drawdown Meter	QED	1436	4-gas meter		
Water Level Meter	Heron-style	13952	Pump Controller	QED	2290

Additional Field Notes

Sampling/Well Location Information:
Computer says stable at 63000 liters. Not stable

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: PA50MW07A	Parcel: G	Sampling Event: 4Q08 Addendum III
Sampling By: Dan Eldredge	Helper: Shannon MacKenzie	Sampling Date: 11/7/2008
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 7.90	Total Depth (feet): 11.83	Pump Intake Depth: 10

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	2	Bolts Replaced:	0
Reason for not Replacing:	Tab Broken		
Standing water in vault:	YES	Water pumped out:	YES

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: none

Internal Well ID: PA50MW07A

Describe Conditions as Applicable:

Concrete pad and surrounding area: Soil/Dirt

Vault lid, rubber seal, and vault: No Gasket

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: PA50MW07A

Initial Depth to Water: 7.90

Total Depth: 11.83

Maximum Drawdown: 8.43

Pump Intake Depth: 10

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
11/7/2008	0928	500		7.90						
11/7/2008	0930	500	**1,000**	7.95	19.03	17.00	1.97	7.03	155.00	21.00
11/7/2008	0932	500	**2,000**	7.97	19.01	16.90	1.48	7.03	149.00	16.80
11/7/2008	0934	500	**3,000**	7.97	19.02	16.70	1.28	7.03	146.00	14.60
11/7/2008	0936	500	**4,000**	7.97	19.00	16.60	1.28	7.03	142.00	12.60
11/7/2008	0938	500	**5,000**	7.97	19.09	16.40	1.44	7.02	144.00	10.60
11/7/2008	0940	500	**6,000**	7.97	19.15	16.10	1.90	7.01	135.00	5.40
11/7/2008	0942	500	**7,000**	7.97	19.12	15.90	2.09	7.00	133.00	4.40

11/7/2008	0944	500	**8,000**	7.97	19.13	15.80	2.20	7.00	132.00	3.80
11/7/2008	0946	500	**9,000**	7.97	19.10	15.70	2.30	7.00	129.00	2.80
11/7/2008	0948	500	**10,000**	7.97	19.13	15.60	2.42	7.00	126.00	1.90
11/7/2008	0950	500	**11,000**	7.97	19.19	15.60	2.45	7.00	124.00	1.80
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 82 **QED End Index: 82** **Final PSI: 12** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: PA50MW07A
VOCs /

Sample ID: 0845D029 Sample Time: 09:54

QA/QC Samples

This well has the following QA/QC sample types:
Trip Blank Sample Data: Sample ID: 0845D028, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 11.83 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1581	PID	MiniRae	013767
Drawdown Meter	QED	1436	4-gas meter		
Water Level Meter	Heron-style	13952	Pump Controller	QED	2290

Additional Field Notes

Sampling/Well Location Information:
COMPUTER SAYS STABLE AT 9000 (NOT)

Unusual Events/Problems:

General Comments:

1Q2009 Sampling Event

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Monitoring Well Sampling Sheet

Well ID: IR07MW24A	Parcel: B	Sampling Event: TPH Cap Program 1Q09
Sampling By: William Uchiyama	Helper: Shannon MacKenzie	Sampling Date: 3/20/2009
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 11.02	Total Depth (feet): 18.11	Pump Intake Depth: 15.07

Well Physical Inspection

Well Completion Type: Monument

Height above ground/road surface (inches): 34
Number of Bollards: 3
Difficulty opening?: NO
Well locked upon arrival: YES
Condition of lock: Usable
External Well ID: 24A
Internal Well ID: IR07MW24A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK
Protective casing and cover: OK
Well cap: OK
PVC / inner casing: OK
Odor: NO
Stain: NO
Casing diameter: 4"
Casing Type: PVC
Type of Well Cap: Expandable
PVC Casing distinct mark/notch: Mark
PVC casing orientation: North
Air venting hole on PVC / inner casing: NO
Obstructions: NO
Immiscible phases present: NO
Photograph taken: NO
Any Unusual Conditions: NO
Any Maintenance Performed: NO
Was Dedicated Pump Available? NO
Was Dedicated Pump Used? NO
How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR07MW24A

Initial Depth to Water: 11.02
Total Depth: 18.11
Maximum Drawdown: 12.03
Pump Intake Depth: 15.07

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
3/20/2009	1014	500		11.02						
3/20/2009	1016	500	**1,000**	11.02	14.15	0.98	1.36	7.15	101.00	0.00
3/20/2009	1018	500	**2,000**	11.02	14.06	1.95	1.06	7.14	102.00	0.00
3/20/2009	1020	500	**3,000**	11.02	14.07	1.96	0.94	7.14	103.00	0.00
3/20/2009	1022	500	**4,000**	11.02	14.05	1.95	0.91	7.14	104.00	0.00
3/20/2009	1024	500	**5,000**	11.02	14.05	1.95	0.90	7.14	104.00	0.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: **QED End Index:** **Final PSI:** **Final Flow ID:**

Groundwater Samples Analytes List for Well: IR07MW24A

Sample ID: 0912W045 Sample Time: 10:26

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 18.11 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	Model	Serial Number	Equipment	Model	Serial Number
Water Quality Meter	QED	1566	PID	MiniRae	012374
Drawdown Meter	QED	1423	4-gas meter		
Water Level Meter	Heron-style	13959	Pump Controller	QED	2217

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR07MW26A	Parcel: B	Sampling Event: TPH Cap Program 1Q09
Sampling By: William Uchiyama	Helper: Shannon MacKenzie	Sampling Date: 3/20/2009
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 11.76	Total Depth (feet): 18.6	Pump Intake Depth: 15.56

Well Physical Inspection

Well Completion Type: Monument

Height above ground/road surface (inches): 33.5

Number of Bollards: 3

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: 26A

Internal Well ID: IR07MW26A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Rubber Slip Cap

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR07MW26A

Initial Depth to Water: 11.76

Total Depth: 18.6

Maximum Drawdown: 12.71

Pump Intake Depth: 15.56

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
3/20/2009	0913	500		11.76						
3/20/2009	0915	500	**1,000**	11.76	15.55	9.34	1.58	7.30	196.00	0.20
3/20/2009	0917	500	**2,000**	11.77	15.64	9.23	1.01	7.31	190.00	0.00
3/20/2009	0919	500	**3,000**	11.78	15.68	8.99	0.93	7.32	186.00	0.00
3/20/2009	0921	500	**4,000**	11.79	15.69	8.67	1.05	7.33	183.00	0.00
3/20/2009	0923	500	**5,000**	11.79	15.72	7.94	2.05	7.35	178.00	0.00
3/20/2009	0925	500	**6,000**	11.79	15.67	7.44	2.94	7.36	176.00	0.00
3/20/2009	0927	500	**7,000**	11.78	15.61	7.09	3.54	7.36	174.00	0.00
3/20/2009	0929	500	**8,000**	11.79	15.61	6.94	4.04	7.36	173.00	0.00
3/20/2009	0931	500	**9,000**	11.79	15.58	6.77	4.39	7.37	171.00	0.00

3/20/2009	0933	500	**10,000**	11.78	15.56	6.49	4.76	7.37	170.00	0.00
3/20/2009	0935	500	**11,000**	11.80	15.52	6.18	5.04	7.38	169.00	0.00
3/20/2009	0937	500	**12,000**	11.80	15.49	6.16	5.18	7.38	168.00	0.00
3/20/2009	0939	500	**13,000**	11.80	15.50	6.10	5.21	7.38	167.00	0.00
							Stability:	**YES**	**YES**	**YES**

QED Start Index: **QED End Index:** **Final PSI:** **Final Flow ID:**

Groundwater Samples Analytes List for Well: IR07MW26A

Sample ID: 0912W044 Sample Time: 09:41

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 18.6 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1566	PID	MiniRae	012374
Drawdown Meter	QED	1423	4-gas meter		
Water Level Meter	Heron-style	13959	Pump Controller	QED	2217

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Sheet 1 of 1

Well No.: IR18MW100B	Day of Week: Fri	Date: 3-27-09
Personnel: P. Candley, D. Eldredge	Initial depth to water:	ft. below top of casing

Organic Vapor Concentrations

PID — Top of Casing: 0.0 Background: 0.0

Landfill Gas Meter (if applicable to well) — LEL: NA Methane: NA O2: 209

Groundwater Parameters

Time	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	19.21 Depth to water (ft. below TOC)	Temperature (degrees C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
0946	500	0	11.45						
0948	500	1000	11.97	17.51	2.67	1.28	6.53	176	4.0
0950	500	2000	12.45	17.54	2.63	1.28	6.51	174	4.2
0952	500	3000	12.63	17.50	2.59	0.89	6.50	172	4.1
0954	500	4000	12.97	17.50	2.51	0.60	6.47	171	3.9
0956	500	5000	13.27	17.46	2.48	0.44	6.44	169	4.0
0958	500	6000	13.54	17.48	2.47	0.38	6.41	167	3.1
1000	500	7000	13.77	17.50	2.48	0.36	6.41	167	2.5
1002	500	8000	14.07	17.54	2.47	0.36	6.40	166	2.7

After Sampling Depth to Bottom of Well: 45.35 ft. below TOC Purged Dry? NO

Field Measurement Equipment Used

Equipment	Model	Serial Number	Equipment	Model	Serial Number
Water Quality Meter	YSI 556		PID	MiniRae	
Turbidity Meter	LaMotte		Filter Apparatus	Disposable	
Water Level Meter	Heron-style		Other:		
Pump	Grundfos RF2		Other:		

Groundwater Samples Collected (check all that apply)

Metals		Organotins		NH3	
PCBs		Oil / Grease		TKN	
Pesticides		Cyanide		Salinity	
VOCs		Anions		TDS	
SVOCs		Sulfide		TSS	
TPH-e	✓	Dioxane		PAH	✓
TPH-p	✓	OP Cmpds			
Hexavalent Chromium		Organo Cl Pesticides			

SAMPLE INFORMATION

Sample Number: 0913D046

Sample Date: 3-27-09 Time: 1005

Middle of Saturated Screen Sample Depth (ft. below TOC): 42.50

Method of Extraction: QED Submersible Pump

Method of Sampling: QED Submersible Pump

QA/QC Samples:

None? ✓ Field Dupe MS/MSD? ____ Rinsate

(FD) Sample Time ____ (Rinsate) Sample Time ____

(FD) Sample Number (Rinsate) Sample Number

QA/QC Checked by: ____ Date: ____

Monitoring Well Sampling Sheet

Well ID: IR24MW05A	Parcel: B	Sampling Event: TPH Cap Program 1Q09
Sampling By: William Uchiyama	Helper: Shannon MacKenzie	Sampling Date: 3/20/2009
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 9.11	Total Depth (feet): 22.03	Pump Intake Depth: 17

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	1	Bolts Replaced:	0
Reason for not Replacing:	Tab Broken		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO
Well locked upon arrival: NO
Condition of lock: Usable
External Well ID: NONE
Internal Well ID: IR24MW05A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK
Vault lid, rubber seal, and vault: OK
Protective casing and cover: OK
Well cap: OK
PVC / inner casing: OK
Odor: NO
Stain: NO
Casing diameter: 4"
Casing Type: PVC
Type of Well Cap: Expandable
PVC Casing distinct mark/notch: Mark
PVC casing orientation: North
Air venting hole on PVC / inner casing: NO
Obstructions: NO
Immiscible phases present: NO
Photograph taken: NO
Any Unusual Conditions: NO
Any Maintenance Performed: NO
Was Dedicated Pump Available? NO
Was Dedicated Pump Used? NO
How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR24MW05A

Initial Depth to Water: 9.11
Total Depth: 22.03
Maximum Drawdown: 11.08
Pump Intake Depth: 17

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
3/20/2009	1122	500		9.11						
3/20/2009	1124	500	**1,000**	9.24	14.70	38.20	0.81	6.90	-235.00	2.10
3/20/2009	1126	500	**2,000**	9.91	14.63	37.60	0.53	6.91	-251.00	1.30
3/20/2009	1128	500	**3,000**	10.07	14.56	37.50	0.40	6.91	-259.00	0.90
3/20/2009	1130	500	**4,000**	10.23	14.59	37.60	0.33	6.91	-264.00	0.10
3/20/2009	1132	500	**5,000**	10.31	14.59	37.70	0.37	6.91	-269.00	0.80
3/20/2009	1134	500	**6,000**	10.40	14.56	37.70	0.23	6.92	-273.00	0.50
3/20/2009	1136	500	**7,000**	10.48	14.53	37.70	0.20	6.91	-277.00	1.30

3/20/2009	1138	500	**8,000**	110.50	14.50	37.70	0.19	6.91	-279.00	3.20
							Stability:	**YES**	**YES**	**YES**

QED Start Index: **QED End Index:** **Final PSI:** **Final Flow ID:**

Groundwater Samples Analytes List for Well: IR24MW05A

Sample ID: 0912W046 Sample Time: 11:40

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 22.03 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1566	PID	MiniRae	012374
Drawdown Meter	QED	1423	4-gas meter		
Water Level Meter	Heron-style	13959	Pump Controller	QED	2217

Additional Field Notes

Sampling/Well Location Information:
SAMPLE DUPLICATE TAKEN ON THIS WELL 0912W047

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR33MW02	Parcel: G	Sampling Event: TPH Cap Program 1Q09
Sampling By: Dan Eldredge	Helper: Justin Hernandez	Sampling Date: 3/20/2009
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 4.68	Total Depth (feet): 21.2	Pump Intake Depth:

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: NO

Condition of lock:

External Well ID: MW02

Internal Well ID: MW02

Describe Conditions as Applicable:

Concrete pad and surrounding area:

Vault lid, rubber seal, and vault:

Protective casing and cover:

Well cap:

PVC / inner casing:

Odor: NO

Stain: NO

Casing diameter: 0

Casing Type:

Type of Well Cap:

PVC Casing distinct mark/notch: Notch

PVC casing orientation: 0

Air venting hole on PVC / inner casing: YES
Distance from inner TOC (inches): 0

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO
Was Dedicated Pump Used? NO
How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR33MW02

Initial Depth to Water: 4.68

Total Depth: 21.2

Maximum Drawdown: N/A

Pump Intake Depth:

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
3/20/2009	1332	500		4.68						
3/20/2009	1334	500	**1,000**	4.80	16.82	1.89	0.96	7.52	-134.00	86.10
3/20/2009	1336	500	**2,000**	4.80	16.83	1.88	0.90	7.53	-143.00	83.40
3/20/2009	1338	500	**3,000**	4.80	16.80	1.81	0.57	7.65	-145.00	79.20
3/20/2009	1340	500	**4,000**	4.80	16.76	1.67	0.44	7.68	-142.00	66.40
3/20/2009	1342	500	**5,000**	4.80	16.74	1.58	0.32	7.68	-137.00	58.00
3/20/2009	1344	500	**6,000**	4.80	16.71	1.46	0.22	7.72	-129.00	51.60

3/20/2009	1346	500	**7,000**	4.80	16.71	1.42	0.20	7.72	-127.00	48.20
3/20/2009	1348	500	**8,000**	4.80	16.66	1.37	0.18	7.73	-123.00	44.50
3/20/2009	1350	500	**9,000**	4.80	16.58	1.35	0.17	7.73	-122.00	41.60
3/20/2009	1352	500	**10,000**	4.80	16.59	1.31	0.15	7.73	-121.00	38.80
3/20/2009	1354	500	**11,000**	4.80	16.56	1.26	0.14	7.74	-120.00	35.30
3/20/2009	1356	500	**12,000**	4.80	16.34	1.12	0.11	7.74	-114.00	24.70
3/20/2009	1358	500	**13,000**	4.80	16.29	1.09	0.10	7.75	-113.00	22.10
3/20/2009	1400	500	**14,000**	4.80	16.26	1.07	0.10	7.75	-121.00	21.00
							Stability:	**NO**	**YES**	**YES**

QED Start Index: **QED End Index:** **Final PSI:** **Final Flow ID:**

Groundwater Samples Analytes List for Well: IR33MW02

Sample ID: 0912D045 Sample Time: 14:02

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1581	PID	MiniRae	013767
Drawdown Meter	QED	1436	4-gas meter		
Water Level Meter	Heron-style	13952	Pump Controller	QED	2290

Additional Field Notes

Sampling/Well Location Information:
ID SHOULD BE 043 ST 1402

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR46MW47A	Parcel: B	Sampling Event: TPH Cap Program 1Q09
Sampling By: Harry Leung	Helper: Lance Moore	Sampling Date: 3/20/2009
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 8.43	Total Depth (feet): 20.81	Pump Intake Depth: 15

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	1	Bolts Replaced:	0
Reason for not Replacing:	Tab Broken		
Standing water in vault:	YES	Water pumped out:	YES

Difficulty opening?: NO

Well locked upon arrival: NO

Condition of lock: Usable

External Well ID: 47A

Internal Well ID: IR46MW47A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR46MW47A

Initial Depth to Water: 8.43

Total Depth: 20.81

Maximum Drawdown: 10.07

Pump Intake Depth: 15

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
3/20/2009	1107	500		8.43						
3/20/2009	1109	500	**1,000**	8.56	14.60	13.80	1.35	7.25	155.00	3.30
3/20/2009	1111	500	**2,000**	8.63	14.60	13.55	1.92	7.25	148.00	2.50
3/20/2009	1113	500	**3,000**	8.65	14.58	13.52	1.61	7.25	141.00	1.80
3/20/2009	1115	500	**4,000**	8.65	14.59	13.53	1.32	7.25	136.00	1.70
3/20/2009	1117	500	**5,000**	8.65	14.59	13.52	1.17	7.24	125.00	2.00
3/20/2009	1119	500	**6,000**	8.65	14.61	13.53	1.02	7.24	106.00	1.20
3/20/2009	1121	500	**7,000**	8.65	14.64	13.52	0.87	7.24	82.00	0.80

3/20/2009	1123	500	**8,000**	8.65	14.69	13.51	0.77	7.23	60.00	1.10
3/20/2009	1125	500	**9,000**	8.65	14.66	13.52	0.74	7.23	43.00	0.40
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 14 **QED End Index: 14** **Final PSI: 20** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR46MW47A

Sample ID: 0912H038 Sample Time: 11:26

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 20.81 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	CE2	PID	MiniRae	012396
Drawdown Meter	QED	CE2	4-gas meter		
Water Level Meter	Heron-style	13961	Pump Controller	QED	CE2

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR46MW48A	Parcel: B	Sampling Event: TPH Cap Program 1Q09
Sampling By: Harry Leung	Helper: Lance Moore	Sampling Date: 3/20/2009
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 6.41	Total Depth (feet): 21.1	Pump Intake Depth: 14.185

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	2	Size of Bolts:	3/4"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR46MW48A

Internal Well ID: IR46MW48A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR46MW48A

Initial Depth to Water: 6.41

Total Depth: 21.1

Maximum Drawdown: 8.35

Pump Intake Depth: 14.185

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
3/20/2009	0953	500		6.41						
3/20/2009	0955	300	**1,000**	6.75	15.78	41.30	1.18	7.29	205.00	9.70
3/20/2009	0958	200	**1,900**	7.20	16.09	43.10	1.02	7.29	200.00	6.60
3/20/2009	1003	200	**2,900**	7.40	15.75	43.00	0.96	7.29	19.60	5.90
3/20/2009	1008	200	**3,900**	7.60	15.81	42.90	0.80	7.29	189.00	6.20
3/20/2009	1013	200	**4,900**	7.65	15.60	42.80	0.72	7.28	186.00	6.10
3/20/2009	1018	200	**5,900**	7.71	15.57	42.70	0.64	7.28	182.00	5.20
3/20/2009	1023	200	**6,900**	7.76	15.91	42.60	0.62	7.28	179.00	5.90

3/20/2009	1028	200	**7,900**	7.82	16.05	42.40	0.57	7.27	176.00	4.40
3/20/2009	1033	200	**8,900**	7.84	16.12	42.30	0.54	7.27	175.00	4.30
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 06 **QED End Index: 06** **Final PSI: 10** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR46MW48A

Sample ID: 0912H037 Sample Time: 10:34

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 21.1 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	CE2	PID	MiniRae	012396
Drawdown Meter	QED	CE2	4-gas meter		
Water Level Meter	Heron-style	13961	Pump Controller	QED	CE2

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR46MW49A	Parcel: B	Sampling Event: TPH Cap Program 1Q09
Sampling By: Nathan Berner	Helper: Patsy Candley	Sampling Date: 3/20/2009
PID DATA: Top of Casing: 30.00		Background: 0.10
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 9.59	Total Depth (feet): 19.79	Pump Intake Depth: 15

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	7/8"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR46MW49A

Internal Well ID: IR46MW49A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR46MW49A

Initial Depth to Water: 9.59

Total Depth: 19.79

Maximum Drawdown: 10.94

Pump Intake Depth: 15

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
3/20/2009	0908	500		9.59	16.04	22.30	1.16	7.20	-151.00	2.90
3/20/2009	0910	500	**1,000**	9.65	16.04	22.30	0.60	7.17	-162.00	2.90
3/20/2009	0912	500	**2,000**	9.56	16.05	22.30	0.49	7.17	-167.00	3.20
3/20/2009	0914	500	**3,000**	9.65	16.08	22.30	0.38	7.16	-175.00	3.60
3/20/2009	0916	500	**4,000**	9.56	16.08	22.30	0.38	7.16	-175.00	3.60
3/20/2009	0918	500	**5,000**	9.67	16.09	22.20	0.38	7.16	-184.00	3.60
3/20/2009	0920	500	**6,000**	9.68	16.09	22.20	0.34	7.16	-189.00	3.00
3/20/2009	0922	500	**7,000**	9.81	16.11	22.20	0.28	7.16	-198.00	2.70

3/20/2009	0924	500	**8,000**	9.81	16.07	22.20	0.26	7.16	-201.00	2.10
							Stability:	**YES**	**YES**	**YES**

QED Start Index: **QED End Index:** **Final PSI:** **Final Flow ID:**

Groundwater Samples Analytes List for Well: IR46MW49A

Sample ID: 0912A005 Sample Time: 0928

QA/QC Samples

This well has the following QA/QC sample types:
Trip Blank Sample Data: Sample ID: 0912A004, Sample Time: 0800

After Sampling, depth to bottom of well: (ft. below TOC): 19.79 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR46MW50A	Parcel: B	Sampling Event: TPH Cap Program 1Q09
Sampling By: Harry Leung	Helper: Lance Moore	Sampling Date: 3/20/2009
PID DATA: Top of Casing: 0.00		Background: 0.00
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 9.35	Total Depth (feet): 19.7	Pump Intake Depth:

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	15/16"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: IR46MW50A

Internal Well ID: IR46MW50A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR46MW50A

Initial Depth to Water: 9.35

Total Depth: 19.7

Maximum Drawdown: N/A

Pump Intake Depth:

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
3/20/2009	1204	500		9.35						
3/20/2009	1206	500	**1,000**	9.40	15.99	14.45	1.18	7.39	-85.00	62.40
3/20/2009	1208	500	**2,000**	9.40	16.02	14.51	1.11	7.42	-95.00	56.60
3/20/2009	1210	500	**3,000**	9.42	16.02	14.46	1.33	7.42	-106.00	51.40
3/20/2009	1212	500	**4,000**	9.42	16.03	14.44	1.01	7.43	-119.00	41.00
3/20/2009	1214	500	**5,000**	9.42	16.05	14.44	0.91	7.43	-128.00	37.90
3/20/2009	1216	500	**6,000**	9.42	16.07	14.44	1.05	7.42	-134.00	37.00
3/20/2009	1218	500	**7,000**	9.42	16.06	14.45	0.94	7.42	-138.00	38.90

3/20/2009	1220	500	**8,000**	9.42	16.07	14.47	0.85	7.42	-131.00	35.80
							Stability:	**YES**	**YES**	**YES**

QED Start Index: 21 **QED End Index: 21** **Final PSI: 22** **Final Flow ID: 103**

Groundwater Samples Analytes List for Well: IR46MW50A

Sample ID: 0912H039 Sample Time: 12:21

QA/QC Samples

This well has the following QA/QC sample types:
Trip Blank Sample Data: Sample ID: 0912H035, Sample Time: 08:00

After Sampling, depth to bottom of well: (ft. below TOC): 19.7 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	CE2	PID	MiniRae	012396
Drawdown Meter	QED	CE2	4-gas meter		
Water Level Meter	Heron-style	13961	Pump Controller	QED	CE2

Additional Field Notes

Sampling/Well Location Information:

Unusual Events/Problems:

General Comments:

Monitoring Well Sampling Sheet

Well ID: IR46MW51A	Parcel: B	Sampling Event: TPH Cap Program 1Q09
Sampling By: Nathan Berner	Helper: Patsy Candley	Sampling Date: 3/20/2009
PID DATA: Top of Casing: 0.30		Background: 0.20
	Landfill Gas Meter? NO	
Initial Depth to Water (ft. below Top of Casing): 8.90	Total Depth (feet): 19.67	Pump Intake Depth:

Well Physical Inspection

Well Completion Type: Flush

Number of Bolts on Vault Cover:	1	Size of Bolts:	7/8"
Bolts Missing:	0	Bolts Replaced:	0
Reason for not Replacing:	N/A		
Standing water in vault:	NO	Water pumped out:	NO

Difficulty opening?: NO

Well locked upon arrival: YES

Condition of lock: Usable

External Well ID: NONE

Internal Well ID: IR46MW50A

Describe Conditions as Applicable:

Concrete pad and surrounding area: OK

Vault lid, rubber seal, and vault: OK

Protective casing and cover: OK

Well cap: OK

PVC / inner casing: OK

Odor: NO

Stain: NO

Casing diameter: 4"

Casing Type: PVC

Type of Well Cap: Expandable

PVC Casing distinct mark/notch: Mark

PVC casing orientation: North

Air venting hole on PVC / inner casing: NO

Obstructions: NO

Immiscible phases present: NO

Photograph taken: NO

Any Unusual Conditions: NO

Any Maintenance Performed: NO

Was Dedicated Pump Available? NO

Was Dedicated Pump Used? NO

How was well sampled? Peristaltic Pump

Groundwater Parameters

Well ID: IR46MW51A

Initial Depth to Water: 8.90

Total Depth: 19.67

Maximum Drawdown: N/A

Pump Intake Depth:

Date	Time (HHMM)	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temp (Celsius)	Specific Conductance (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
3/20/2009	1144	500		9.31	16.06	28.40	0.60	7.29	-290.00	18.60
3/20/2009	1146	500	**1,000**	9.41	16.02	28.40	0.60	7.27	-293.00	17.60
3/20/2009	1148	500	**2,000**	9.41	16.01	28.30	0.51	7.26	-298.00	16.00
3/20/2009	1150	500	**3,000**	9.40	16.01	28.30	0.48	7.25	-301.00	15.70
3/20/2009	1152	500	**4,000**	9.44	15.97	28.10	0.49	7.24	-307.00	12.20
3/20/2009	1154	500	**5,000**	9.49	15.94	28.10	0.44	7.23	-309.00	12.20
3/20/2009	1156	500	**6,000**	9.49	15.90	28.10	0.40	7.23	-310.00	10.10
3/20/2009	1158	500	**7,000**	9.50	15.88	28.00	0.38	7.22	-312.00	9.30

3/20/2009	1200	500	**8,000**	9.57	15.86	28.00	0.31	7.22	-312.00	8.90
							Stability:	**YES**	**YES**	**YES**

QED Start Index: **QED End Index:** **Final PSI:** **Final Flow ID:**

Groundwater Samples Analytes List for Well: IR46MW51A

Sample ID: 0912A006 Sample Time: 1205

QA/QC Samples

This well has the following QA/QC sample types:
No QA/QC Samples needed.

After Sampling, depth to bottom of well: (ft. below TOC): 19.67 **Purged Dry? NO**

Field Measurement Equipment Used					
Equipment	**Model**	**Serial Number**	**Equipment**	**Model**	**Serial Number**
Water Quality Meter	QED	1567	PID	MiniRae	012373
Drawdown Meter	QED	1424	4-gas meter		
Water Level Meter	Heron-style	13956	Pump Controller	QED	2218

Additional Field Notes

Sampling/Well Location Information:
COMPUTER OFF 2 MINUTES, REAL STOP WAS AT 1202 AND 9000.

Unusual Events/Problems:

WELL MISS LABELED AS IR46MW50A; RELABELED WELL AND INSTALLED PUMP.

General Comments:

3/20/09 continued Nathan Berner/Patsy C.

Well #2 IR46MW51A
Sample time: 1205, 0912A006
QA/QC = none
bottles = 8 VOAs, 4 Ambers
QED index = 06
Analyte list = VOCs, TPHe, TPHp

Well #3 IR46MW52A Nathan Berner
Gabe Fuson

*Free product observed on water meter, installed dedicated pump, intake depth is 15.45'

*Re-checked 51A, noted Hydrocarbon odor, possible decomposed product on paristaltic pump tubing, dark gray to black, no product observed during sampling

Loc: Hunter's Pt. Shipyard 3-23-09
Proj Client: BGQP 101720-3 1Q'09

IR02MWB-2 ≈ 0900
Sample Time: 1018 ID: 0913B033
No QA/QC
Analytes: TDS, Rad

IR02MW101A1 ≈ 1045
Sample Time: ID: 0913B034
No QA/QC
Analytes: TDS, Rad
- Installed long (3ft) dedicated bladder pump @ 15 ft. bgs, w/ SS 4" well head.

IR46MW52A: ≈ 1400
DTW: 10.15
Sampled well
Sample ID: 0913~~MW35~~ B035 N.E.
Time: 1400
*Did not take water quality parameters MSMSD

Monitoring Well Sampling Sheet

Sheet 1

Well No.: PA18MW09A

Personnel: G. Fuson, ~~DPE~~ T. Sayre

Day of Week: ~~MONDAY~~ Friday

Date: 3/27/09 ~~3-23-09~~

Initial depth to water: 13.16 ft. below top of casing

Organic Vapor Concentrations

PID — Top of Casing: Background:

Landfill Gas Meter (if applicable to well) — LEL: N/A Methane: NA O2: NA

Groundwater Parameters

Time	Discharge Rate (mL/min)	Cumulative Volume Discharged (mL)	Depth to water (ft. below TOC)	Temperature (degrees C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential	Turbidity (NTU)
1000	500	0	13.16						
1002	500	1000	13.66	17.86	9.48	0.50	7.12	-100	8.9
1004	500	2000	13.91	17.66	9.47	0.42	7.14	-119	1.7
1006	500	3000	14.05	17.66	9.47	0.37	7.15	~~-100~~ 141	1.3
1008	500	4000	14.17	17.67	9.46	0.32	7.15	-123 TAS	0.9
1010	500	5000	14.32	17.73	9.44	0.27	7.15	-124	0.9
1012	500	6000	14.46	17.71	9.39	0.25	7.15	-124	0.6
1014	500	7000	14.55	17.72	9.30	0.23	7.13	-123	0.4
1016	500	8000	14.66	17.79	9.13	0.12	7.10	-121	0.3

After Sampling Depth to Bottom of Well: ____ ft. below TOC Purged Dry? NO

Field Measurement Equipment Used

Equipment	Model	Serial Number	Equipment	Model	Serial Number
Water Quality Meter	YSI 556	Z	PID	MiniRae	Z
Turbidity Meter	LaMotte	Z	Filter Apparatus	Disposable	N
Water Level Meter	Heron-style	Z	Other:		
Pump	Grundfos RF2	Z	Other:		

Groundwater Samples Collected (check all that apply)

Metals		Organotins		NH3		Sample Number: 041360 ~~041300~~	
PCBs		Oil / Grease		TKN			
Pesticides		Cyanide		Salinity			
VOCs		Anions		TDS			
SVOCs		Sulfide		TSS		Sample Date: 3/27/09 ~~3-23-09~~ TAS Time:	
TPH-e	✓	1,4-Dioxane		PAH		Middle of Saturated Screen	
TPH-p		OP Cmpds				Sample Depth (ft. below TOC): 22.5' btoc	
Hexavalent Chromium		Organo Cl Pesticides				Method of Extraction: Submersible Pump	Method of Sampling: Submersible Pump

QA/QC Samples:

None? ✓ Field Dupe MS/MSD? ____ Rinsate

(FD) Sample Time ____ (Rinsate) Sample Time ____

(FD) Sample Number ____ (Rinsate) Sample Number ____

QA/QC Checked by: ____ Date: ____

DED Start 23 End 24 PSI = 27 Flow ID: 133

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Chain-of-Custody Records

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3Q2008 Sampling Event

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CHAIN OF CUSTODY RECORD

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175
Fax: (559) 275-4422

C.O.C. № 25772

Discard per client. 8/7/08

Report to: (PLEASE PRINT)		Invoice to: (PLEASE PRINT)	
Company Name: Kleinfelder/C2	Phone: 415.822.2253	Company Name: C2	Phone:
Address:	Fax: 415.822.1329	Address:	Fax:
Attn:		Attn:	

Project Name/Number	Sampler (Print)	Date Shipped:
HPS/91399	Patricia Walters	Carrier:
Purchase Order Number	Sampler (Signature)	Waybill No.:
91399	Patricia Walters	Comments: Diss metals filtered Field filtered *run BE,Cd by 6020 **run 1,2-DCA, CCl4, & vinyl chloride by SIM

Analysis Requested/Method Number

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-P 8015B	TPH-e 8015B	TPH-d 8015B	Diss Metals 6020B/6020*	Perchlorate 6850	VOCs 8260B** SIM**					
0830E033	IR14MW13A	7/23/08	1055	L	6	X	X	X								
0830E034	IR14MW13A	|	1115	|	6	X	X	X								
~~0830E035~~	~~IR14MW10A~~	|	~~1342~~	|	~~3~~			X	X							
~~0830E036~~	~~IR01MW16A~~	|	~~1510~~	|	~~1~~					X						
0830E032	Trip Blank	|	0800	|	8	X					X					
0830X010	Trip Blank	↓	1600	↓	8	X					X					

TPH 7/23/08

TPH 7/23/08

TPH 7/23/08

Note: samples may be wet ★

Shuttle Temperature:	Turnaround Requested: MUST CHECK ONE	Sample Disposal:
2.0 C	☒ Standard (2-3 week) ☐ One week ☐ 24-48 hour	☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	7/23/08	1610					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					7-24-08	0800	[illegible]

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 25797

Report to: PLEASE PRINT
Company Name: CE2/Kleinfelder
Address: 1970 Broadway Ste 710
Oakland, CA 94612
Attn: Patricia Walters
added to COC per fax 8-28-08 rp
Phone: 415-822-2253
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: CE2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Date Shipped:
Carrier:
Waybill No.:
Comments:

Analysis Requested/Method Number

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-P by EPA (8015B)	TPH-E by EPA (8015B)	DISS. METALS 6010B/6020*	Comments
0835G010	TRIPBLANK	08/26/08	0800	L	3	X			* run ~~beryllium~~ Be and Cd by 6020.
0835G011	IR46MW47A		1046		6	X	X		
0835G012	IR46MW47A		1051		6	X	X		Please filter and acidify sample volume for metals prior to analysis.
0835G013	IR24MW05A		1154		6	X	X		
0835G014	IR25MW56A	08/27/08	1334		1			X	
0835X002	TRIP BLANK	08/27/08	1500	L	3	X			

GCF 08/27/08

GCF 08/27/08

GCF 08/27/08

GCF 08/27/08

Shuttle Temperature: 20 C

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	08/27/08	1320	changed per fax 8-28-08 rp				
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					8-28-08	0800	[illegible]

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

CHAIN OF CUSTODY RECORD

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

C.O.C. № 25800

Report to: (PLEASE PRINT)		Invoice to: (PLEASE PRINT)	
Company Name: Kleinfelder	Phone: (415) 822-2253	Company Name: Ce 2	Phone:
Address:	Fax: (415) 822-1329	Address:	Fax:
Attn:		Attn:	

Project Name/Number	Sampler (Print)	Analysis Requested/Method Number	Date Shipped:
HPS 91399	Gabriel Fuson		Carrier:
Purchase Order Number: 91399	Sampler (Signature): Gabriel Fuson		Waybill No.:
			Comments: run Be, Cd by 6020

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-D	DISS METALS 6010B/6020*	PCBs-8082	CS-137 901.0 (MOD)	RA-226 903.1	SR-90 905.0	TPH-GC 8015B	HEX CHROME 7199				
0836G016	IR02MW375A	9-3-08	1028	GW	9	X											HCl Preservative dumped out due to effervescence
0836X003	TRIP BLANK	9-3-08	1600	GW	3	X											
0836G017	IR02MW374A	9-3-08	1516	GW	15	X	X	X	X	X	X	X	X				~~MS/MSD~~ CM 09-04-08
0836G015	TRIPBLANK	9-3-08	0800	GW	3	X											

MS/MSD

COC 09/03/08

09/03/08

Shuttle Temperature:	Turnaround Requested: MUST CHECK ONE	Sample Disposal:
20C	☒ Standard (2-3 week) ☐ One week ☐ 24-48 hour	☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by sampler	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	09/03/08	1400					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					9-4-08	800	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 25801

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address:
Attn:
Phone: (415) 822-2253
Fax: (415) 822-1329

Invoice to: PLEASE PRINT
Company Name: Ce2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS 91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Analysis Requested/Method Number

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	Diss Metals 6010B/6020*	Cs-137 901.1 mod	Ra-226 903.1	Sr-90 905.0	Hex Chrome 7199	Date Shipped:	Comments: *RUN Be & Cd by 6020
0836G016	1R02MW375A	9/3/08	1028	GW	24	X	X	X	X	X	Carrier:	MS/MSD
											Waybill No.:	All metals
												Sample volumes were field-filtered.

GCF 09/03/08

GCF 09/05/08

Shuttle Temperature: 2°C

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	09/05/08	1600					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					9-4-08	0800	[illegible]

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 25806

PLEASE PRINT

Report to:
Company Name: Kleinfelder/CE2
Address: 1970 Broadway, Suite 710, Oakland, CA 94612
Attn: Patricia Walters
Phone: 415-822-2253
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: CE2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Date Shipped:
Carrier:
Waybill No.:
Comments:
*run 1,2DCA CCl4 & vinyl chloride by SIM
-HCl preservative dumped out due to effervescence
MS/MSD
-HCl preservative dumped out
Location: IR25MW902B
**run Be&Cd by 6020
Note - metals sample volumes were field-filtered.
***VOCs-Benzene-8260B

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	VOCs-8260B SIM*	TPH-P-8015B	DISS. METALS-6010B/6020**
0836G021***	IR39MW21A	08/04/08	1114	L	5	X		
0836G023	IR25MW54A		1359		3			X
0836G024	IR25MW902B		1440		6	X		X
0836G018	TRIPBLANK		0800		8	X	X	
~~0836G~~ 0836X005	TRIPBLANK		1600		8	X	X	

GCF 08/04/08

Shuttle Temperature: 20C

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☐ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	08/04/08	1600					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					8-5-08	0800	[illegible]

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

CHAIN OF CUSTODY RECORD

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

C.O.C. № 25810

Report to: (PLEASE PRINT)		Invoice to: (PLEASE PRINT)	
Company Name: Kleinfelder	Phone: 415-822-2253	Company Name: CEL	Phone:
Address: 1970 Broadway, Suite 710, Oakland, CA 94612	Fax: 415-822-1329	Address:	Fax:
Attn: Patricia Walters		Attn:	

Project Name/Number	Sampler (Print)
HPS/91399	Gabriel Fuson
Purchase Order Number	**Sampler (Signature)**
91399	Gabriel Fuson

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-diesel, motor oil (EPA 8015B w/silica gel cleanup)*	Analysis Requested/Method Number	Date Shipped:
0839G029	IR46MW48A	9/22/08	1026	L	3	X	GCF 09/22/08	Carrier:
0839G030	IR46MW47A	↓	1121	↓	3	X		Waybill No.:
0839G031	IR46MW46A	↓	1320	↓	3	X	GCF 09/22/08	Comments: *quantify TPH-diesel as C12-C24, TPH-motor oil as C24-C36
							GCF 09/22/08	

Note:
1. if sediment present in sample, do not disturb sample for 24 hours and only analyze water partition.
2. if sheen present, only analyze water partition, and if dilution is needed, please wipe syringe needle.

Shuttle Temperature:	Turnaround Requested: MUST CHECK ONE	Sample Disposal:
3.0 °C	☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour	☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	09/23/08	1600					
Relinquished by:	**Date**	**Time**	**Received by:**	**Relinquished by:**	**Date**	**Time**	**Received at lab by:**
					9/24 2008	8:00	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 25811

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address: 1970 Broadway, Suite 710
Oakland, CA 94612
Attn: Patricia Walters
Phone: 415-822-2253
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: CE2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Date Shipped:
Carrier:
Waybill No.:
Comments: * quantify TPH-P (gasoline) as C6-C12

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-P (gasoline)* EPA 8015B	Analysis Requested/Method Number	
0839G028	TRIPBLANK	9/22/08	0800	L	3	X		
0839G029	IR46MW48A		1026		3	X		~~Sample ID: 09~~ location: IR46MW48A
0839G030	IR46MW47A		1121		3	X		
0839G031	IR46MW46A		1320		3	X		
0839G032	IR24MW05A		1416		3	X		Note:
0839G036	IR33MW02	9/23/08	1404	L	3	X		1. if sediment present in sample, do not disturb sample for 24 hours and only analyze water partition.
0839G037	IR33MW02		1419		3	X		
0838T001	TRIPBLANK	9/18/08	0800		3	X		2. if sheen present, only analyze water partition and if dilution is needed, please wipe syringe needle.
0838T002	IR53B032		1525		3	X		
0838T003	IR53B032		1530		3	X		

GCF 09/23/08

Shuttle Temperature: 3.5°C

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	09/23/08	1600					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					9/24 2008	8:00	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 25812

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address: 1970 Broadway, Suite 710
Oakland, CA 94612
Attn: Patricia Walters
Phone: 415-822-2253
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: CE2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number: ~~HPS/91399~~ 09/23/08
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-diesel, motor oil (*) EPA 8015B w/silica gel cleanup
0839G032	IR24MW05A	9/22/08	1416	L	3	X
0839G036	IR33MW02	9/23/08	1404	↓	3	X
0839G037	IR33MW02	9/23/08	1419	↓	3	X

Analysis Requested/Method Number

GCF 09/23/08

GCF 09/23/08

Date Shipped:
Carrier:
Waybill No.:
Comments: *quantify TPH-diesel as C12-C24, TPH-motor oil as C24-C36

Note:
1. if sediment present in sample, do not disturb sample for 24 hours and only analyze water portion.
2. if sheen present, only analyze water portion, and if dilution is needed, please wipe syringe needle.

Shuttle Temperature: 20°C

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	09/23/08	1600					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					9/24 2008	8:00	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 25813

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address: 1970 Broadway, Suite 710
Oakland, CA 94612
Attn: Patricia Walters
Phone: 415-822-2253
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: CE2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Analysis Requested/Method Number: TPH-e (diesel, motor oil)* EPA 8015 B w/silica gel cleanup

Date Shipped:
Carrier:
Waybill No.:
Comments: *quantify TPH-diesel as C12-C24, TPH-motor oil as C24-C36

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-e (diesel, motor oil)* EPA 8015 B w/silica gel cleanup
0838T002	IR53B032	9/18/08	1525	L	2	X
0838T003	IR53B032	9/18/08	1530		2	X
0838T005	IR44B010	9/19/08	0940		6	X

Sample I.D.: 0838T002

GCF 09/23/08

GCF 09/23/08

Note:
1. if sediment present in sample, do not distill sample for 24 hours and only analyze water partition.
2. if sheen present, only analyze water partition and if dilution is needed, please wipe syringe needle

Shuttle Temperature: 25°C

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	09/23/08	1600					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					9/24/2008	8:00	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 25814

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address: 1970 Broadway, Suite 710
Oakland, CA 94612
Attn: Patricia Walters
Phone: 415-822-2253
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: CE2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Analysis Requested/Method Number

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-P(gasoline)*	EPA 8015B	VOCs 8260B/SIM**
0838T004	TRIPBLANK	9/19/08	0800	L	3	X		
0838T005	IR44B010	9/19/08	0940	L	9	X		
0839X007	TRIPBLANK	9/23/08	1600	L	8	X	X	
0839G033*	TRIPBLANK	9/23/08	0800	L	8	X	X	

Sample added per fax 9-24-08 rp

GCF 09/23/08

GCF 09/23/08

Date Shipped:
Carrier:
Waybill No.:
Comments: *quantify TPH-P(gasoline) as C6-C12

MS/MSD

** please run 1,2-DCA, CCl4, vinyl chloride by SIM.

Note:
1. if sediment present in sample, do not disturb sample for 24 hours and only analyze water partition.
2. if sheen present, only analyze water partition, and if dilution is needed, please wipe syringe needle.

Shuttle Temperature: 3.0°C

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	09/23/08	1600					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					9/24 2008	8:00	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

CHAIN OF CUSTODY RECORD

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

C.O.C. № 25818

Report to: (PLEASE PRINT)		Invoice to: (PLEASE PRINT)	
Company Name: Kleinfelder	Phone: 415-822-2253	Company Name: CE2	Phone:
Address: 1970 Broadway, Suite 710, Oakland, CA 94612	Fax: 415-822-138	Address:	Fax:
Attn: Patricia Walters		Attn:	

Project Name/Number	Sampler (Print)
HPS/91399	Gabriel Fuson
Purchase Order Number	**Sampler (Signature)**
91399	Gabriel Fuson

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-P (gasoline) EPA 8015B *	TPH-e (diesel, motor oil) EPA 8015B w/ silica gel cleanup *	Date Shipped:
0839G040	IR46MW49A	9/25/08	1151	L	6	X	X	Carrier:
0839G038	TRIP BLANK	↓	0800	↓	3	X		Waybill No.:
0839X008	TRIP BLANK	↓	1530	↓	3	X		Comments: * quantify

Analysis Requested/Method Number

TPH-P (gasoline) as C6-C12,
TPH-diesel as C12-C24,
TPH-motor oil as C24-C36

GCF 9/25/08

GCF 9/25/08

Note:
1. if sediment present in sample, do not disturb sample for 24 hours and only analyze water partition
2. if sheen present, only analyze water partition and if dilution is needed, please wipe syringe needle.

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	9/25/08	1700					
Relinquished by:	**Date**	**Time**	**Received by:**	**Relinquished by:**	**Date**	**Time**	**Received at lab by:**
					9-26-08	0800	[illegible]

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

Columbia Analytical Services INC.
An Employee - Owned Company

CHAIN OF CUSTODY

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

SR#: K0809014

PAGE 1 OF 1 COC # 09162008

PROJECT NAME: Hunters Point Baxwide Groundwater Monitoring Program
PROJECT NUMBER:
PROJECT MANAGER: attn: Patricia Walters
COMPANY/ADDRESS: Kleinfelder Inc.
1970 Broadway, Suite 710
CITY/STATE/ZIP: Oakland, CA 94612
E-MAIL ADDRESS: pwalters@kleinfelder.com
PHONE #: 925-766-9430 FAX#: 510-628-9009
SAMPLER'S SIGNATURE: Patricia Walters

	SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐ 8021 ☐ BTEX ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐ Hex-Chrom ☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle) NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐	Total Mercury - EPA 1631E	Methylmercury - EPA 1630		REMARKS
blank →	0838D011	9/16/08	1110	—	L	2													X	X			Field Blank
24/49A →	0838D012	↓	1142	—	↓	2													X	X*			MS/MSD
Field dupe →	0838D013	↓	1147	—	↓	2													X	X*			

PD 9/16/08

PD 9/16/08

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data) Level IV data package
✓ IV. CLP Deliverable Report
✓ V. EDD (EQuIS EFW2, 4 file EDD)

INVOICE INFORMATION

P.O. # 5006
Bill To: Ce2 Corporation
4457 Willow Rd, Ste 210
Pleasanton, CA 94588
accountspayable@ce2corp.com

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
✓ Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
- please lab filter samples upon receipt (for 0838D012 & 0838D014 only)
- please report metals as dissolved concentrations (0838D012 & 0838D014)
- please send hardcopy Level IV data package and CD with pdf, as well as EDDs
- run 0838D011 for methyl mercury as total methyl mercury (don't filter)

Container Supply Number
10239

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Patricia Walters 9/16/08 1320	9/17/08 0930		
Signature / Date/Time	Signature / Date/Time	Signature / Date/Time	Signature / Date/Time
Patricia Walters / Kleinfelder			
Printed Name / Firm	Printed Name / Firm	Printed Name / Firm	Printed Name / Firm

RCOC #1 06/03

4Q2008 Sampling Event

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APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 25828

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address: 1970 Broadway, Suite 710
Oakland, CA 94612
Attn: Patricia Walters
Phone: ~~415~~ 415-822-2253 (10/7/08)
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: CE2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Analysis Requested/Method Number

Sample Identification	Location (corrected per fax)	Date Collected	Time Collected	Matrix	Number of Containers	Diss. Metals-EPA 6010B/6020A*	Hex. Chrom. EPA 7199	Diss. Metals-Cr only EPA 6010B	Diss Cs-137-EPA 901.0**	Diss Ra-226-EPA 903.1**	Diss Sr-90-EPA 905.0**						Date Shipped:
0841B007	IR09P0438A	10/7/08	~~1045~~ 0845	WL	1	X											Carrier:
0841D005	IR09PPY1		0948		2		X	X									Waybill No.:
0841D006	IR09MW63A		1127		2		X	X									Comments:
0841C002	IR09MW62A		0941		2		X	X									
0841C003	IR09MW62A		0946		2		X	X									
0841C004	IR09MW37A		1057		2	X	X										time corrected per fax
0841D007	IR09MW51F		1350		2	~~X~~	X	X									EPA 7199 10-8-08 rp
0841C005	IR09MW35A		1320		2	JW 10/7/08	X	X									EPA 6010B-Cr
0841D008	IR02MW374A		1452		7	X			X	X	X						
0841D009	IR02MW374A		1457		7	X			X	X	X						

Note - metals were field filtered
* ~~run Be & Cd by 6020A~~
** radiochem samples were field filtered

Pw 10/7/08

Pw 10/7/08

Shuttle Temperature: 3.0C

Turnaround Requested: MUST CHECK ONE
☒ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	10/7/08	1548					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					10/8/08	0800	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

Pg 1 of 2

C.O.C. № 25842

Report to: PLEASE PRINT
Company Name: KLEINFELDER
Address:
Attn:
Phone: 415 822 2253
Fax: 415 822 1329

Invoice to: PLEASE PRINT
Company Name: CEZ
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS / 91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Date Shipped:
Carrier:
Waybill No.:
Comments: *Please run 1,2-DCA, CCl4, and vinyl chloride by SIM.

Analysis Requested/Method Number: VOCs EPA 8260B/8260B SIM*; TPH-P (gas) EPA 8015B

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	VOCs EPA 8260B/8260B SIM*	TPH-P (gas) EPA 8015B
0841D018	IR01MWI-7	10/9/08	0911	L	5	X	
0841D019	IR01MW48A		1009		8	X	X
0841B019	IR01MWI-8		0915		5	X	
0841B020	IR01MW65A		1041		5	X	
0841C013	PA28MW50A		0908		5	X	
0841C014	IR28MW136A		0951		5	X	
0841C015	PA28MW52A		1034		5	X	
0841C016	IR39MW33A		1118		5	X	
0841H020	IR58MW32B		0857		5	X	
0841H021	IR58MW33B		0939		5	X	

GCF 10/9/08

GCF 10/9/08

-no preservative -shortened hold time.

Shuttle Temperature: ~~2.8°C~~ 20°C 10/10/08

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	10/9/08	1602					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					10/10 08	802	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

pg 2 of 2

C.O.C. № 25847

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address:
Attn:
Phone: 415-822-2253
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: CE2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS / 91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Analysis Requested/Method Number: VOCs - EPA 8260B / 8260B SIM*; TPH-P 8015B

Date Shipped:
Carrier:
Waybill No.:
Comments: *Please run 1,2-DCA, CCl4 and vinyl chloride by SIM.

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	VOCs - EPA 8260B / 8260B SIM*	TPH-P 8015B
0841H022	IR58MW31A	10/9/08	1103	L	5	X	
0841H023	IR28MW190F		1208		5	X	
0841C012	Trip Blank		0800		5	X	
0841D017	Trip Blank		0800		5	X	
0841B017 8 TP 10-10-08	Trip Blank		0800		8	X	
0841X006	Trip Blank		1600		8	X	

PW 10/9/08

PW 10/9/08

PW 10/9/08

corrected to per fax 10-10-08

Shuttle Temperature: 2.0°C

Turnaround Requested: MUST CHECK ONE
☒ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	10/9/08	1602					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					10/10 2008	800	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 25848

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address:
Attn:
Phone: 415-822-2253
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: CEL
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number:
Sampler (Print): Patricia Walters
Sampler (Signature): Patricia Walters

Analysis Requested/Method Number: TPH-P (gas) 8015B

Date Shipped:
Carrier:
Waybill No.:
Comments: Quantify TPH-gasoline as C6-C12

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-P (gas) 8015B	Comments
0841C017	1R46MW46A	10/9/08	1318	L	9	X	MS/MSD
0841B021	1R46MW48A	↓	1341	↓	3	X	
0841B022	1R46MW47A	↓	1421	↓	3	X	
0841D020	1R46MW49A	↓	1346	↓	3	X	
0841D021	1R24MW05A	↓	1440	↓	3	X	
0841D022	1R24MW05A	↓	1445	↓	3	X	
0841D017	Trip Blank	↓	0800	↓	3	X	
0841C012	Trip Blank	↓	0800	↓	3	X	
0841X005	Trip Blank	10/9/08	1547	L	3	X	

PW 10/9/08

Shuttle Temperature: 20°C

Turnaround Requested: MUST CHECK ONE
☒ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	10/9/08	1550					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					10/10 2008	800	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 29062

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address:
Attn:
Phone: 415-822-~~1329~~ 2253
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: CE2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS191399
Purchase Order Number:
Sampler (Print): Patricia Walters
Sampler (Signature): Patricia Walters

Analysis Requested/Method Number: TPH-E (D+MO)* with silica gel cleanup - EPA 8015C/8015B

Date Shipped:
Carrier:
Waybill No.:
Comments: *Please Quantify
- TPH-diesel as C12-C24
- TPH-MO as C24-C36

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-E (D+MO)* with silica gel cleanup - EPA 8015C/8015B
0841D021	1R24MW05A	10/9/08	1440	L	3	X
0841D022	1R24MW05A	↓	1445	↓	3	X

PW 10/9/08

PW 10/9/08

10/9/08

Notes:
1. If sediment is present in sample, do not disturb for 24 hrs & only analyze water partition
2. If sheen is present in sample, only analyze water partition
3. If dilution is needed, please wipe syringe

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☒ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	10/9/08	1553					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					10/10 2008	800	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

CHAIN OF CUSTODY RECORD

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

C.O.C. № 29061

Report to: (PLEASE PRINT)		Invoice to: (PLEASE PRINT)	
Company Name: Kleinfelder	Phone: 415-822-2253	Company Name: CE2	Phone:
Address:	Fax: 415-822-1329	Address:	Fax:
Attn:		Attn:	

Project Name/Number	Sampler (Print)	Analysis Requested/Method Number	Date Shipped:
HPS/91399	Patricia Walters		Carrier:
Purchase Order Number	Sampler (Signature) Patricia Walters		Waybill No.:
			Comments: * Please Quantify: -TPH-diesel as C12-C24 -TPH-MO as C24-C36

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-ED (+MO)* w/silica gel cleanup EPA 3630C/8015B
0841B021	1R46MW48A	10/9/08	1341	L	3	X
0841B022	1R46MW47A	↓	1421	↓	3	X
0841D020	1R46MW49A	↓	1346	↓	3	X

PW 10/9/08

PW 10/9/08

PW 10/9/08

Notes:
1. If sediment is present in sample, do not disturb for 24 hrs & only analyze water partition
2. If sheen present in sample, only analyze water partition
3. If dilution is needed, please wipe syringe

Shuttle Temperature:	Turnaround Requested: MUST CHECK ONE	Sample Disposal:
2.5°C	☒ Standard (2-3 week) ☐ One week ☐ 24-48 hour	☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	10/9/08	1516					
Relinquished by:	**Date**	**Time**	**Received by:**	**Relinquished by:**	**Date**	**Time**	**Received at lab by:**
					10/10 2008	8:00	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

1 of 2

C.O.C. № 29072

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address:
Attn: Patricia Walters
Phone: 415-822-2253
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: CE2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Analysis Requested/Method Number: VOCs - EPA 8260B / 8260B SIM*

Date Shipped:
Carrier:
Waybill No.:
Comments: *please run 1,2-DCA, CCl4, and vinyl chloride by SIM.

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	VOCs - EPA 8260B / 8260B SIM*
0845D024	PA33MW37A	11/6/08	1206	L	5	X
0845D025	IR33MW120B		1317		5	X
0845H030	IR09P040A		1127		15	X
0845H031	IR09P042A		1258		5	X
0845H029	TRIP BLANK		0800		5	X
0845H032	IR09P043A		1334		5	X
0845H033	IR09P043A		1339		5	X
0845D023	TRIP BLANK		0800		5	X
0845D026	IR09MW35A		1510		5	X
0845D027	IR09MW35A		1515		5	X

GCF 11/6/08

MS/MSD

Shuttle Temperature: 2.0C

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	11/6/08	1610					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					11/7/08	800	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

2 of 2

C.O.C. № 29073

Report to: PLEASE PRINT		Invoice to: PLEASE PRINT	
Company Name: Kleinfelder	Phone: 415-822-2253	Company Name: CE2	Phone:
Address:	Fax: 415-822-1329	Address:	Fax:
Attn: Patricia Walters		Attn:	

Project Name/Number	Sampler (Print)	Analysis Requested/Method Number	Date Shipped:
HPS/91399	Gabriel Fuson		Carrier:
Purchase Order Number	Sampler (Signature)		Waybill No.:
91399	Gabriel Fuson		Comments:

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	VOCs - EPA 8260B/ 8260B SIM*
0845B027	TRIP BLANK	11/6/08	0800	L	5	X
0845B028	IR09MW38A	↓	1145	↓	5	X
0845B029	IR09MW39A	↓	1428	↓	5	X
0845B030	IR09MW44A	↓	1545	↓	5	X
0845X010	TRIP BLANK	↓	1600	↓	5	X

GCF 11/6/08

GCF 11/6/08

GCF 11/6/08

*please run 1,2-DCA, CCl4, and vinyl chloride by SIM.

Shuttle Temperature: 2.0C

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	11/6/08	1610					
Relinquished by:	**Date**	**Time**	**Received by:**	**Relinquished by:**	**Date**	**Time**	**Received at lab by:**
					11/7/08	800	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

1 of 1

C.O.C. № 29071

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address:
Attn: Patricia Walters
Phone: 415-822-2253
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: CE2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Analysis Requested/Method Number

Date Shipped:
Carrier:
Waybill No.:
Comments:

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	Diss. metals - Ni only (6010B)*	Hex Chrom EPA 7199									Comments
0845H030	IR09P040A	11/6/08	1127	L	6	X	X									MS/MSD
0845H031	IR09P042A		1258		2	X	X									
0845H032	IR09P043A		1334		2	X	X									Dissolved metals
0845H033	IR09P043A		1339		2	X	X									sample volumes
0845D026	IR09MW35A		1510		2	X	X									were field-filtered
0845D027	IR09MW35A		1515		2	X	X									
0845B028	IR09MW38A		1145		1	GCF 11/6/08	X									
0845B029	IR09MW39A		1428		2	X	X									
0845B030	IR09MW44A		1545		2	X	X									
						GCF 11/6/08										

GCF 11/6/08

GCF 11/6/08

Shuttle Temperature: 2.0 C

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	11/6/08	1615					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					11/7/08	800	Tom

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

1 of 2

C.O.C. № 29074

Report to: (PLEASE PRINT)		Invoice to: (PLEASE PRINT)	
Company Name: Kleinfelder	Phone: 415-822-2253	Company Name: CE2	Phone:
Address:	Fax: 415-822-1329	Address:	Fax:
Attn: Patricia Walters		Attn:	

Project Name/Number	Sampler (Print)	Analysis Requested/Method Number	Date Shipped:
HPS/91399	Gabriel Fuson	GCF 11/7/08	Carrier:
Purchase Order Number: 91399	Sampler (Signature): Gabriel Fuson		Waybill No.:
			Comments: * please run 1,2-DCA, CCl4, and vinyl chloride by SIM.

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	VOCs-EPA 8260B / EPA 8260B SIM*
0845B032	IR70MW07A	11/7/08	1016	L	5	X
0845B033	IR67MW04A		1153		5	X
0845D029	PA50MW07A		0954		5	X
0845D030	IR55MW01A		1216		5	X
0845H034	TRIPBLANK		0800		5	X
0845H035	IR70MW11A		0948		5	X
0845B034	IR33MW12B		1415		5	X
0845H036	IR09P035AA		1043		5	X
0845H037	IR09P035AB		1127		5	X
0845H038	IR44MW08A		1224		5	X

GCF 11/7/08

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
- [x] Standard (2-3 week)
- [ ] One week
- [ ] 24-48 hour

Sample Disposal:
- [ ] Return to client
- [x] Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	11/7/08	1520					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					11/8/08	11:55	Stephanie Cameron

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

2 of 2

C.O.C. № 29075

Report to: (PLEASE PRINT)		Invoice to: (PLEASE PRINT)	
Company Name: Kleinfelder	Phone: 415-822-2253	Company Name: CE2	Phone:
Address:	Fax: 415-822-1329	Address:	Fax:
Attn: Patricia Walters		Attn:	

Project Name/Number	Sampler (Print)	Purchase Order Number	Sampler (Signature)
HPS/91399	Gabriel Fuson	91399	Gabriel Fuson

Analysis Requested/Method Number: VOCs - EPA 8260B / EPA 8260B SIM*

Date Shipped:
Carrier:
Waybill No.:
Comments: *Please run 1,2-DCA, CCl4, and vinyl chloride by SIM.

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	VOCs - EPA 8260B / EPA 8260B SIM*
0845H039	IR36MW16A	11/7/08	1356	L	5	X
0845B031	TRIP BLANK	↓	0800	↓	5	X
0845X011	TRIP BLANK	↓	1505	↓	5	X
0845D028	TRIP BLANK	↓	0800	↓	5	X
0845D031	IR25MW60A	↓	1446	↓	5	X

GCF 11/7/08

GCF 11/7/08

GCF 11/7/08

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	11/7/08	1520					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					11/8/08	11:55	Stephanie Cam

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 29077

PLEASE PRINT

Report to:
Company Name: Kleinfelder
Address:
Attn: Patricia Walters
Phone: 415-822-2253
Fax: 415-822-1329

PLEASE PRINT

Invoice to:
Company Name: CEZ
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Analysis Requested/Method Number: EPA 8260B/EPA 8260B SIM VOCs*

Date Shipped:
Carrier:
Waybill No.:
Comments: *please run 1,2-DCA, CCl_4, and vinyl chloride by SIM.

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	EPA 8260B/EPA 8260B SIM VOCs*
0846G007	TRIP BLANK	11/10/08	0800	L	5	X
0846G008	IR34MW02A		0952		5	X
0846G009	PA33MW36A		1128		5	X
0846G010	IR71MW04A		1400		5	X
0846N002	IR33MW66A		1019		5	X
0846N001	TRIP BLANK		0800		5	X
0846N003	IR33MW65A		1108		5	X
0846N004	IR33MW64A		1207		5	X
0846N005	IR09MW55B		1443		5	X
0846B035	TRIP BLANK		0800		5	X

QCF 11/10/08

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	11/10/08	1600					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					11/11/08	800	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 29079

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address:
Attn: Patricia Walters
Phone: 415-822-2253
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: CE2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Analysis Requested/Method Number: VOCs - EPA 8260B/8260B SIM*

Date Shipped:
Carrier:
Waybill No.:
Comments: * please run 1,2-DCA, CCl4, and vinylchloride by SIM.

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	VOCs - EPA 8260B/8260B SIM*
0846B036	IR34MW01A	11/10/08	0924	L	5	X
0846B037	IR34MW36A		1022		5	X
0846B038	IR34MW36A		1027		5	X
0846B039	IR34MW36B		1103		5	X
0846B040	IR09MW31A		1157		5	X
0846B041	IR09MW54B		1403		5	X
0846B042	IR09MW45F		1453		5	X
0846X012	TRIP BLANK		1555		5	X

GCF 11/10/08

GCF 11/10/08

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	11/10/08	1600					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					11/11/08	800	[illegible]

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 29078

PLEASE PRINT

Report to:
Company Name: Kleinfelder
Phone: 415-822-2253
Address:
Fax: 415-822-1329
Attn: Patricia Walters

PLEASE PRINT

Invoice to:
Company Name: CE2
Phone:
Address:
Fax:
Attn:

Project Name/Number: HPS/91399
Purchase Order Number: 91399
Sampler (Print): Gabriel Fuson
Sampler (Signature): Gabriel Fuson

Date Shipped:
Carrier:
Waybill No.:
Comments: *All metals sample volumes were field-filtered.

Analysis Requested/Method Number

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	Diss. Metals NT only - 6010B*	Hex Chrom. EPA 7199
0846G008	IR34MW02A	11/10/08	0952	L	2	X	X
0846G009	PA33MW36A		1128		2	X	X
0846G010	IR71MW04A		1400		2	X	X
0846N002	IR33MW66A		1019		1	X (ES 11/10/08)	X
0846N003	IR33MW65A		1108		1		X
0846N004	IR33MW64A		1207		1		X
0846N005	IR09MW55B		1443		2	X	X
0846B036	IR34MW01A		0924		1		X
0846B037	IR34MW36A		1022		1		X
0846B038	IR34MW36A		1027		1		X

QCF 11/10/08

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Gabriel Fuson	11/10/08	1600					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					11/11/08	800	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

CHAIN OF CUSTODY RECORD

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

C.O.C. № 29081

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address:
Attn: Patricia Walters
Phone: 415 822 2253
Fax: 415 822 1329

Invoice to: PLEASE PRINT
Company Name: CEZ
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number: 91399
Sampler (Print): Thomas A. Sayre
Sampler (Signature): Thomas A. Sayre

Date Shipped:
Carrier:
Waybill No.:
Comments: * Note - run 1,2-DCA, CCl4, vinyl chloride by SIM

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	VOCs EPA 8260B	VOCs - Chloroformony 8260B SIM	EPA 8260B	TAS 11/12/08
0846 ~~G011~~ B043 np 11-12-08	Trip Blanks	11/11/08	0800	L	5	X			
0846 G012	IR33MW116A		1005	L	5	X			
0846 G013	IR09P041A		1057	L	5	X			
0846 G014	IR09P041A		1102	L	5	X			
0846 B044	IR09MW61A		0956	L	5	X			
0846 B045	IR09MW52A		1041	L	5	X			
0846 B046	IR09MW36A		1130	L	5	X			
0846 B047	IR55MW02A		1356	L	15	X			MS/MSD
0846 B048	IR70MW12A		1500	L	5	X			
0846 G019	G13		1537	L	5		X		

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Thomas A. Sayre	11/11/08	1605					
Relinquished by:	**Date**	**Time**	**Received by:**	**Relinquished by:**	**Date**	**Time**	**Received at lab by:**
					11/12/08	800	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 29082

Report to: PLEASE PRINT
Company Name: Klenfelder
Address:
Attn: Patricia Walters
Phone: 415 822 2253
Fax: 415 822 1329

Invoice to: PLEASE PRINT
Company Name: CEZ
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/91399
Purchase Order Number: 91399
Sampler (Print): Thomas A. Sayre
Sampler (Signature):

Analysis Requested/Method Number

Date Shipped:
Carrier:
Waybill No.:
Comments: *All Metal sample Volumes were Field-filtered

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	Diss Metals - Ni only - 6010B*	Hex Chrom. EPA 7196
0846G012	IR33MW116A	11/11/08	1005	L	2	X	X
0846G013	IR09P041A		1057	L	2	X	X
0846G014	IR09P041A		1102	L	2	X	X
0846B044	IR09MW61A		0956	L	1		X
0846B045	IR09MW52A		1041	L	1		X
0846B046	IR09MW36A		1130	L	2	X	X

TAS 11/11/08

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
	11/11/08	1605					
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					11/12/08	800	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

CHAIN OF CUSTODY RECORD

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

C.O.C. № 29083

Report to: (PLEASE PRINT)		Invoice to: (PLEASE PRINT)	
Company Name: KleinFelder	Phone: 415 822 2253	Company Name: CEZ	Phone:
Address:	Fax: 415 822 1329	Address:	Fax:
Attn: Patricia Walters		Attn:	

Project Name/Number	Sampler (Print)	Purchase Order Number	Sampler (Signature)
HPS / 91399	Thomas A. Sayre	91399	

Analysis Requested/Method Number: TPH-P 8015B; TPH-D 8015B; TPH (MO) EPA 8015 + 8015C

Date Shipped:
Carrier:
Waybill No.:
Comments:
~~# w/ Silica Gel Cleanup~~ rp 11-12-08

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-P 8015B	TPH-D 8015B	TPH (MO) EPA 8015 + 8015C	Comments
0846G015	Trip Blanks	11/11/08	1300	L	3	X			Quantify TPH-gas C6-C12
0846G016	IR46MW50A	↓	1331	L	6	X	X		TPH Diesel C-12-C24
0846G017	IR46MW52A	↓	1416	L	6	X	X		TPH MO C24-C36
0846G018	IR46MW51A	↓	1446	L	6	X	X		NOTE: if sediment is present in sample, do NOT disturb sample for 24 hrs. + only analyze water portion. If sheen is present, only analyze water portion. If dilution is needed, please wipe syringe.
									added per revised COC 11-12-08 rp

TAS 11/11/08

TAS 11/11/08

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
- [x] Standard (2-3 week)
- [ ] One week
- [ ] 24-48 hour

Sample Disposal:
- [ ] Return to client
- [x] Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
	11/12/08	1620					
Relinquished by:	**Date**	**Time**	**Received by:**	**Relinquished by:**	**Date**	**Time**	**Received at lab by:**
					11/12/08	800	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

CHAIN OF CUSTODY RECORD

APPL, Inc.
4203 W. Swift
Fresno, CA 93722

Phone: (559) 275 2175

Fax: (559) 275-4422

C.O.C. № 29084

Report to: PLEASE PRINT		Invoice to: PLEASE PRINT	
Company Name: Kleinfelder	Phone: 415 822 2253	Company Name: CE2	Phone:
Address:	Fax: 415 822 1325	Address:	Fax:
Attn: Patricia Walters		Attn:	

Project Name/Number	Sampler (Print)	Analysis Requested/Method Number	Date Shipped: 11/12/08
HPS/91399	Thomas A. Sayre		Carrier: Fedex
Purchase Order Number	Sampler (Signature)		Waybill No.: 8665 6429 4320
91399			Comments:

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	VOCs EPA 8260B	826013 SIM *	
0846G00011 TAS 11/12/08	Trip Blank	11/11/08	0800	L	5	X		

*Note - run 1,2-DCA, CCl4 Vinyl Chloride by SIM

TAS 11/12/08

TAS 11/12/08

Shuttle Temperature:	Turnaround Requested: MUST CHECK ONE	Sample Disposal:
20C	☑ Standard (2-3 week) ☐ One week ☐ 24-48 hour	☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
	11/12/08	1212					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:
					11-13-08	0950	

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

1Q2009 Sampling Event

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APPL LABS

APPL Labs
908 North Temperance Ave.
Clovis, CA 93611

Phone: (559) 275-2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

pg 1 of 2

C.O.C. № 31765

Report to: PLEASE PRINT
Company Name: Kleinfelder
Phone: 415-822-2253
Address:
Fax: 415-822-1329
Attn:

Invoice to: PLEASE PRINT
Company Name: C2
Phone:
Address:
Fax:
Attn:

Project Name/Number: HPS110F720
Sampler (Print): Patricia Walters
Purchase Order Number: TPH sampling
Sampler (Signature): Patricia Walters

Analysis Requested/Method Number

Date Shipped:
Carrier:
Waybill No.:
Comments: Report EFW2's EDF EDDs

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	BTEX & MTBE - 8260B/8260B SIM*	TPH-P (gasoline) - 8015B**
0912W044	1R07MW26A	3/20/09	0941	L	8	X	X
0912W045	1R07MW24A	↓	1026	↓	8	X	X
0912X010	Trip Blank	↓	1220	↓	8	X	X
0912H037	1R46MW48A	↓	1034	↓	8	X	X
0912H038	1R46MW47A	↓	1126	↓	8	X	X
0912H039	1R46MW50A	↓	1221	↓	8	X	X
0912W046	1R24MW05A	↓	1140	↓	8	X	X
0912W047	1R24MW05A	↓	1145	↓	8	X	X
0912A005	1R46MW49A	↓	0928	↓	8	X	X
0912D043	1R33MW02	↓	1402	↓	8	X	X

TPW 3/20/09

TPW 3/24/09

* Run Benzene by 8260B SIM

** Quantify Gasoline as C6-C12

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour
1 week prelims (FIs) 2 week Data package

Sample Disposal:
☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	3/20/09	1522					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL LABS

APPL Labs
908 North Temperance Ave.
Clovis, CA 93611

Phone: (559) 275-2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 31769

PLEASE PRINT

Report to:
Company Name: Kleinfelder
Phone: 415-822-2253
Address:
Fax: 415-822-1329
Attn:

PLEASE PRINT

Invoice to:
Company Name: CO2
Phone:
Address:
Fax:
Attn:

Project Name/Number: HPS/101720
Sampler (Print): Patricia Walters
Purchase Order Number: TPH sampling
Sampler (Signature): Patricia Walters

Analysis Requested/Method Number

Date Shipped:
Carrier:
Waybill No.:
Comments: Report EFW2; EDF EDDs

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-e (DRO) w/SGC-3630C/8015B	PAHs (plus naphthalene) - 8270C SIM
0912H037	1R46MW48A	3/20/09	1034	L	2		X
0912H038	1R46MW47A	↓	1126	↓	4	X	X
0912H039	1R46MW50A	↓	1221	↓	4	X	X

PW 3/20/09

please quantify:
1. Diesel as C12-C24
2. ~~Motor oil as C24-C36~~

Additional Notes:
1. If sediment is present in sample, dont disturb sample. Let 24 hrs & only analyze water partition
2. If sheen is present only analyze water partition
3. If dilution is needed, wipe syringe needle

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE 1 week prelim. (FIs) 2 week data package
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	3/20/09	1520					
Relinquished by:	**Date**	**Time**	**Received by:**	**Relinquished by:**	**Date**	**Time**	**Received at lab by:**

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL LABS

APPL Labs
908 North Temperance Ave.
Clovis, CA 93611

Phone: (559) 275-2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 31770

PLEASE PRINT

Report to:
Company Name: Kleinfelder
Phone: 415-822-2253
Address:
Fax: 415-822-1329
Attn:

PLEASE PRINT

Invoice to:
Company Name: Ce2
Phone:
Address:
Fax:
Attn:

Project Name/Number: HPS/101720

Purchase Order Number: TPH sampling

Sampler (Print): Patricia Walters

Sampler (Signature): Patricia Walters

Analysis Requested/Method Number

Date Shipped:
Carrier:
Waybill No.:
Comments: Report EFW2 & EFEDDS

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-e (D,MO) w/ SGC-3630C/3510B	PAHs (plus naphthalene) - 8270C SIM
✓ 0912W044	1R07MW26A	3/20/09	0941	L	4	X	X
✓ 0912W045	1R07MW24A	↓	1026	↓	4	X	X
✓ 0912H037	1R46MW48A	↓	1034	↓	2	X	

PW 3/20/09

PW 3/20/09

PW 3/20/09

please quantify:
1. Diesel as C12-C24
2. Motor Oil as C24-C36

Additional Notes:
1. If sediment is present in sample, do not disturb sample for 24 hrs & only analyze water partition
2. If sheen is present, only analyze water partition
3. If dilution is needed, wipe syringe needle.

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour
1 week prelim (FIs)
2 week data package

Sample Disposal:
☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	3/20/09	1512					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

CHAIN OF CUSTODY RECORD

pg 2 of 2

APPL Labs
908 North Temperance Ave.
Clovis, CA 93611

Phone: (559) 275-2175

Fax: (559) 275-4422

C.O.C. № 31771

PLEASE PRINT

Report to:
Company Name: Kleinfelder
Phone: 415-822-2253
Address:
Fax: 415-822-1329
Attn:

PLEASE PRINT

Invoice to:
Company Name: CO2
Phone:
Address:
Fax:
Attn:

Project Name/Number: HPS/101720
Sampler (Print): Patricia Walters
Purchase Order Number: TPH Sampling
Sampler (Signature): Patricia Walters

Date Shipped:
Carrier:
Waybill No.:
Comments: Report EFDD's EDF EDX
* Run Benzene by 8260B SIM
** Quantify Gasoline as C6-C12

Analysis Requested/Method Number

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	BTEX & MTBE-8260B/8260B SIM*	TPH-P (gasoline)-8015B**
✓ 0912H035	Trip Blank	3/20/09	0800	L	8	X	X
✓ 0912D042	Trip Blank	↓	0800	↓	8	X	X
✓ 0912W043	Trip Blank	↓	0800	↓	8	X	X

PW 3/20/09

PW 3/20/09

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour
1 week results (FIS)
2 week data package

Sample Disposal:
☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	3/20/09	1522					
Relinquished by:	**Date**	**Time**	**Received by:**	**Relinquished by:**	**Date**	**Time**	**Received at lab by:**

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL LABS

APPL Labs
908 North Temperance Ave.
Clovis, CA 93611

Phone: (559) 275-2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 31774

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address:
Attn:
Phone: 415-822-2253
Fax: 415-822-1329

Invoice to: PLEASE PRINT
Company Name: Ce2
Address:
Attn:
Phone:
Fax:

Project Name/Number: HPS/101720
Purchase Order Number: TPH sampling
Sampler (Print): Patricia Walters
Sampler (Signature): Patricia Walters

Analysis Requested/Method Number: TPH-e (DRO) w/ SGC-3630C/8015B; PAHs (plus naphthalene) 8270C SIM

Date Shipped:
Carrier:
Waybill No.:
Comments: Report EFW2 & EDF EDDs

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-e (DRO) w/ SGC-3630C/8015B	PAHs (plus naphthalene) 8270C SIM
0912W046	1R24MW05A	3/20/09	1140	L	4	X	X
0912W047	1R24MW05A	↓	1145	↓	4	X	X
~~0912A006~~	~~1R46MW51A~~		~~0928~~		~~2~~	~~X~~	
0912A005	1R46MW49A	3/20/09	0928	L	2	X	

PW 3/20/09

PW 3/20/09

PW 3/20/09

please quantify:
1. Diesel as C12-C24
2. Motor Oil as C24-C36

Additional Notes:
1. If sediment is present in sample, do not disturb for 24 hrs & only analyze water partition
2. If sheen is present, only analyze water partition
3. If dilution is needed, wipe syringe needle

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour
1 week prelim (FIs) 2 week data package

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	3/20/09	1532					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL LABS

APPL Labs
908 North Temperance Ave.
Clovis, CA 93611

Phone: (559) 275-2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 31775

Report to: PLEASE PRINT
Company Name: Kleinfelder
Phone: 415-822-2253
Address:
Fax: 415-822-1329
Attn:

Invoice to: PLEASE PRINT
Company Name: C2
Phone:
Address:
Fax:
Attn:

Project Name/Number: HPS / 101720
Sampler (Print): Patricia Walters
Purchase Order Number: TPH Sampling
Sampler (Signature): Patricia Walters

Analysis Requested/Method Number

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-e (DRO) w/SGC - 3630C/8015B	TPHs (plus MP/Naphthalene) 8270C SIM	TPH-p (gasoline) - 8015B	BTEX, MTBE - 8260B/8260B SIM*							
0912A006	IR46MW51A	3/20/09	1205	L	12 4	X	X	X	X							
0912X011	Trip Blank	↓	1440	↓	8			X	X							
0912A004	Trip Blank	↓	0800	↓	8			X	X							

PW 3/20/09

PW 3/20/09

* Sample may be HOT! *

Date Shipped:
Carrier:
Waybill No.:
Comments: Report EFH02 & EDF EDDs
* Run Bombine by 8260B SIM please quantify:
1. Diesel as C12-C24
2. Motor oil as C24-C36
3. gasoline as C6-C12

Additional Notes:
1. If sediment is present in sample, do not distill sample for 8270 SIM only analyze water partition.
2. If sheen is present, only analyze water partition.
3. If dilution is needed, wipe syringe needle.

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour
1 week Preliminary (FIs)
2 week Data Package

Sample Disposal:
☐ Return to client ☑ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	3/20/09	1509					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

CHAIN OF CUSTODY RECORD

APPL Labs
908 North Temperance Ave.
Clovis, CA 93611

Phone: (559) 275-2175

Fax: (559) 275-4422

C.O.C. № 31784

PLEASE PRINT

Report to:
Company Name: Kleinfelder
Phone: 415-822-7253
Address:
Fax: 415-822-1329
Attn:

PLEASE PRINT

Invoice to:
Company Name: CE2
Phone:
Address:
Fax:
Attn:

Project Name/Number: HPS/101720
Sampler (Print): Patricia Walters
Purchase Order Number: TPH sampling
Sampler (Signature): Patricia Walters

Analysis Requested/Method Number

Date Shipped:
Carrier:
Waybill No.:
Comments: Report EPW2 EDF EDDS

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-e (DRO) w/ SGC-SG30C/8015B	PAHs (Pilot w/ Naphthalene) 8270C SIM	
0912A005	IR46MW49A	3/20/09	0928	L	2		X	
0912D043	IR33MW02	↓	1402	↓	4	X	X	
~~0912AC04~~	~~Trip Blank~~	~~↓~~	~~0800~~	~~↓~~	~~PW 3/20/09~~			

PW 3/20/09

PW 3/20/09

PW 3/20/09

Please quantify:
1. DRO C12-C24
2. Motor oil as C24-C36

Additional Notes:
1. If sediment is present in sample, do not disturb the settled sediment, just use the liquid portion.
2. If sheen is present, only analyze the liquid portion.
3. If bubbles are present, use syringe needle.

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE 1 week results (FIs) 2 week data package
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour

Sample Disposal:
☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	3/20/09	1535					
Relinquished by:	**Date**	**Time**	**Received by:**	**Relinquished by:**	**Date**	**Time**	**Received at lab by:**

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL LABS

APPL Labs
908 North Temperance Ave.
Clovis, CA 93611

Phone: (559) 275-2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 31798

Report to: PLEASE PRINT
Company Name: Kleinfelder
Address:
Phone: 415-822-2253
Fax: 415-822-1329
Attn:

Invoice to: PLEASE PRINT
Company Name: Co2
Address:
Phone:
Fax:
Attn:

Project Name/Number: HPS/101720
Purchase Order Number: TPH Sampling
Sampler (Print): Patsy Candley
Sampler (Signature): P Candley

Analysis Requested/Method Number

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	BTEX, MTBE - 8260B/8260B SIM*	TPH-p (gasoline) - 8015B	TPH-e (D,MO) w/SGC - 3630C/8015B	PAHs (plus naphthalene) - 8270C SIM						
0913B035	TR46MW52A	3-23-09	1400	L	35	X	X	X	X	☆ Sample may be red ☆					
0913B032	Trip Blank	↓	0800	↓	8	X	X								

PC 03-23-09

Date Shipped:
Carrier:
Waybill No.:
Comments: provide EFWZF & EDF EDDs

*run Benzene by 8260B SIM
please quantity:
1. gasoline as C6-C12
2. diesel as C12-C24
3. motor oil as C24-C36

Additional notes:
1. If sediment is present in sample, do not distill sample for 24 hrs & only analyze water partition
2. If sheen is present, only analyze water partition.
3. If dilution is needed, wipe syringe needle.

run 0913B035 as MS/MSD

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour
1 week Prelim (FID) 2 week data package

Sample Disposal:
☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
P Candley	3-23-09	1510					
Relinquished by:	**Date**	**Time**	**Received by:**	**Relinquished by:**	**Date**	**Time**	**Received at lab by:**

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL Labs
908 North Temperance Ave.
Clovis, CA 93611

Phone: (559) 275-2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 31807

PLEASE PRINT

Report to:
Company Name: Kleinfelder
Phone: 415-822-2253
Address:
Fax: 415-822-1329
Attn:

PLEASE PRINT

Invoice to:
Company Name: Ce2
Phone:
Address:
Fax:
Attn:

Project Name/Number: HPS/101720
Sampler (Print): Patricia Walters
Purchase Order Number: TPH Sampling
Sampler (Signature): Patricia Walters

Analysis Requested/Method Number

Date Shipped:
Carrier: Fedex
Waybill No.: 8665 6425 4771
Comments: EFWR'S EDF EDDs

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-E (D,MO) w/ SGC-362OC/8015B	PAHs (plus naphthalene) 8270C SIM
✓ 09136008	PA18MW09A	3/27/09	1100	L	4	X	X
✓ 09131047	1R18MW100B	↓	1030	↓	4	X	X

PW 3/27/09

PW 3/27/09

PW 3/27/09

please quantify:
1. Diesel as C12-C24
2. Motor oil as C24-C36

Additional Notes:
1. If sediment is present in sample, do not distill the sample for 24 hrs & only analyze water partition
2. If sheen is present, only analyze water partition
3. If dilution is needed please wipe syringe needle

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour
1 week prelim (FIS) 2 week data package

Sample Disposal:
☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	3/27/09	1607					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL LABS

APPL Labs
908 North Temperance Ave.
Clovis, CA 93611

Phone: (559) 275-2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 31809

PLEASE PRINT

Report to:
Company Name: Klenfelder
Address:
Phone: 415-822-2253
Fax: 415-822-1329
Attn:

PLEASE PRINT

Invoice to:
Company Name: CO2
Address:
Phone:
Fax:
Attn:

Project Name/Number: HPS/101720
Purchase Order Number: TPH sampling
Sampler (Print): Patricia Walters
Sampler (Signature): Patricia Walters

Analysis Requested/Method Number

Date Shipped:
Carrier: Fedex
Waybill No.: 8665 6425 4760
Comments: EFIOS, EDF, EDDS

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	TPH-e (D, MO) w/SGC-3630C/8015B	PAHs (plus naphthalene) 8270C SIM
✓ 0913D046	IR18MW100B	3/27/09	1005	L	4	X	X
✓ 0913G007	PA18MW09A	↓	1024	↓	4	X	X

PW 3/27/09

PW 3/27/09

PW 3/27/09

please quantify:
1. diesel as C12-C24
2. motor oil as C24-C36

Additional notes:
1. If sediment is present in sample, let it settle, sample for 24 hrs, only analyze water portion
2. If sheen is present, analyze water portion only
3. If dilution is needed, please swipe syringe

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour
1 week prelim (FIs)
2 week data package

Sample Disposal:
☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	3/27/09	1602					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

APPL LABS

APPL Labs
908 North Temperance Ave.
Clovis, CA 93611

Phone: (559) 275-2175

Fax: (559) 275-4422

CHAIN OF CUSTODY RECORD

C.O.C. № 31810

Report to: PLEASE PRINT
Company Name: Klemfelder
Phone: 415-822-2253
Address:
Fax: 415-822-1329
Attn:

Invoice to: PLEASE PRINT
Company Name: GZ
Phone:
Address:
Fax:
Attn:

Project Name/Number: 101720/HPS
Sampler (Print): Patricia Walters
Purchase Order Number: TPH sampling
Sampler (Signature): Patricia Walters

Analysis Requested/Method Number

Date Shipped:
Carrier: Fedex
Waybill No.: 8665 6425 4782
Comments: FEDEX FEDEX

Sample Identification	Location	Date Collected	Time Collected	Matrix	Number of Containers	BTEX, MTBE – 8260B/8260B SIM	TPH-P (gasoline) – 8015B	TPH-e (D, MO) w/SGC – 3630C/8015B	PAHs (plus naphthalene) – 8270C SIM
0913D047	IR18MW100B	3/27/09	1030	L	8	X	X		
0913G007	PA18MW09A		1024		8	X	X		
0913G008	PA18MW09A		1100		8	X	X		
0913D045	Trip Blank		0800		8	X	X		
0913D046	IR18MW100B		1005		8	X	X		
0913X016	Trip Blank		1200		8	X	X		
0913G006	Trip Blank		0800		8	X	X		

pw 3/27/09

pw 3/27/09

pw 3/27/09

*run benzene by 8260B SIM

please quantify:
1. gasoline as C6-C12
2. ~~diesel as C12-C24~~
3. motor oil as C24-C36

Additional notes:
1. If sediment is present in sample, do not disturb for 24 hrs & only analyze water partition.
2. If silica gel is present only analyze water partition
3. If dilution is needed, use syringe needle

Shuttle Temperature:

Turnaround Requested: MUST CHECK ONE
☐ Standard (2-3 week) ☐ One week ☐ 24-48 hour
1 week prelim (FIs)
2 week data package

Sample Disposal:
☐ Return to client ☒ Disposal by Lab (30-day retention)

Relinquished by sampler:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Patricia Walters	3/27/09	1605					

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received at lab by:

White: Return to client with report Yellow: Laboratory Copy Pink: Sampler

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ATTACHMENT B

DATA VALIDATION REPORTS

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3Q2008 Sampling Event

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

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612
ATTN: Ms. Tricia Walters

September 24, 2008

SUBJECT: Hunters Point Shipyard, 3Q08 GW Sampling Event, Data Validation

Dear Ms. Walters,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on Septmeber 5, 2008. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 19447:

SDG #	Fraction
56545, 56577, 56608, 56628, 56629, 56648, 56655, 56666	Volatiles, Semivolatiles, Chlorinated Pesticides, Polychlorinated Biphenyls, Dissolved Metals, Wet Chemistry, TPH as Gasoline, TPH as Extractables, Organophosphorus Pesticides, Perchlorate

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

- Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, SanFrancisco, CA, June 17, 2008
- 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

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

Sincerely,

Stella S. Cuenco
Project Manager/Senior Chemist

V:\LOGIN\CE2\Hunters\19447COV.wpd

Attachment 1

EDD

LDC #19447 (CE2-San Diego / Hunters Point Shipyard, 3Q08 GW Sampling Event)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		VOA (8260B -SIM)		SVOA (8270C)		Pest. 8081A		PCBs (8082)		TPH-G (8015)		TPH-E (8015)		OPHS Pest. (8141A)		CLO_4 (6850)																			
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	56545	09/05/08	09/26/08	11	0	11	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-																		
A	56545	09/05/08	09/26/08	3	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-																		
B	56577	09/05/08	09/26/08	18	0	20	0	-	-	-	-	-	-	2	0	0	0	-	-	-	-																		
B	56577	09/05/08	09/26/08	4	0	5	0	-	-	-	-	-	-	1	0	1	0	-	-	-	-																		
C	56608	09/05/08	09/26/08	13	0	13	0	-	-	-	-	1	0	8	0	1	0	-	-	-	-																		
C	56608	09/05/08	09/26/08	1	0	0	0	-	-	-	-	1	0	1	0	1	0	-	-	-	-																		
D	56628	09/05/08	09/26/08	-	-	-	-	-	-	-	-	-	-	1	0	1	0	-	-	-	-																		
E	56629	09/05/08	09/26/08	12	0	14	0	1	0	1	0	1	0	5	0	3	0	1	0	-	-																		
E	56629	09/05/08	09/26/08	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-																		
F	56648	09/05/08	09/26/08	12	0	12	0	-	-	-	-	-	-	3	0	1	0	-	-	-	-																		
F	56648	09/05/08	09/26/08	4	0	4	0	-	-	-	-	-	-	0	0	0	0	-	-	-	-																		
G	56655	09/05/08	09/26/08	8	0	8	0	-	-	-	-	-	-	6	0	3	0	-	-	-	-																		
G	56655	09/05/08	09/26/08	2	0	2	0	-	-	-	-	-	-	1	0	1	0	-	-	-	-																		
H	56666	09/05/08	09/26/08	9	0	9	0	-	-	-	-	1	0	3	0	1	0	-	-	1	0																		
H	56666	09/05/08	09/26/08	2	0	2	0	-	-	-	-	1	0	0	0	0	0	-	-	1	0																		
Total	T/SC			103	0	108	0	1	0	1	0	5	0	31	0	13	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	265

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

19447ST.wpd

EDD

LDC #19447 (CE2-San Diego / Hunters Point Shipyard, 3Q08 GW Sampling Event)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Diss. Metals SW846		Diss. Cr (6010B)		Diss. Ni (6010B)		TSS (160.2)		TKN (351.2)		Cr(VI) (7199)		CN- (9010B /9014)		S= (376.1)		Cl (300.0)		Br (300.0)		SO_4 (300.0)		Fl (300.0)		NO_3-N (300.0)		NO_2-N (300.0)		O-PO_4 (300.0)		NH_3 (350.1)							
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	W	S
A	56545	09/05/08	09/26/08	9	0	-	-	-	-	-	-	-	-	3	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
A	56545	09/05/08	09/26/08	2	0	-	-	-	-	-	-	-	-	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
B	56577	09/05/08	09/26/08	5	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C	56608	09/05/08	09/26/08	9	0	-	-	-	-	1	0	-	-	-	-	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
C	56608	09/05/08	09/26/08	3	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
E	56629	09/05/08	09/26/08	5	0	-	-	-	-	1	0	1	0	0	0	1	0	1	0	1	0	1	0	2	0	1	0	1	0	1	0	1	0	1	0						
E	56629	09/05/08	09/26/08	5	0	-	-	-	-	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
F	56648	09/05/08	09/26/08	6	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
F	56648	09/05/08	09/26/08	3	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
G	56655	09/05/08	09/26/08	3	0	1	0	-	-	-	-	-	-	2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
G	56655	09/05/08	09/26/08	2	0	1	0	-	-	-	-	-	-	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
H	56666	09/05/08	09/26/08	1	0	1	0	1	0	-	-	-	-	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
H	56666	09/05/08	09/26/08	1	0	1	0	1	0	-	-	-	-	2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Total	T/SC			54	0	4	0	2	0	2	0	1	0	10	0	2	0	1	0	1	0	1	0	2	0	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0	85

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

Hunters Point Shipyard, 3Q08 GW Sampling Event
Data Validation Reports
LDC# 19447

Polychlorinated Biphenyls

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 3Q08 GW Sampling Event

Collection Date: July 23, 2008

LDC Report Date: September 15, 2008

Matrix: Water

Parameters: Polychlorinated Biphenyls

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 56608

Sample Identification

0830E033**
0830E034

**Indicates sample underwent Level IV review.

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 8082 for Polychlorinated Biphenyls.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Samples indicated by a double asterisk on the front cover underwent a Level IV review. A Level III review was performed on all 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

III. Initial Calibration

Initial calibration of multicomponent compounds was performed for the primary (quantitation) 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 a Level IV review was performed. Raw data were not evaluated for the samples on which a Level III review was performed.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors 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 a Level IV review was performed. Raw data were not evaluated for the samples on which a Level III review was performed.

V. Blanks

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

Sample 0830E034 was identified as an equipment blank. No polychlorinated biphenyl contaminants were found in this blank.

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	Column	Surrogate	%R (Limits)	Compound	Flag	A or P
0830E033**	DB-5MS	Tetrachloro-m-xylene	37.1 (40-135)	All TCL compounds	UJ13 (all non-detects)	P

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. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Florisil cleanup was not required and therefore not performed in this SDG.

b. GPC Calibration

GPC cleanup was not required and therefore not performed in this SDG.

XI. Target Compound Identification

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

XII. Compound Quantitation and Reported CRQLs

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

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

Hunters Point Shipyard, 3Q08 GW Sampling Event
Polychlorinated Biphenyls - Data Qualification Summary - SDG 56608

SDG	Sample	Compound	Flag	A or P	Reason
56608	0830E033**	All TCL compounds	UJ13 (all non-detects)	P	Surrogate spikes (%R)

Hunters Point Shipyard, 3Q08 GW Sampling Event
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG 56608

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 3Q08 GW Sampling Event
Polychlorinated Biphenyls - Field Blank Data Qualification Summary - SDG 56608

No Sample Data Qualified in this SDG

EPA 8082 PCB WATER

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0830E033
Sample Collection Date: 7/23/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR14MW13A
ARF: 56608
APPL ID: AX81238
QCG: $8PHP-080730A-124927

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8082	PCB-1016	Not detected UJ B	0.5	0.12	ug/L	7/30/08	8/11/08
EPA 8082	PCB-1221	Not detected	0.5	0.08	ug/L	7/30/08	8/11/08
EPA 8082	PCB-1232	Not detected	0.5	0.12	ug/L	7/30/08	8/11/08
EPA 8082	PCB-1242	Not detected	0.5	0.12	ug/L	7/30/08	8/11/08
EPA 8082	PCB-1248	Not detected	0.5	0.09	ug/L	7/30/08	8/11/08
EPA 8082	PCB-1254	Not detected	0.5	0.20	ug/L	7/30/08	8/11/08
EPA 8082	PCB-1260	Not detected	0.5	0.09	ug/L	7/30/08	8/11/08
EPA 8082	Surrogate: DECA-PCB	45.9	40-135		%	7/30/08	8/11/08
EPA 8082	Surrogate: TcMX	37.1 #	40-135		%	7/30/08	8/11/08

= Recovery (or RPD) is outside QC limits.

N 991908

Quant Method:	PCBSD.M
Run #:	0804247
Instrument:	Ethel
Sequence:	080804
Dilution Factor:	1
Initials:	MA

Printed: 8/11/08 2:26:35 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8082 PCB WATER

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0830E034
Sample Collection Date: 7/23/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR14MW13A
ARF: 56608
APPL ID: AX81239
QCG: $8PHP-080730A-124927

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8082	PCB-1016	Not detected	0.5	0.12	ug/L	7/30/08	8/8/08
EPA 8082	PCB-1221	Not detected	0.5	0.08	ug/L	7/30/08	8/8/08
EPA 8082	PCB-1232	Not detected	0.5	0.12	ug/L	7/30/08	8/8/08
EPA 8082	PCB-1242	Not detected	0.5	0.12	ug/L	7/30/08	8/8/08
EPA 8082	PCB-1248	Not detected	0.5	0.09	ug/L	7/30/08	8/8/08
EPA 8082	PCB-1254	Not detected	0.5	0.20	ug/L	7/30/08	8/8/08
EPA 8082	PCB-1260	Not detected	0.5	0.09	ug/L	7/30/08	8/8/08
EPA 8082	Surrogate: DECA-PCB	63.3	40-135		%	7/30/08	8/8/08
EPA 8082	Surrogate: TcMX	47.7	40-135		%	7/30/08	8/8/08

BY 071908

Quant Method: PCBSD.M
Run #: 0804151
Instrument: Ethel
Sequence: 080804
Dilution Factor: 1
Initials: MA

Printed: 8/11/08 2:26:35 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19447C3b
SDG #: 56608
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 9/12/08
Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 7/23/08
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	ICV < 15%
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation and reported CRQLs	A	Not reviewed for Level III validation.
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	EB=2

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0830E033** W	11	080730W MB	21		31	
2	0830E034 ✓	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 19447C3b
SDG #: 55608

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: V

Method: ✓ GC ____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ✓ %D or %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?		✓		
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?		✓		
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			

LDC #: 19447C3b
SDG #: 5660R

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: ✓

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds idetected in the field duplicates?			✓	
XV. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		

LDC #: 19447C3b
SDG #: 56608

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Reviewer: Q
2nd Reviewer: V

METHOD: ✓ GC __ HPLC
Are surrogates required by the method? Yes ✓ or No____.
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were surrogates spiked into all samples and blanks?
Y (N) N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	~~Detector~~/ Column	Surrogate Compound	%R (Limits)		Qualifications
	1 (ND)	#3 DB-5MS	TCMX	37.1	(40-135)	J/UJ/P (13)
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene		
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Tripentyltin		
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin		
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate		
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

LDC #: 19447C3b
SDG #: 56608

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: h

METHOD: GC ✓ HPLC _____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (0.1 std)	Recalculated CF (0.1 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	7/24/08	~~BB~~ (DB-5 MS)	17133810	17133810	17234672	17234672	13	13
			~~BB~~ (DB-XLB)	10911533	10911535	10427002	10427002	14	14
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INICLC.1SB

LDC #: 19447C36
SDG #: 56608

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: ✓

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	0804245	8/11/08	BB (OB-5MS)	17.235 E6	18.309 E6	18.309 E6	6.2	6.2
			BB (013-XLB)	10.427 E6	11.083 ✓	11.083 ✓	6.3	6.3
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19447C3b
SDG #: 5608

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: ✓ GC __ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
DCB	DB-5MS	0.286	0.131	45.9	45.9	0
TCMX	↓	↓	0.106	37.1	37.1	0

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 9447C36
SDG #: 56608

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 1

METHOD: ✓ GC __HPLC

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory control sample percent recovery
SC = Concentration
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 080730W

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
BB	1.0	NA	0.708	NA	70.8	70.8				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 14473b
SDG #: 56608

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound in the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 1 Compound Name ND

Concentration =

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments:

SAMPCALew.wpd

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

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612
ATTN: Ms. Tricia Walters

November 6, 2008

SUBJECT: Hunters Point Shipyard, Point Avisadero Mercury Sampling, Data Validation

Dear Ms. Walters,

Enclosed is the final validation report for the fraction listed below. This SDG was received on November 6, 2008. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 19729:

SDG #	Fraction
K0809014	Mercury

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

- Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, SanFrancisco, CA, June 17, 2008
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004

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

Sincerely,

Stella Cuenco

Stella S. Cuenco
Project Manager/Senior Chemist

V:\LOGIN\CE2\HUNTERS\19729COV.wpd

2 WEEK TAT

Attachment 1

LDC #19729 (CE2-San Diego / Hunters Point Shipyard)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Diss. Hg (1631E)		Methyl Hg (1630)		Diss. Methyl Hg																															
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	K0809014	11/06/08	11/20/08	3	0	1	0	2	0																														
Total	T/SC			3	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

19729ST.wpd

Hunters Point Shipyard, Point Avisadero Mercury Sampling
Data Validation Reports
LDC# 19729

Mercury

LDC

LDC Report# 19729A4a

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, Point Avisadero Mercury Sampling

Collection Date: September 16, 2008

LDC Report Date: November 6, 2008

Matrix: Water

Parameters: Mercury

Validation Level: Level IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): K0809014

Sample Identification

0838D011
0838D012
0838D013

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA 846 Method 1631E for Dissolved Mercury and EPA Method 1630 for Methyl Mercury.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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.

Sample 0838D011 was identified as a field blank. No contaminant concentrations were found in this blank.

IV. ICP Interference Check Sample (ICS) Analysis

Not required by these methods.

V. Matrix Spike Analysis

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

VI. Duplicate Sample Analysis

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

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 (ICP-MS)

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution was not performed for this SDG.

XI. Sample Result Verification

All sample result verifications were acceptable.

XII. Overall Assessment of Data

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

XIII. Field Duplicates

Samples 0838D012 and 0838D013 were identified as field duplicates. No mercury was detected in any of the samples with the following exceptions:

Analyte	Concentration (ng/L)		RPD
	0838D012	0838D013	
Dissolved mercury	1930	1770	9

Hunters Point Shipyard, Point Avisadero Mercury Sampling
Mercury - Data Qualification Summary - SDG K0809014

No Sample Data Qualified in this SDG

Hunters Point Shipyard, Point Avisadero Mercury Sampling
Mercury - Laboratory Blank Data Qualification Summary - SDG K0809014

No Sample Data Qualified in this SDG

Hunters Point Shipyard, Point Avisadero Mercury Sampling
Mercury - Field Blank Data Qualification Summary - SDG K0809014

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Kleinfelder	**Service Request:**	K0809014
Project:	Hunters Point Basewide Groundwater Monitoring	**Date Collected:**	09/16/08
Sample Matrix:	Water	**Date Received:**	09/17/08

Methyl Mercury, Total

Prep Method:	CAS SOP	Units:	ng/L
Analysis Method:	CAS SOP	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
0838D011	K0809014-001	0.1	1	09/25/08	09/26/08	ND	
Method Blank 1	K0809014-MB1	0.1	1	09/25/08	09/26/08	ND	
Method Blank 2	K0809014-MB2	0.1	1	09/25/08	09/26/08	ND	
Method Blank 3	K0809014-MB3	0.1	1	09/25/08	09/26/08	ND	

N 110708

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Kleinfelder	**Service Request:**	K0809014
Project:	Hunters Point Basewide Groundwater Monitoring	**Date Collected:**	9/16/2008
Sample Matrix:	Water	**Date Received:**	9/17/2008

Methyl Mercury, Dissolved

Prep Method:	CAS SOP	Units:	ng/L
Analysis Method:	CAS SOP	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
0838D012	K0809014-002 DISS	0.1	1	9/25/2008	9/26/2008	ND	
0838D013	K0809014-003 DISS	0.1	1	9/25/2008	9/26/2008	ND	

h 110708

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Kleinfelder	**Service Request:**	K0809014
Project:	Hunters Point Basewide Groundwater Monitoring	**Date Collected:**	09/16/08
Sample Matrix:	Water	**Date Received:**	09/17/08

Mercury, Dissolved

Prep Method:	METHOD	Units:	ng/L
Analysis Method:	1631E	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
0838D011	K0809014-001 DISS	1.0	1	09/18/08	09/25/08	ND	
0838D012	K0809014-002 DISS	50	50	09/18/08	09/25/08	1930	
0838D013	K0809014-003 DISS	50	50	09/18/08	09/25/08	1770	
Method Blank 1	K0809014-MB1	1.0	1	09/18/08	09/25/08	ND	
Method Blank 2	K0809014-MB2	1.0	1	09/18/08	09/25/08	ND	
Method Blank 3	K0809014-MB3	1.0	1	09/18/08	09/25/08	ND	

L110708

LDC #: 19729A4
SDG #: K0809014
Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 11/6/08
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Dissolved Mercury (EPA Method 1631E), Methyl Mercury (EPA Method 1630)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 9/16/08
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	Not required
V.	Matrix Spike Analysis	N	client specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized.
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	A	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	(2, 3)
XIV.	Field Blanks	ND	FB=1

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All

1	0838D011	11		21		31	
2	0838D012	12		22		32	
3	0838D013	13		23		33	
4	PB	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 19729 A4
SDG #: K0809014

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: MH
2nd Reviewer: [illegible]

Method: Metals (EPA SW 846 Method 6010/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			Method limits
Were all initial calibration correlation coefficients > 0.995? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. ICP Interference Check Sample				
Were ICP interference check samples performed daily?			✓	
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?			✓	
IV. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were < 5X the RL.			✓	
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VI. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients > 0.995?			✓	
Do all applicable analysies have duplicate injections? (Level IV only)			✓	
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%? (Level IV only)			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	

LDC #: 19729A4
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: WM
2nd Reviewer: R

Validation Area	Yes	No	NA	Findings/Comments
VII. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?			✓	
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
VIII. Internal Standards (EPA SW 846 Method 6020)				
Were all the percent recoveries (%R) within the 30-120% of the intensity of the internal standard in the associated initial calibration?			✓	
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
XIII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC #: 19929AC
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MM
2nd reviewer: [illegible]

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-3	Aq	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, (Hg), Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻ (CVAA-Hg)
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___

Comments: Mercury by CVAA if performed

LDC#: 19729A4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: Metals (EPA Method 1631E/1630)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ng/L)		RPD	
	2	3		
Mercury, Dissolved	1930	1770	9	

V:\FIELD DUPLICATES\FD_inorganic\19729A4.wpd

LDC #: 19929A4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MY
2nd Reviewer: LC

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$\%R = \frac{Found}{True} \times 100$

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
	ICP (Initial calibration)						
(OPR ICV)	~~GFAA~~ CVAA (Initial calibration)	Hg	4.58	5.0	92	92	Y
ICV (OPR)	CVAA (Initial calibration)	CH3Hg	1.90	2.22	86	86	Y
	ICP (Continuing calibration)						
(OPR CCV)	~~GFAA~~ CVAA (Continuing calibration)	Hg	4.76	5.0	95	95	Y
CCV (OPR)	CVAA (Continuing calibration)	CH3Hg	1.57	2.22	71	71	Y
	ICP/MS (Initial calibration)						
	ICP/MS (Continuing calibation)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CALCLC.4SW

LDC #: 19729M
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$\%D = \frac{|I-SDR|}{I} \times 100$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
NA	ICP interference check						
LCS	Laboratory control sample	Hg	91.5	1.0	92	92	Y
NA	Matrix spike		(SSR-SR)				
	Duplicate						
	ICP serial dilution						

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

TOTCLC.4SW

LDC #: 19728A4
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MM
2nd reviewer: A

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
Y N N/A Are all detection limits below the CRDL?

Detected analyte results for 2 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

#2 Pb 5 Hg

$= \frac{193\ \mu g \times \frac{100\ ml}{0.1\ ml}}{0.1\ l} = 193\ ng/0.1\ l = 1930\ ng/l$

Sample ID	Analyte	Reported Concentration (ug/l)	Calculated Concentration (ug/l)	Acceptable (Y/N)
2	Pb 5 Hg	1930	1930	Y

RECALC.4S2

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

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612
ATTN: Ms. Tricia Walters

November 14, 2008

SUBJECT: Hunters Point Shipyard, 3Q08 GW Sampling Event, Data Validation

Dear Ms. Walters,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on November 3, 2008. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 19710:

SDG #	Fraction
57042, 57075	Volatiles, Semivolatiles, Chlorinated Pesticides, Polychlorinated Biphenyls, Dissolved Metals, Wet Chemistry, TPH as Gasoline, TPH as Extractables, Organophosphorus Pesticides

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

- Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA, June 17, 2008
- 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

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

Sincerely,

Stella Cuenco

Stella S. Cuenco
Project Manager/Senior Chemist

Attachment 1

EDD

LDC #19710 (CE2-San Diego / Hunters Point Shipyard, 3Q08 GW Sampling Event)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		VOA (8260B -SIM)		SVOA (8270C)		Pest. 8081A		PCBs (8082)		Diss. Metals SW846		TPH-G (8015)		TPH-E (8015)		OPHS Pest. (8141A)																			
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	57042	11/03/08	11/24/08	3	0	3	0	1	0	1	0	1	0	2	0	12	0	7	0	1	0																		
A	57042	11/03/08	11/24/08	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0																		
B	57075	11/03/08	11/24/08	-	-	-	-	-	-	-	-	-	-	-	-	2	0	0	0	-	-																		
B	57075	11/03/08	11/24/08	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	0	-	-																		
Total	T/SC			3	0	3	0	1	0	1	0	1	0	2	0	18	0	11	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41

EDD

LDC #19710 (CE2-San Diego / Hunters Point Shipyard, 3Q08 GW Sampling Event)

LDC	SDG#	DATE REC'D	(3) DATE DUE	TSS (160.2)		TKN (351.2)		CN- (9010B /9014)		S= (376.1)		Cl (300.0)		Br (300.0)		SO_4 (300.0)		Fl (300.0)		NO_3-N (300.0)		NO_2-N (300.0)		O-PO_4 (300.0)		NH_3 (350.1)													
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	57042	11/03/08	11/24/08	2	0	1	0	1	0	1	0	2	0	1	0	2	0	1	0	1	0	1	0	1	0	1	0												
Total	T/SC			2	0	1	0	1	0	1	0	2	0	1	0	2	0	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	15

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

19710ST.wpd

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

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612
ATTN: Ms. Tricia Walters

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LDC Project # 19710:

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

- Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA, June 17, 2008
- 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

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

Sincerely,

Stella Cuenco

Stella S. Cuenco
Project Manager/Senior Chemist

Attachment 1

EDD

LDC #19710 (CE2-San Diego / Hunters Point Shipyard, 3Q08 GW Sampling Event)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		VOA (8260B -SIM)		SVOA (8270C)		Pest. 8081A		PCBs (8082)		Diss. Metals SW846		TPH-G (8015)		TPH-E (8015)		OPHS Pest. (8141A)																			
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	57042	11/03/08	11/24/08	3	0	3	0	1	0	1	0	1	0	2	0	12	0	7	0	1	0																		
A	57042	11/03/08	11/24/08	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0																		
B	57075	11/03/08	11/24/08	-	-	-	-	-	-	-	-	-	-	-	-	2	0	0	0	-	-																		
B	57075	11/03/08	11/24/08	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	0	-	-																		
Total	T/SC			3	0	3	0	1	0	1	0	1	0	2	0	18	0	11	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41

EDD

LDC #19710 (CE2-San Diego / Hunters Point Shipyard, 3Q08 GW Sampling Event)

LDC	SDG#	DATE REC'D	(3) DATE DUE	TSS (160.2)		TKN (351.2)		CN- (9010B /9014)		S= (376.1)		Cl (300.0)		Br (300.0)		SO_4 (300.0)		Fl (300.0)		NO_3-N (300.0)		NO_2-N (300.0)		O-PO_4 (300.0)		NH_3 (350.1)													
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	57042	11/03/08	11/24/08	2	0	1	0	1	0	1	0	2	0	1	0	2	0	1	0	1	0	1	0	1	0	1	0												
Total	T/SC			2	0	1	0	1	0	1	0	2	0	1	0	2	0	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	15

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

19710ST.wpd

Hunters Point Shipyard, 3Q08 GW Sampling Event
Data Validation Reports
LDC# 19710

Volatiles

LDC

LDC Report# 19710A1a

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 3Q08 GW Sampling Event

Collection Date: September 23, 2008

LDC Report Date: November 7, 2008

Matrix: Water

Parameters: Volatiles

Validation Level: Level III

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57042

Sample Identification

0839X007
0839G034
0839G033

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 8260B for Volatiles.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
9/27/08	1,2-Dibromo-3-chloropropane	26	0839X007 0839G034	UJ5 (all non-detects)	A

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

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

V. Blanks

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

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
080929WMB	9/30/08	Chloroform	0.13 ug/L	0839G033

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.

Samples 0839X007 and 0839G033 were identified as trip blanks. No volatile contaminants were found in these 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

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 the report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

Hunters Point Shipyard, 3Q08 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 57042

SDG	Sample	Compound	Flag	A or P	Reason
57042	0839X007 0839G034	1,2-Dibromo-3-chloropropane	UJ5 (all non-detects)	A	Continuing calibration (%D)

Hunters Point Shipyard, 3Q08 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 57042

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 3Q08 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 57042

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839X007
Sample Collection Date: 09/23/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57042
APPL ID: AX84263
QCG: $86HP-080926BC-126246

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	09/27/08	09/27/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	09/27/08	09/27/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	09/27/08	09/27/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	09/27/08	09/27/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	09/27/08	09/27/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	09/27/08	09/27/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	09/27/08	09/27/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	09/27/08	09/27/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected UJS	2.0	0.76	ug/L	09/27/08	09/27/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	09/27/08	09/27/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	09/27/08	09/27/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	09/27/08	09/27/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	09/27/08	09/27/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	09/27/08	09/27/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	09/27/08	09/27/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	09/27/08	09/27/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	09/27/08	09/27/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	09/27/08	09/27/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	09/27/08	09/27/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	09/27/08	09/27/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	09/27/08	09/27/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	09/27/08	09/27/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	09/27/08	09/27/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	09/27/08	09/27/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	09/27/08	09/27/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	09/27/08	09/27/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	09/27/08	09/27/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	09/27/08	09/27/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	09/27/08	09/27/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	09/27/08	09/27/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	09/27/08	09/27/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	09/27/08	09/27/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	09/27/08	09/27/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	09/27/08	09/27/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	09/27/08	09/27/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	09/27/08	09/27/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	09/27/08	09/27/08

L 11/7/08

Quant Method: C86HPW.M
Run #: 0926C25
Instrument: Chico
Sequence: C080925
Dilution Factor: 1
Initials: GM

Printed: 10/01/08 4:52:29 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839X007
Sample Collection Date: 09/23/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57042
APPL ID: AX84263
QCG: $86HP-080926BC-126246

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	09/27/08	09/27/08
EPA 8260B	Surrogate Recovery (BFB)	110	75-120		%	09/27/08	09/27/08
EPA 8260B	Surrogate Recovery (DBFM)	97.9	85-115		%	09/27/08	09/27/08
EPA 8260B	Surrogate Recovery (DCA)	95.6	70-120		%	09/27/08	09/27/08
EPA 8260B	Surrogate Recovery (TOL)	112	85-120		%	09/27/08	09/27/08

C 11/28

Quant Method: C86HPW.M
Run #: 0926C25
Instrument: Chico
Sequence: C080925
Dilution Factor: 1
Initials: GM

Printed: 10/01/08 4:52:29 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G033
Sample Collection Date: 09/23/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57042
APPL ID: AX84328
QCG: $86HP-080929BM-126247

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	09/30/08	09/30/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	09/30/08	09/30/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	09/30/08	09/30/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	09/30/08	09/30/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	09/30/08	09/30/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	09/30/08	09/30/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	09/30/08	09/30/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	09/30/08	09/30/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	09/30/08	09/30/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	09/30/08	09/30/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	09/30/08	09/30/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	09/30/08	09/30/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	09/30/08	09/30/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	09/30/08	09/30/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	09/30/08	09/30/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	09/30/08	09/30/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	09/30/08	09/30/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	09/30/08	09/30/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	09/30/08	09/30/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	09/30/08	09/30/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	09/30/08	09/30/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	09/30/08	09/30/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	09/30/08	09/30/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	09/30/08	09/30/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	09/30/08	09/30/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	09/30/08	09/30/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	09/30/08	09/30/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	09/30/08	09/30/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	09/30/08	09/30/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	09/30/08	09/30/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	09/30/08	09/30/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	09/30/08	09/30/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	09/30/08	09/30/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	09/30/08	09/30/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	09/30/08	09/30/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	09/30/08	09/30/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	09/30/08	09/30/08

L 11/2008

Quant Method: M86HPW.M
Run #: 0929M25
Instrument: Max
Sequence: M080925
Dilution Factor: 1
Initials: GM

Printed: 10/01/08 4:52:30 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G033
Sample Collection Date: 09/23/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57042
APPL ID: AX84328
QCG: $86HP-080929BM-126247

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	09/30/08	09/30/08
EPA 8260B	Surrogate Recovery (BFB)	102	75-120		%	09/30/08	09/30/08
EPA 8260B	Surrogate Recovery (DBFM)	102	85-115		%	09/30/08	09/30/08
EPA 8260B	Surrogate Recovery (DCA)	102	70-120		%	09/30/08	09/30/08
EPA 8260B	Surrogate Recovery (TOL)	96.4	85-120		%	09/30/08	09/30/08

10/1/2008

Quant Method: M86HPW.M
Run #: 0929M25
Instrument: Max
Sequence: M080925
Dilution Factor: 1
Initials: GM

Printed: 10/01/08 4:52:30 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19710A1a
SDG #: 57042
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III

Date: 11/5/08
Page: 1 of 1
Reviewer: a
2nd Reviewer: N

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 9/23/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD. r²
IV.	Continuing calibration/ICV	SW	RV= 25%
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	TB= 1, 3

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

1	0839X007 W	11	080926WMB	21	C	31	
2	0839G034	12	080929WMB	22	M	32	
3	0839G033	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 19710A19
SDG #: 57042

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: 9
2nd Reviewer: M

METHOD: GC/MS VOA (EPA SW 846 Method 8260)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	9/27/08	0926C20W	MM	26		1-2, ~~[illegible]~~	J/UJ/A (5)
						(ND)	

CONCAL1S

LDC #: 19710A19
SDG #: 57002

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 9/30/08
Conc. units: µg/L
Associated Samples: 3

Compound	Blank ID	Sample Identification								
	080929W/MB									
Methylene chloride										
Acetone										
K	0.43									
CRQL										

Blank analysis date:
Conc. units:
Associated Samples:

Compound	Blank ID	Sample Identification								
Methylene chloride										
Acetone										
CRQL										

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

Hunters Point Shipyard, 3Q08 GW Sampling Event
Data Validation Reports
LDC# 19710

TPH as Gasoline

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 3Q08 GW Sampling Event

Collection Date: September 18 through September 23, 2008

LDC Report Date: November 6, 2008

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57042

Sample Identification

0839G028
0839G029
0839G030
0839G031
0839G032**
0839G036**
0839G037
0838T001
0838T002**
0838T003
0838T004
0838T005
0839X007
0839G034
0839G033
0838T005MS
0838T005MSD

**Indicates sample underwent 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 8015 for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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
0839G028 0839G033	TPH as gasoline	Air bubbles were apparent in the sample containers.	There should be no air bubbles in the sample containers.	UJ2 (all non-detects)	A

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

Samples 0839G028, 0838T001, 0838T004, 0839X007, and 0839G033 were identified as trip blanks. No total petroleum hydrocarbons as gasoline contaminants were found in these 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 a Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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 0839G036** and 0839G037 and samples 0838T003 and 0838T002** were identified as field duplicates. No total petroleum hydrocarbons as gasoline were detected in any of the samples.

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 57042

SDG	Sample	Compound	Flag	A or P	Reason
57042	0839G028 0839G033	TPH as gasoline	UJ2 (all non-detects)	A	Sample condition (air bubbles)

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 57042

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG 57042

No Sample Data Qualified in this SDG

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G028
Sample Collection Date: 09/22/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57042
APPL ID: AX84251
QCG: $GAHP-080926A-126542

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected KJ2	20.0	8.60	ug/L	09/26/08	09/26/08
8015	Surrogate: BFB-FID (S)	116	75-125		%	09/26/08	09/26/08

L 11/7/08

Quant Method:	HBTXGOK.M
Run #:	0926H04
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/14/08 10:15:43 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G029
Sample Collection Date: 09/22/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW48A
ARF: 57042
APPL ID: AX84252
QCG: $GAHP-080926A-126542

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/26/08	09/26/08
8015	Surrogate: BFB-FID (S)	117	75-125		%	09/26/08	09/26/08

L 111208

Quant Method: HBTXGOK.M
Run #: 0926H09
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/14/08 10:15:43 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G030
Sample Collection Date: 09/22/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW47A
ARF: 57042
APPL ID: AX84253
QCG: $GAHP-080926A-126542

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/26/08	09/26/08
8015	Surrogate: BFB-FID (S)	116	75-125		%	09/26/08	09/26/08

rL 11/7-8

Quant Method: HBTXGOK.M
Run #: 0926H10
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/14/08 10:15:43 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G032
Sample Collection Date: 09/22/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR24MW05A
ARF: 57042
APPL ID: AX84255
QCG: $GAHP-080926A-126542

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/26/08	09/26/08
8015	Surrogate: BFB-FID (S)	121	75-125		%	09/26/08	09/26/08

10/11/08

Quant Method:	HBTXGOK.M
Run #:	0926H12
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/14/08 10:15:43 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G036
Sample Collection Date: 09/23/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR33MW02
ARF: 57042
APPL ID: AX84256
QCG: $GAHP-080926A-126542

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/26/08	09/26/08
8015	Surrogate: BFB-FID (S)	106	75-125		%	09/26/08	09/26/08

2/11/08

Quant Method: HBTXGOK.M
Run #: 0926H13
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/14/08 10:15:43 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G037
Sample Collection Date: 09/23/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR33MW02
ARF: 57042
APPL ID: AX84257
QCG: $GAHP-080926A-126542

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/26/08	09/26/08
8015	Surrogate: BFB-FID (S)	119	75-125		%	09/26/08	09/26/08

12/1/2008

Quant Method: HBTXGOK.M
Run #: 0926H15
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/14/08 10:15:43 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0838T001
Sample Collection Date: 09/18/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57042
APPL ID: AX84258
QCG: $GAHP-080926A-126542

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/26/08	09/26/08
8015	Surrogate: BFB-FID (S)	117	75-125		%	09/26/08	09/26/08

2/11/08

Quant Method: HBTXGOK.M
Run #: 0926H05
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/14/08 10:15:43 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0838T002
Sample Collection Date: 09/18/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR53BO32
ARF: 57042
APPL ID: AX84259
QCG: $GAHP-080926A-126542

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/26/08	09/26/08
8015	Surrogate: BFB-FID (S)	115	75-125		%	09/26/08	09/26/08

2/11/08

Quant Method:	HBTXGOK.M
Run #:	0926H16
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/14/08 10:15:43 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0838T003
Sample Collection Date: 09/18/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR53BO32
ARF: 57042
APPL ID: AX84260
QCG: $GAHP-080926A-126542

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/26/08	09/26/08
8015	Surrogate: BFB-FID (S)	117	75-125		%	09/26/08	09/26/08

2 11/20

Quant Method: HBTXGOK.M
Run #: 0926H17
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/14/08 10:15:43 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0838T004
Sample Collection Date: 09/19/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57042
APPL ID: AX84261
QCG: $GAHP-080926A-126542

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/26/08	09/26/08
8015	Surrogate: BFB-FID (S)	111	75-125		%	09/26/08	09/26/08

2 11/7-5

Quant Method: HBTXGOK.M
Run #: 0926H06
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/14/08 10:15:43 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0838T005
Sample Collection Date: 09/19/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR44BO10
ARF: 57042
APPL ID: AX84262
QCG: $GAHP-080926A-126542

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/26/08	09/26/08
8015	Surrogate: BFB-FID (S)	118	75-125		%	09/26/08	09/26/08

L 11/7/08

Quant Method: HBTXGOK.M
Run #: 0926H18
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/14/08 10:15:43 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839X007
Sample Collection Date: 09/23/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57042
APPL ID: AX84263
QCG: $GAHP-080926A-126542

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/26/08	09/26/08
8015	Surrogate: BFB-FID (S)	115	75-125		%	09/26/08	09/26/08

L 11/2 08

Quant Method: HBTXGOK.M
Run #: 0926H07
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/14/08 10:15:43 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G033
Sample Collection Date: 09/23/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57042
APPL ID: AX84328
QCG: $GAHP-080926A-126542

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected KJ2	20.0	8.60	ug/L	09/26/08	09/26/08
8015	Surrogate: BFB-FID (S)	93.0	75-125		%	09/26/08	09/26/08

R 11/2-08

Quant Method: HBTXGOK.M
Run #: 0926H08
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/14/08 10:15:43 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19710A7
SDG #: 57042
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 11/3/08
Page: 1 of 1
Reviewer: Q
2nd Reviewer: K

METHOD: GC TPH as Gasoline (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A/N	Sampling dates: 9/18 - 23/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15%D
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	D = 6 + 7. ~~8~~ 10 + 9
X.	Field blanks	ND	TB = 1. 8. 11. 13. 15

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

MH 11/3/08

1	0839G028	T	11	0838T004	T	21	080926W/MB	31	
2	0839G029		12	0838T005		22		32	
3	0839G030		13	0839X007	T	23		33	
4	0839G031		14	0839G034		24		34	
5	0839G032**		15	0839G033	T	25		35	
6	0839G036**		16	0838T005MS		26		36	
7	0839G037		17	0838T005MSD		27		37	
8	0838T001	T	18			28		38	
9	0838T002**		19			29		39	
10	0838T003		20			30		40	

Notes:

LDC #: 19710A7
SDG #: 57042

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: K

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 19710AT
SDG #: 67042

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: w

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 19710A7
SDG #: 57042

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: 9
2nd Reviewer: K

All circled dates have exceeded the technical holding times.
Y N N/A Were all cooler temperatures within validation criteria?

METHOD: ✓ GC ___ HPLC

Sample ID	Matrix	Preserved	Sampling Date	Extraction date	Analysis date	Total # of Days	Qualifier
1.15 (ND)	large	air bubbles					J/UH/A (2)

TECHNICAL HOLDING TIME CRITERIA

VOLATILES: Water unpreserved: Aromatic within 7 days, non-aromatic within 14 days of sample collection.
Water preserved: Both within 14 days of sample collection.
Soils: Both within 14 days of sample collection.

EXTRACTABLES:
Water: Extracted within 7 days, analyzed within 40 days.
Soil: Extracted within 14 days, analyzed within 40 days.

LDC #: 19710A7
SDG #: 57042

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC _____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (20 std)	Recalculated CF (20 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	7/23/08	4RO	30078	30078	26995	26995	7.3	7.3
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INICLC.1SB

LDC #: 19710A7
SDG #: 5704-2

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 4
2nd Reviewer: 4

METHOD: GC ✓ HPLC _____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	0926H01	9/26/08	GRO	28995	28120	28120	4.2	4.2
2	0926H14	9/26/08	GRO	26995	30021	30021	11	11
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 19710A7
SDG #: 57642

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: ✓ **GC** ___ **HPLC**

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 5

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
BFB	DB-624	25.00	30.141	121	121	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 19710A7
SDG #: 57042

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked sample concentration SC = Sample concentration
SA = Spike added
RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike MSD = Matrix spike duplicate

MS/MSD samples: ~~0329260~~ 16/17

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	300	300	ND	338	345	113	113	115	115	2.0	2.0
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19710A7
SDG #: 57042

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer:
2nd Reviewer:

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory control sample percent recovery
SC = Concentration
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 080926W

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	300	NA	337	NA	112	112				
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19[illegible]A7
SDG #: 57042

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. ND Compound Name _____

Concentration = _____

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

SAMPCALew.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 3Q08 GW Sampling Event

Collection Date: September 25, 2008

LDC Report Date: November 6, 2008

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57075

Sample Identification

0839G040**
0839G038
0839X008

**Indicates sample underwent Level IV review

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 8015 for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

Samples 0839G038 and 0839X008 were identified as trip blanks. No total petroleum hydrocarbons as gasoline contaminants were found in these 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 a Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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.

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 57075

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 57075

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG 57075

No Sample Data Qualified in this SDG

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G040
Sample Collection Date: 09/25/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW49A
ARF: 57075
APPL ID: AX84406
QCG: $GAHP-081002A-126317

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	28 ++	20.0	8.60	ug/L	10/03/08	10/03/08
8015	Surrogate: BFB-FID (S)	105	75-125		%	10/03/08	10/03/08

L 11/1/08

++(G3) The analyst has noted that the chromatogram of this sample includes higher boiling hydrocarbons.

Quant Method: BTXG1001.M
Run #: 1002H19
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/21/08 11:46:00 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G038
Sample Collection Date: 09/25/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57075
APPL ID: AX84407
QCG: $GAHP-081002A-126317

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/03/08	10/03/08
8015	Surrogate: BFB-FID (S)	112	75-125		%	10/03/08	10/03/08

L 11/7-8

Quant Method: BTXG1001.M
Run #: 1002H17
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/21/08 11:46:00 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839X008
Sample Collection Date: 09/25/08

Loc ID: TRIP BLANK
ARF: 57075
APPL ID: AX84408
QCG: $GAHP-081002A-126317

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/03/08	10/03/08
8015	Surrogate: BFB-FID (S)	114	75-125		%	10/03/08	10/03/08

R 11/20

Quant Method:	BTXG1001.M
Run #:	1002H18
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/21/08 11:46:00 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19710B7
SDG #: 57075
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 11/5/08
Page: 1 of 1
Reviewer: 9
2nd Reviewer: IV

METHOD: GC TPH as Gasoline (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 9/25/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15%
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	TB = 2.3

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0839G040**	W	11	081002WMB	21		31	
2	0839G038	↓	12		22		32	
3	0839X008	↓	13		23		33	
4			14		24		34	
5			15		25		35	
6			16		26		36	
7			17		27		37	
8			18		28		38	
9			19		29		39	
10			20		30		40	

Notes:

LDC #: 19710B7
SDG #: 57075

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: n

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓	✓		
Was a MS/MSD analyzed every 20 samples of each matrix?	✓	✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 19710B7
SDG #: 57075

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: N

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 19710B7
SDG #: 57075

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: Q
2nd Reviewer: K

METHOD: GC ✓ HPLC _____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (20 std)	Recalculated CF (20 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	1942	7/23/08	Φ GRO	30078	30078	26995	26995	7.3	7.3
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INICLC.1SB

LDC #: 19710B7
SDG #: 57076

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	1002411	10/2/08	GRO	26995	26345	26345	2.4	2.4
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 19710B7
SDG #: 57075

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: 4

METHOD: ✓ **GC** ___ **HPLC**

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
BFB	DB-624	25.00	26.148	105	105	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 19710B7
SDG #: 57075

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: 9
2nd Reviewer: 4

METHOD: ✓ GC __HPLC

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory control sample percent recovery
SC = Concentration
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 081003W

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	300	NA	273	NA	91.0	91.0				
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19107B7
SDG #: 57075

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 1 Compound Name 4RU

Concentration = (3833725) (1) / (26995) (5)
= 28.4 µg/L

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments:

SAMPCALew.wpd

Hunters Point Shipyard, 3Q08 GW Sampling Event
Data Validation Reports
LDC# 19710

TPH as Extractables

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 3Q08 GW Sampling Event

Collection Date: September 18 through September 23, 2008

LDC Report Date: November 7, 2008

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57042

Sample Identification

0839G029
0839G030
0839G031
0839G032**
0839G036**
0839G037
0838T002**
0838T003
0838T005
0839G034
0838T005MS
0838T005MSD

**Indicates sample underwent Level IV review

Introduction

This data review covers 12 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

No field blanks were identified in this SDG.

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 with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
0838T005MS/MSD (0838T005)	TPH as diesel	-	-	33.4 (≤30)	UJ9 (all non-detects)	A

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

VI. Compound Quantitation and CRQLs

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

Silica gel cleanup was performed for all samples in this SDG.

VII. System Performance

The system performance was acceptable for samples on which a 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 0839G036** and 0839G037 and samples 0838T002** and 0838T003 were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples.

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 57042

SDG	Sample	Compound	Flag	A or P	Reason
57042	0838T005	TPH as diesel	UJ9 (all non-detects)	A	Matrix spike/Matrix spike duplicates (RPD)

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 57042

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG 57042

No Sample Data Qualified in this SDG

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G029
Sample Collection Date: 09/22/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW48A
ARF: 57042
APPL ID: AX84252
QCG: $DIHP-080924A-126473

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	09/24/08	10/07/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	09/24/08	10/07/08
EPA 8015B-	Surrogate: Octacosane (S)	68.8	60-140		%	09/24/08	10/07/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	73.4	60-140		%	09/24/08	10/07/08

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Quant Method: DIHP106.M
Run #: 1006050
Instrument: Apollo
Sequence: 081006
Dilution Factor: 1
Initials: EJ

Printed: 10/09/08 12:05:22 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G030
Sample Collection Date: 09/22/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW47A
ARF: 57042
APPL ID: AX84253
QCG: $DIHP-080924A-126473

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	09/24/08	10/07/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	09/24/08	10/07/08
EPA 8015B-	Surrogate: Octacosane (S)	66.3	60-140		%	09/24/08	10/07/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	67.5	60-140		%	09/24/08	10/07/08

2 1/1/2008

Quant Method: DIHP106.M
Run #: 1006051
Instrument: Apollo
Sequence: 081006
Dilution Factor: 1
Initials: EJ

Printed: 10/09/08 12:05:22 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G032
Sample Collection Date: 09/22/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR24MW05A
ARF: 57042
APPL ID: AX84255
QCG: $DIHP-080924A-126473

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	09/24/08	10/07/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	09/24/08	10/07/08
EPA 8015B-	Surrogate: Octacosane (S)	67.8	60-140		%	09/24/08	10/07/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	70.3	60-140		%	09/24/08	10/07/08

r 111208

Quant Method: DIHP106.M
Run #: 1006053
Instrument: Apollo
Sequence: 081006
Dilution Factor: 1
Initials: EJ

Printed: 10/09/08 12:05:22 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G036
Sample Collection Date: 09/23/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR33MW02
ARF: 57042
APPL ID: AX84256
QCG: $DIHP-080924A-126473

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	09/24/08	10/08/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	09/24/08	10/08/08
EPA 8015B-	Surrogate: Octacosane (S)	63.3	60-140		%	09/24/08	10/08/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	62.7	60-140		%	09/24/08	10/08/08

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Quant Method: DIHP106.M
Run #: 1006107
Instrument: Apollo
Sequence: 081006
Dilution Factor: 1
Initials: EJ

Printed: 10/09/08 12:05:22 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G037
Sample Collection Date: 09/23/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR33MW02
ARF: 57042
APPL ID: AX84257
QCG: $DIHP-080924A-126473

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	09/24/08	10/07/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	09/24/08	10/07/08
EPA 8015B-	Surrogate: Octacosane (S)	68.2	60-140		%	09/24/08	10/07/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	65.9	60-140		%	09/24/08	10/07/08

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Quant Method: DIHP106.M
Run #: 1006065
Instrument: Apollo
Sequence: 081006
Dilution Factor: 1
Initials: EJ

Printed: 10/09/08 12:05:22 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0838T002
Sample Collection Date: 09/18/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR53BO32
ARF: 57042
APPL ID: AX84259
QCG: $DIHP-080924A-126473

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	09/24/08	10/09/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	09/24/08	10/09/08
EPA 8015B-	Surrogate: Octacosane (S)	107	60-140		%	09/24/08	10/09/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	113	60-140		%	09/24/08	10/09/08

2 11/08

Quant Method: DIHP106.M
Run #: 1006140
Instrument: Apollo
Sequence: 081006
Dilution Factor: 1
Initials: EJ

Printed: 10/09/08 12:05:22 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0838T003
Sample Collection Date: 09/18/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR53BO32
ARF: 57042
APPL ID: AX84260
QCG: $DIHP-080924A-126473

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	09/24/08	10/09/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	09/24/08	10/09/08
EPA 8015B-	Surrogate: Octacosane (S)	72.4	60-140		%	09/24/08	10/09/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	82.6	60-140		%	09/24/08	10/09/08

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Quant Method: DIHP106.M
Run #: 1006141
Instrument: Apollo
Sequence: 081006
Dilution Factor: 1
Initials: EJ

Printed: 10/09/08 12:05:22 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0838T005
Sample Collection Date: 09/19/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR44BO10
ARF: 57042
APPL ID: AX84262
QCG: $DIHP-080924A-126473

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected UJ9	40.0	13.07	ug/L	09/24/08	10/09/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	09/24/08	10/09/08
EPA 8015B-	Surrogate: Octacosane (S)	78.5	60-140		%	09/24/08	10/09/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	86.9	60-140		%	09/24/08	10/09/08

R 11/12/08

Quant Method: DIHP106.M
Run #: 1006142
Instrument: Apollo
Sequence: 081006
Dilution Factor: 1
Initials: EJ

Printed: 10/09/08 12:05:22 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19710A8
SDG #: 57042
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 11/5/08
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 9/18 - 9/23/08
IIa.	Initial calibration	A	r2
IIb.	Calibration verification/ICV	A	ICV ≤ 15%
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation. silica gel clean up for all
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	D=5+6. 7+8
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0839G029	11	0838T005MS	21	080924W/MB	31	
2	0839G030	12	0838T005MSD	22		32	
3	0839G031	13		23		33	
4	0839G032**	14		24		34	
5	0839G036**	15		25		35	
6	0839G037	16		26		36	
7	0838T002**	17		27		37	
8	0838T003	18		28		38	
9	0838T005	19		29		39	
10	0839G034 *	20		30		40	

Notes: * DRO (C10-C28), MRO (C18-C30)
others. DRO (C12-C24), MRO (C24-C36)

LDC #: 19710A8
SDG #: 57104-2

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: N

Method: ✓ GC ____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?		✓		
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?	~~✓~~	✓		
Were the performance evaluation (PE) samples within the acceptance limits?	~~✓~~		✓	

LDC #: 19710B8
SDG #: 57042

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: n

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 19710A8
SDG #: 37042

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: K
2nd Reviewer: K

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?
(Y) N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y (N) N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	11/12	Diesel	( )	( )	33.4 (≤30)	9 (ND)	J/UJ/A (9)
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 19710A8
SDG#: 57042

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: Q
2nd Reviewer: K

METHOD: SW 846 Method 8015B

Parameter: Diesel

Order of regression: linear

DATE	GCMS ID	COLUMN	(Y) AREA	(X) CONC
10/06/2008	Apollo	CAP	25422613	10
			88019925	100
			378935572	400
			597345388	600
			790798719	800
			1061939968	1000

Regression Output:

Constant		-12342050.9
Std Err of Y Est		29837786.6
R Squared		0.99565
No. of Observations		6.00000
Degrees of Freedom		4.00000
X Coefficient(s)	1036602.9	0.23806
Std Err of Coef.	34254.5	0.03037

Correlation Coefficient (r) =	0.99782
Coefficient of Determination (r^2) =	0.99565

LDC #: 19710A8
SDG #: 57042

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	1006098	10/8/08	DRO	400	397.711	397.711	0.57	0.57
2	1006134	10/9/08	DRO	600	610.336	610.336	1.7	1.7
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 19710A8
SDG #: 57042

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: 4

METHOD: ✓ **GC** __ **HPLC**

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 4

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
octacosane	~~NSOB5~~	33.333	22.610	67.8	67.8	0
TPH	✓	✓	23.431	70.3	70.3	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 19710A8
SDG #: 57021

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: ✓ GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked sample concentration SC = Sample concentration
SA = Spike added
RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike MSD = Matrix spike duplicate

MS/MSD samples: 11/12

Compound	Spike Added (µg/L)		Sample Conc. (µg/L)	Spike Sample Concentration (µg/L)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)	1000	1000	ND	610	855	61.0	61.0	85.5	85.5	33.4	33.4
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19710A8
SDG #: 57012

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: 9
2nd Reviewer: 4

METHOD: ✓ GC __HPLC

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory control sample percent recovery
SC = Concentration
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 080924WMB

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)	667	NA	575	NA	86.2	86.2				
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19710A8
SDG #: 57042

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: 9
2nd Reviewer: K

METHOD: ✓ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. ND Compound Name _____

Concentration = _____

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

SAMPCALew.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 3Q08 GW Sampling Event

Collection Date: September 25, 2008

LDC Report Date: November 7, 2008

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: Level IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57075

Sample Identification

0839G040

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

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

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
10/10/08	1009021	DB-5	TPH as diesel	16	All samples in SDG 57075	J5 (all detects)	A

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 total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

No field blanks were identified in this SDG.

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.

VI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

Silica gel cleanup was performed for all samples is this SDG.

VII. System Performance

The system performance was acceptable

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.

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 57075

SDG	Sample	Compound	Flag	A or P	Reason
57075	0839G040	TPH as diesel	J5 (all detects)	A	Continuing calibration (%D)

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 57075

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG 57075

No Sample Data Qualified in this SDG

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0839G040
Sample Collection Date: 09/25/08

Loc ID: IR46MW49A
ARF: 57075
APPL ID: AX84406
QCG: $DIHP-080930A-126564

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	510 ++ J5	40.0	13.07	ug/L	09/30/08	10/10/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	09/30/08	10/10/08
EPA 8015B-	Surrogate: Octacosane (S)	67.1	60-140		%	09/30/08	10/10/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	77.5	60-140		%	09/30/08	10/10/08

L 11/7/08

++(T8) The analyst has noted that the chromatogram of this sample includes a match to hydrocarbon profiles within the range of diesel fuel.

Quant Method: DIHP106.M
Run #: 1009026
Instrument: Apollo
Sequence: 081009
Dilution Factor: 1
Initials: MA

Printed: 11/06/08 3:42:30 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19710B8
SDG #: 57075
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 11/5/08
Page: 1 of 1
Reviewer: a
2nd Reviewer: N

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 9/25/08
IIa.	Initial calibration	A	r2
IIb.	Calibration verification/ICV	MN	ICV ≤ 15%
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	
VI.	Compound Quantitation and CRQLs	A	Silica gel clean up for all
VII.	System Performance	A	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

1	0839G040 W	11	080930WMB	21		31	
2		12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 19710B8
SDG #: 57075

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: M

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?		✓		
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓	✓		
Were all the retention times within the acceptance windows?	✓	✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 19710B8
SDG #: 57075

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 1910B8
SDG #: 57075

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: [illegible]

METHOD: ✓ **GC** __ **HPLC**

2nd Reviewer: [illegible]

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
What type of continuing calibration calculation was performed? ✓ %D or __ RPD

Y N N/A Were continuing calibration standards analyzed at the required frequencies?
Y N N/A Did the continuing calibration standards meet the %D / RPD validation criteria of ≤15.0%?

Level IV Only

Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	~~Detector/~~ Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (limit)	Associated Samples	Qualifications
	10/10/08	1009027	DB-5	Diesel	16	( )	All (dets)	~~All~~ (AIS)
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
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						( )		
						( )		
						( )		

LDC #: 19710B8
SDG#: 57075

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: 4

METHOD: SW 846 Method 8015B

Parameter: Diesel

Order of regression: linear

DATE	GCMS ID	COLUMN	(Y) AREA	(X) CONC
10/06/2008	Apollo	CAP	25422613	10
			88019925	100
			378935572	400
			597345388	600
			790798719	800
			1061939968	1000

Regression Output:

Constant		-12342050.9
Std Err of Y Est		29837786.6
R Squared		0.99565
No. of Observations		6.00000
Degrees of Freedom		4.00000
X Coefficient(s)	1036602.9	0.23806
Std Err of Coef.	34254.5	0.03037

Correlation Coefficient (r) =	0.99782
Coefficient of Determination (r^2) =	0.99565

LDC #: 19710B8
SDG #: 5075

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	1009027	10/10/08	DRO	400	463.480	463.480	16	16
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 19710B8
SDG #: 57075

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Octacosane	DB-5	47.619	31.952	67.1	67.1	0
TPH	✓	✓	36.923	77.5	77.5	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 19710B8
SDG #: 57075

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: 9
2nd Reviewer: 4

METHOD: ✓ GC __HPLC

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory control sample percent recovery
SC = Concentration
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 080930W

Compound	Spike Added (mg/kg)		Spiked Sample Concentration (mg/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)	667	NA	503	NA	75.4	75.4				
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19710B8
SDG #: 57075

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 1 Compound Name DPU

Concentration = $\frac{(38338957+12342050.9)(2)(1)}{(1036602.9)(1.5)}$

= 509.01 µg/L

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments:

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

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612
ATTN: Ms. Tricia Walters

October 30, 2008

SUBJECT: Hunters Point Shipyard, 3Q08 GW Sampling Event, Data Validation

Dear Ms. Walters,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on October 17, 2008. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 19619:

SDG #	Fraction
56855, 56895, 56909, 56964, 569668/R80803 8-8743/R808037-8742	Volatiles, Polychlorinated Biphenyls, Dissolved Metals, Hexavalent Chromium, TPH as Gasoline, TPH as Extractables, Radium-226, Cobalt-60, Strontium-90, Plutonium-239, Isotopic Thorium, Cesium-137

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

- Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, SanFrancisco, CA, June 17, 2008
- 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

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

Sincerely,

Stella Cuenco

Stella S. Cuenco
Project Manager/Senior Chemist

Attachment 1

EDD

LDC #19619 (CE2-San Diego / Hunters Point Shipyard, 3Q08 GW Sampling Event)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		VOA (8260B -SIM)		PCBs (8082)		Diss. Metals SW846		TPH-G (8015)		TPH-E (8015)		Cr(VI) (7199)		Ra-226 (903.1)		Cs-137 (901.0)		Co-60 (901.1)		Sr-90 (905.0)		Pu-239 (HASL -300)		Iso. Thorium (CP902)											
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	56855	10/17/08	11/07/08	-	-	-	-	-	-	1	0	3	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-										
A	56855	10/17/08	11/07/08	-	-	-	-	-	-	0	0	2	0	2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-										
B	56895	10/17/08	11/07/08	-	-	-	-	1	0	1	0	3	0	1	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-										
B	56895	10/17/08	11/07/08	-	-	-	-	1	0	1	0	1	0	1	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-										
C	56909	10/17/08	11/07/08	7	0	8	0	-	-	0	0	4	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-										
C	56909	10/17/08	11/07/08	3	0	2	0	-	-	2	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-										
D	56964	10/17/08	11/07/08	4	0	4	0	-	-	0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-	-	-	-	-										
D	56964	10/17/08	11/07/08	1	0	1	0	-	-	1	0	-	-	-	-	2	0	-	-	-	-	-	-	-	-	-	-	-	-										
E	56668/ R808038-8743/ R808037-8742	10/17/08	11/07/08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	0	17	0	3	0	12	0	10	0	8	0										
E	56668/ R808038-8743/ R808037-8742	10/17/08	11/07/08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	0	5	0	2	0	2	0	1	0	1	0										
Total	T/SC			15	0	15	0	2	0	6	0	13	0	6	0	4	0	22	0	22	0	5	0	14	0	11	0	1	0	0	0	0	0	0	0	0	0	0	136

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

19619ST.wpd

Hunters Point Shipyard, 3Q08 GW Sampling Event
Data Validation Reports
LDC# 19619

Volatiles

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 3Q08 GW Sampling Event

Collection Date: September 4, 2008

LDC Report Date: October 28, 2008

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 56909

Sample Identification

0836G019
0836G020
0836G022
0836X004
0836G021
0836G024**
0836G024DL1**
0836G024DL2**
0836G018
0836X005

**Indicates sample underwent Level IV review

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 8260B for Volatiles.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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
0836X005	All TCL compounds	A headspace was apparent in the sample containers.	There should be no headspace in the sample containers.	UJ2 (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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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

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

V. Blanks

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

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
080916ACMB	9/16/08	Chloroform	0.07 ug/L	0836G019 0836G020 0836G022 0836G018 0836X005
080910ACMB	9/10/08	1,2-Dichlorobenzene	0.17 ug/L	0836G021

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
0836G021	1,2-Dichlorobenzene	0.39 ug/L	0.5U ug/L

Samples 0836X004, 0836G018, and 0836X005 were identified as trip blanks. No volatile contaminants were found in these 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
0836G019	1,2-Dichloroethane-d4	124 (70-120)	All TCL compounds	J13 (all detects)	A

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
0836G022	1,2-Dichloroethane-d4	124 (70-120)	All TCL compounds	J13 (all detects)	A
0836G024**	Dibromofluoromethane Toluene-d8	78.6 (85-115) 74.2 (85-120)	All TCL compounds	J13 (all detects) UJ13 (all non-detects)	A

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 a 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 with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
0836G024**	1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzene Chlorobenzene cis-1,2-Dichloroethene Tetrachloroethene trans-1,2-Dichloroethene Trichloroethene	Sample result exceeded calibration range.	Reported result should be within calibration range.	J20 (all detects) J20 (all detects) J20 (all detects) J20 (all detects) J20 (all detects) J20 (all detects) J20 (all detects) J20 (all detects) J20 (all detects)	A

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

XV. Overall Assessment of Data

The overall assessment of data was acceptable. In the case where more than one result was reported for an individual sample, the least technically acceptable results were rejected as follows:

Sample	Compound	Flag	A or P
0836G024**	1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzene Chlorobenzene cis-1,2-Dichloroethene Tetrachloroethene trans-1,2-Dichloroethene Trichloroethene	R22 R22 R22 R22 R22 R22 R22 R22 R22	A

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

XVI. Field Duplicates

Samples 0836G019 and 0836G020 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	0836G019	0836G020	
Trichlorofluoromethane	0.30	0.25	18

Hunters Point Shipyard, 3Q08 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 56909

SDG	Sample	Compound	Flag	A or P	Reason
56909	0836X005	All TCL compounds	UJ2 (all non-detects)	A	Sample condition (headspace)
56909	0836G019 0836G022	All TCL compounds	J13 (all detects)	A	Surrogate spikes (%R)
56909	0836G024**	All TCL compounds	J13 (all detects) UJ13 (all non-detects)	A	Surrogate spikes (%R)
56909	0836G024**	1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzene Chlorobenzene cis-1,2-Dichloroethene Tetrachloroethene trans-1,2-Dichloroethene Trichloroethene	J20 (all detects) J20 (all detects) J20 (all detects) J20 (all detects) J20 (all detects) J20 (all detects) J20 (all detects) J20 (all detects) J20 (all detects)	A	Compound quantitation and CRQLs
56909	0836G024**	1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzene Chlorobenzene cis-1,2-Dichloroethene Tetrachloroethene trans-1,2-Dichloroethene Trichloroethene	R22 R22 R22 R22 R22 R22 R22 R22 R22	A	Overall assessment of data

Hunters Point Shipyard, 3Q08 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 56909

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P	Code
56909	0836G021	1,2-Dichlorobenzene	0.5U ug/L	A	7

Hunters Point Shipyard, 3Q08 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 56909

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0836X004
Sample Collection Date: 9/4/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 56909
APPL ID: AX83389
QCG: $86HP-080906AC-125962

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	9/7/2008	9/7/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	9/7/2008	9/7/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	9/7/2008	9/7/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	9/7/2008	9/7/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	9/7/2008	9/7/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	9/7/2008	9/7/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	9/7/2008	9/7/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	9/7/2008	9/7/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	9/7/2008	9/7/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	9/7/2008	9/7/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	9/7/2008	9/7/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	9/7/2008	9/7/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	9/7/2008	9/7/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	9/7/2008	9/7/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	9/7/2008	9/7/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	9/7/2008	9/7/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	9/7/2008	9/7/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	9/7/2008	9/7/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	9/7/2008	9/7/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	9/7/2008	9/7/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	9/7/2008	9/7/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	9/7/2008	9/7/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	9/7/2008	9/7/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	9/7/2008	9/7/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	9/7/2008	9/7/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	9/7/2008	9/7/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	9/7/2008	9/7/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	9/7/2008	9/7/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	9/7/2008	9/7/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	9/7/2008	9/7/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	9/7/2008	9/7/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	9/7/2008	9/7/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	9/7/2008	9/7/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	9/7/2008	9/7/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	9/7/2008	9/7/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	9/7/2008	9/7/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	9/7/2008	9/7/2008

1L/02P28

Quant Method: C86HPW.M
Run #: 0906C16
Instrument: Chico
Sequence: C080906
Dilution Factor: 1
Initials: GM

Printed: 9/19/2008 1:50:05 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0836X004
Sample Collection Date: 9/4/2008

Loc ID: TRIP BLANK
ARF: 56909
APPL ID: AX83389
QCG: $86HP-080906AC-125962

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	9/7/2008	9/7/2008
EPA 8260B	Surrogate Recovery (BFB)	110	75-120		%	9/7/2008	9/7/2008
EPA 8260B	Surrogate Recovery (DBFM)	99.0	85-115		%	9/7/2008	9/7/2008
EPA 8260B	Surrogate Recovery (DCA)	118	70-120		%	9/7/2008	9/7/2008
EPA 8260B	Surrogate Recovery (TOL)	95.2	85-120		%	9/7/2008	9/7/2008

2L/2808

Quant Method: C86HPW.M
Run #: 0906C16
Instrument: Chico
Sequence: C080906
Dilution Factor: 1
Initials: GM

Printed: 9/19/2008 1:50:05 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0836G021
Sample Collection Date: 09/04/08

Loc ID: IR39MW21A
ARF: 56909
APPL ID: AX83390
QCG: $86HP-080910AC-125963

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	09/11/08	09/11/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	09/11/08	09/11/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	09/11/08	09/11/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	09/11/08	09/11/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	09/11/08	09/11/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	09/11/08	09/11/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	09/11/08	09/11/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	09/11/08	09/11/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	09/11/08	09/11/08
EPA 8260B	1,2-Dichlorobenzene	0.39 B J 0.547	0.5	0.17	ug/L	09/11/08	09/11/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	09/11/08	09/11/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	09/11/08	09/11/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	09/11/08	09/11/08
EPA 8260B	Benzene	23	0.5	0.16	ug/L	09/11/08	09/11/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	09/11/08	09/11/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	09/11/08	09/11/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	09/11/08	09/11/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	09/11/08	09/11/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	09/11/08	09/11/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	09/11/08	09/11/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	09/11/08	09/11/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	09/11/08	09/11/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	09/11/08	09/11/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	09/11/08	09/11/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	09/11/08	09/11/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	09/11/08	09/11/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	09/11/08	09/11/08
EPA 8260B	Ethyl benzene	0.40 J	0.5	0.23	ug/L	09/11/08	09/11/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	09/11/08	09/11/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	09/11/08	09/11/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	09/11/08	09/11/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	09/11/08	09/11/08
EPA 8260B	Toluene	1.0	0.5	0.17	ug/L	09/11/08	09/11/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	09/11/08	09/11/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	09/11/08	09/11/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	09/11/08	09/11/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	09/11/08	09/11/08

= Estimated value.
= The analyte was found in a method blank, as well as in the sample.

1L/02808

Quant Method: C86HPW.M
Run #: 0910C19
Instrument: Chico
Sequence: C080910
Dilution Factor: 1
Initials: GM

Printed: 09/23/08 3:28:38 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0836G021
Sample Collection Date: 09/04/08

Loc ID: IR39MW21A
ARF: 56909
APPL ID: AX83390
QCG: $86HP-080910AC-125963

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	0.43 J	0.5	0.19	ug/L	09/11/08	09/11/08
EPA 8260B	Surrogate Recovery (BFB)	102	75-120		%	09/11/08	09/11/08
EPA 8260B	Surrogate Recovery (DBFM)	102	85-115		%	09/11/08	09/11/08
EPA 8260B	Surrogate Recovery (DCA)	101	70-120		%	09/11/08	09/11/08
EPA 8260B	Surrogate Recovery (TOL)	112	85-120		%	09/11/08	09/11/08

J = Estimated value.
B = The analyte was found in a method blank, as well as in the sample.

LL/09/08

Quant Method: C86HPW.M
Run #: 0910C19
Instrument: Chico
Sequence: C080910
Dilution Factor: 1
Initials: GM

Printed: 09/23/08 3:28:38 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0836G018
Sample Collection Date: 9/4/2008

Loc ID: TRIP BLANK
ARF: 56909
APPL ID: AX83393
QCG: $86HP-080916AC-125961

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	9/16/2008	9/16/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	9/16/2008	9/16/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	9/16/2008	9/16/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	9/16/2008	9/16/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	9/16/2008	9/16/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	9/16/2008	9/16/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	9/16/2008	9/16/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	9/16/2008	9/16/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	9/16/2008	9/16/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	9/16/2008	9/16/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	9/16/2008	9/16/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	9/16/2008	9/16/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	9/16/2008	9/16/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	9/16/2008	9/16/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	9/16/2008	9/16/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	9/16/2008	9/16/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	9/16/2008	9/16/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	9/16/2008	9/16/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	9/16/2008	9/16/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	9/16/2008	9/16/2008

Quant Method: C86HPW.M
Run #: 0916C09
Instrument: Chico
Sequence: C080910
Dilution Factor: 1
Initials: GM

Printed: 9/19/2008 1:50:05 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0836G018
Sample Collection Date: 9/4/2008

Loc ID: TRIP BLANK
ARF: 56909
APPL ID: AX83393
QCG: $86HP-080916AC-125961

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	Surrogate Recovery (BFB)	102	75-120		%	9/16/2008	9/16/2008
EPA 8260B	Surrogate Recovery (DBFM)	110	85-115		%	9/16/2008	9/16/2008
EPA 8260B	Surrogate Recovery (DCA)	119	70-120		%	9/16/2008	9/16/2008
EPA 8260B	Surrogate Recovery (TOL)	112	85-120		%	9/16/2008	9/16/2008

XL 9/20/08

Quant Method: C86HPW.M
Run #: 0916C09
Instrument: Chico
Sequence: C080910
Dilution Factor: 1
Initials: GM

Printed: 9/19/2008 1:50:05 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0836X005
Sample Collection Date: 9/4/2008

Loc ID: TRIP BLANK
ARF: 56909
APPL ID: AX83394
QCG: $86HP-080916AC-125961

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	9/16/2008	9/16/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	9/16/2008	9/16/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	9/16/2008	9/16/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	9/16/2008	9/16/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	9/16/2008	9/16/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	9/16/2008	9/16/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	9/16/2008	9/16/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	9/16/2008	9/16/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	9/16/2008	9/16/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	9/16/2008	9/16/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	9/16/2008	9/16/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	9/16/2008	9/16/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	9/16/2008	9/16/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	9/16/2008	9/16/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	9/16/2008	9/16/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	9/16/2008	9/16/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	9/16/2008	9/16/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	9/16/2008	9/16/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	9/16/2008	9/16/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	9/16/2008	9/16/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	9/16/2008	9/16/2008

= Recovery (or RPD) is outside QC limits.

Quant Method: C86HPW.M
Run #: 0916C10
Instrument: Chico
Sequence: C080910
Dilution Factor: 1
Initials: GM

Printed: 9/19/2008 1:50:05 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0836X005
Sample Collection Date: 9/4/2008

Loc ID: TRIP BLANK
ARF: 56909
APPL ID: AX83394
QCG: $86HP-080916AC-125961

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected UJ2	0.5	0.19	ug/L	9/16/2008	9/16/2008
EPA 8260B	Surrogate Recovery (BFB)	101	75-120		%	9/16/2008	9/16/2008
EPA 8260B	Surrogate Recovery (DBFM)	112	85-115		%	9/16/2008	9/16/2008
EPA 8260B	Surrogate Recovery (DCA)	123 #	70-120		%	9/16/2008	9/16/2008
EPA 8260B	Surrogate Recovery (TOL)	111	85-120		%	9/16/2008	9/16/2008

! = Recovery (or RPD) is outside QC limits.

SC 10/8/08

Quant Method: C86HPW.M
Run #: 0916C10
Instrument: Chico
Sequence: C080910
Dilution Factor: 1
Initials: GM

Printed: 9/19/2008 1:50:05 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19619C1a
SDG #: 56909
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 10/21/08
Page: 1 of 1
Reviewer: FZ
2nd Reviewer: M

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 9/4/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	% RSD, r^2 ≥0.990
IV.	Continuing calibration/ICV	A	ICV ≤ 25
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	-
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	SW	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	~~A~~ SW	
XVI.	Field duplicates	SW	D= 1,2
XVII.	Field blanks	ND	TB= 4, 8, 9

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	1	0836G019 D (water)	11	1	080916AC *	21		31	
2	1	0836G020 D	12	2	080906AC	22		32	
3	1	0836G022	13	3	080910AC	23		33	
4	2	0836X004 TB	14	4	080910AS	24		34	
5	3	0836G021	15	4	080910AS1	25		35	
6	2	0836G024**	16	4	0836G024DL2 ** 100X	26		36	
7	4	0836G024DL1** 100X	17			27		37	
8	1	0836G018 TB	18			28		38	
9	1	0836X005 TB	19			29		39	
10			20			30		40	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 19619C/a
SDG #: per cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: FZ
2nd Reviewer: AL

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) > 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Surrogate spikes				
Were all surrogate %R within QC limits?		✓		
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?		✓		
VII. Matrix Spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.			✓	
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 19619c1a
SDG #: all cover

VALIDATION FINDINGS CHECKLIST

Reviewer: PT
2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?			✓	
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 19619C/a
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

All circled dates have exceeded the technical holding times.
Y N N/A Were all cooler temperatures within validation criteria?

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Sample ID	Matrix	Preserved	Sampling Date	Extraction date	Analysis date	Total # of Days	Qualifier
9	W	VOA	contain	headspace			J/UJ/A
							ND (2)

TECHNICAL HOLDING TIME CRITERIA

Water unpreserved: Aromatic within 7 days, non-aromatic within 14 days of sample collection.
Water preserved: Both within 14 days of sample collection.
Soil: Both within 14 days of sample collection.

SDG #: [illegible]

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

code # 7

Blank analysis date: 9/16/08
Conc. units: ug/L
Associated Samples: 1 → 3, 8, 9 (ND)

Compound	Blank ID	Sample Identification								
	080916AC									
~~Methylene chloride~~ K	0.07									
~~Acetone~~										
CRQL										

Blank analysis date: 9/10/08
Conc. units: ug/L
Associated Samples: 5 (ND) Code #7

Compound	Blank ID	Sample Identification								
	080910AC		5							
~~Methylene chloride~~ J J J	0.17		0.39/0.54							
~~Acetone~~										
CRQL										

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 17617C/a
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Surrogate Spikes

Page: 1 of 1
Reviewer: FT
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all surrogate %R within QC limits?

Y (N) N/A If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria?

#	Date	Sample ID	Surrogate	%Recovery (Limits)	Qualifications
		1	DCE	124 (70-120)	J/P det ND+Det (13)
				( )	(KK Det)
				( )	
		3	↓	124 (↓)	↓ ND+Det (13)
				( )	(KK det)
				( )	
				( )	
		9	↓	123 (↓)	J/P det ND (13)
				( )	
				( )	
		6	DFM	78.6 (85-115)	J/UJ/A (ND+det)
			TOL	74.2 (85-120)	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	QC Limits (Soil)	QC Limits (Water)
SMC1 (TOL) = Toluene-d8	81-117	88-110
SMC2 (BFB) = Bromofluorobenzene	74-121	86-115
SMC3 (DCE) = 1,2-Dichloroethane-d4	80-120	80-120
SMC4 (DFM) = Dibromofluoromethane	80-120	86-118

SUR.1SB

LDC #: 19619C/a
SDG #: per comp

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and CRQLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Y N N/A Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

#	Date	compound ~~Sample ID~~	Finding	Associated Samples	Qualifications
		JJJ, FFF, HHH, V,	x'd cal Range	6	J/A det. (20)
		DD, QQQ, AA,			
		PPP, S			

Comments: See sample calculation verification worksheet for recalculations

LDC #: 19619 C/a
SDG #: pu cond

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Date	~~Sample ID~~ compound	Finding	Associated Samples	Qualifications
		JJJ, FFF, HHH,	x'd cal Range	6	R/A (22)
		V, DD, QQQ, AA,			
		PPP, S			

Comments:

OVR.1SB

LDC #: 196196/a
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD
	1	2	
KK	0.30	0.25	18

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

LDC #: 19619C/a
SDG #: all cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL CHICO	9/6/08	Benzene (1st internal standard)	6.310	6.310	6.288	6.288	10	10
			Ethylbenzene (2nd internal standard)	7.993	7.993	7.734	7.734	6.3	6.3
			JJJ (1,2-DCB) (3rd internal standard)	6.277	6.277	6.320	6.320	8.7	8.7
2	ICAL Sweetgrass	9/6/08	V (1st internal standard)	4.452	4.452	4.522	4.522	5.6	5.6
			DD (2nd internal standard)	3.808	3.808	3.879	3.879	4.1	4.1
			JJJ (3rd internal standard)	5.795	5.795	5.886	5.886	5.4	5.4
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19619C/a
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	0906CC10W	9/6/08	V (1st internal standard)	6.288	6.355	6.355	1.1	1.1
			EE (2nd internal standard)	7.734	7.952	7.952	2.8	2.8
			JJJ (3rd internal standard)	6.320	6.039	6.039	4.5	4.5
2	0910501W	9/10/08	V (1st internal standard)	4.522	4.655	4.655	2.9	2.9
			DD (2nd internal standard)	3.879	4.011	4.011	3.4	3.4
			JJJ (3rd internal standard)	5.886	6.015	6.015	2.2	2.2
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 196196a
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	18.953	14.05670	74.2	74	0
Bromofluorobenzene	17.821	19.26727	108	108	↓
1,2-Dichloroethane-d4	18.507	16.85934	91.1	91	↓
Dibromofluoromethane	18.764	14.75346	78.6	78.6	↓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 19619c/a
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCS - LCSD I * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: 080906AC

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	10.0	NA	11.4	NA	114	114				
Trichloroethene	↓	↓	10.7	↓	107	107				
Benzene	↓	↓	10.1	↓	101	101				
Toluene	↓	↓	10.3	↓	103	103				
Chlorobenzene	↓	↓	9.58	↓	95.8	95.8	NA			

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 19619C1a
SDG #: pu cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: PZ
2nd reviewer: M

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. #6, Toluene

$$\text{Conc.} = \frac{(200183)(25)(\quad)(\quad)}{(27040)(5.139)(\quad)(\quad)}$$

= 36 ug/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 3Q08 GW Sampling Event

Collection Date: September 4, 2008

LDC Report Date: October 28, 2008

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 56909

Sample Identification

0836G019
0836G020
0836G022
0836X004
0836G021
0836G021RE
0836G024**
0836G024DL**
0836G018
0836X005

**Indicates sample underwent EPA Level IV review

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 8260B using Selected Ion Monitoring (SIM) for Volatiles.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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
0836X005	All TCL compounds	A headspace was apparent in the sample containers.	There should be no headspace in the sample containers.	UJ2 (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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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

All of the continuing calibration RRF values were within 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
080911ASMB	9/11/08	Carbon tetrachloride Vinyl chloride	0.057 ug/L 0.044 ug/L	0836G021 0836G024** 0836G024DL**

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
0836G021	Carbon tetrachloride Vinyl chloride	0.049 ug/L 0.039 ug/L	0.1U ug/L 0.1U ug/L

Samples 0836X004, 0836G018, and 0836X005 were identified as trip blanks. No volatile contaminants were found in these 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
0836G019	Dibromofluoromethane	122 (85-115)	All TCL compounds	NA	-
0836G020	Dibromofluoromethane	120 (85-115)	All TCL compounds	NA	-

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
0836G022	Dibromofluoromethane	127 (85-115)	All TCL compounds	NA	-
0836G021	1,2-Dichloroethane-d4	128 (70-120)	All TCL compounds	J13 (all detects)	P
0836G021RE	Dibromofluoromethane	125 (85-115)	All TCL compounds	NA	-
0836X005	Dibromofluoromethane	119 (85-115)	All TCL compounds	NA	-

Although the above listed %Rs flagged "NA" demonstrate a high bias, the affected compounds in the associated samples were non-detected and did not warrant the qualification of the data.

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 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 with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
0836G024**	Vinyl chloride	Sample result exceeded calibration range.	Reported result should be within calibration range.	J20 (all detects)	A

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 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.

XV. Overall Assessment of Data

The overall assessment of data was acceptable. In the case where more than one result was reported for an individual sample, the least technically acceptable results were rejected as follows:

Sample	Compound	Flag	A or P
0836G024**	Vinyl chloride	R22	A
0836G021	Carbon tetrachloride	R22	A

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

XVI. Field Duplicates

Samples 0836G019 and 0836G020 were identified as field duplicates. No volatiles were detected in any of the samples.

Hunters Point Shipyard, 3Q08 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 56909

SDG	Sample	Compound	Flag	A or P	Reason
56909	0836X005	All TCL compounds	UJ2 (all non-detects)	A	Sample condition (headspace)
56909	0836G021	All TCL compounds	J13 (all detects)	P	Surrogate recovery (%R)
56909	0836G024**	Vinyl chloride	J20 (all detects)	A	Compound quantitation and CRQLs
56909	0836G024**	Vinyl chloride	R22	A	Overall assessment of data
56909	0836G021	Carbon tetrachloride	R22	A	Overall assessment of data

Hunters Point Shipyard, 3Q08 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 56909

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P	Code
56909	0836G021	Carbon tetrachloride Vinyl chloride	0.1U ug/L 0.1U ug/L	A	7

Hunters Point Shipyard, 3Q08 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 56909

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0836X004
Sample Collection Date: 9/4/2008

Loc ID: TRIP BLANK
ARF: 56909
APPL ID: AX83389
QCG: $86HPS-080917AS-125974

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	9/17/2008	9/17/2008
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	9/17/2008	9/17/2008
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: 1,2-Dichloroethane	111	70-120		%	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: 4-Bromofluorobenz	95.8	75-120		%	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: Dibromofluorometh	112	85-115		%	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: Toluene-d8	100	85-120		%	9/17/2008	9/17/2008

RL 102808

Quant Method:	S86SIM.M
Run #:	0917S06
Instrument:	Sweetpea
Sequence:	S080916A
Dilution Factor:	1
Initials:	GM

Printed: 9/19/2008 1:58:59 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0836G021
Sample Collection Date: 9/4/2008

Loc ID: IR39MW21A
ARF: 56909
APPL ID: AX83390
QCG: $86HPS-080911AS-125973

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	9/11/2008	9/11/2008
EPA 8260B	Carbon tetrachloride	0.049 B J	~~0.14~~ 0.1 ~~7~~ ~~13~~	0.03	ug/L R22	9/11/2008	9/11/2008
EPA 8260B	Vinyl chloride	0.039 B J	0.14 0.1 7, 13	0.03	ug/L	9/11/2008	9/11/2008
EPA 8260B	Surrogate recovery: 1,2-Dichloroethane	128 #	70-120		%	9/11/2008	9/11/2008
EPA 8260B	Surrogate recovery: 4-Bromofluorobenz	111	75-120		%	9/11/2008	9/11/2008
EPA 8260B	Surrogate recovery: Dibromofluorometh	104	85-115		%	9/11/2008	9/11/2008
EPA 8260B	Surrogate recovery: Toluene-d8	114	85-120		%	9/11/2008	9/11/2008

SL 102808

= Estimated value.
= The analyte was found in a method blank, as well as in the sample.
= Recovery (or RPD) is outside QC limits.

Quant Method:	S86SIM.M
Run #:	0911S13
Instrument:	Sweetpea
Sequence:	S080911
Dilution Factor:	1
Initials:	GM

Printed: 9/19/2008 1:58:59 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0836G021
Sample Collection Date: 9/4/2008

Loc ID: IR39MW21A
ARF: 56909
APPL ID: AX83390
QCG: $86HPS-080917AS1-125976

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: 1,2-Dichloroethane	111	70-120		%	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: 4-Bromofluorobenz	98.7	75-120		%	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: Dibromofluorometh	125 #	85-115		%	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: Toluene-d8	101	85-120		%	9/17/2008	9/17/2008

K/102808

= Recovery (or RPD) is outside QC limits.

Quant Method: S86SIM.M
Run #: 0917S11
Instrument: Sweetpea
Sequence: S080916A
Dilution Factor: 1
Initials: GM

Printed: 9/19/2008 1:47:44 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0836G018
Sample Collection Date: 9/4/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 56909
APPL ID: AX83393
QCG: $86HPS-080917AS-125974

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	9/17/2008	9/17/2008
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	9/17/2008	9/17/2008
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: 1,2-Dichloroethane	107	70-120		%	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: 4-Bromofluorobenz	96.2	75-120		%	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: Dibromofluorometh	99.6	85-115		%	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: Toluene-d8	101	85-120		%	9/17/2008	9/17/2008

12/02/08

Quant Method: S86SIM.M
Run #: 0917S07
Instrument: Sweetpea
Sequence: S080916A
Dilution Factor: 1
Initials: GM

Printed: 9/19/2008 1:58:59 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0836X005
Sample Collection Date: 9/4/2008

Loc ID: TRIP BLANK
ARF: 56909
APPL ID: AX83394
QCG: $86HPS-080917AS-125974

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected UJ2	0.1	0.03	ug/L	9/17/2008	9/17/2008
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	9/17/2008	9/17/2008
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: 1,2-Dichloroethane	117	70-120		%	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: 4-Bromofluorobenz	97.3	75-120		%	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: Dibromofluorometh	119 #	85-115		%	9/17/2008	9/17/2008
EPA 8260B	Surrogate recovery: Toluene-d8	102	85-120		%	9/17/2008	9/17/2008

KL/02808

= Recovery (or RPD) is outside QC limits.

Quant Method: S86SIM.M
Run #: 0917S08
Instrument: Sweetpea
Sequence: S080916A
Dilution Factor: 1
Initials: GM

Printed: 9/19/2008 1:58:59 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19619C1c
SDG #: 56909
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 10/20/08
Page: 1 of 1
Reviewer: P
2nd Reviewer: R

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 9/4/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	% RSD, r ≥ 0.990
IV.	Continuing calibration/ICV	A	ICV ≤ 25
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	SW	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	ND	D = 1,2
XVII.	Field blanks	ND	TB = 4, 9, 10

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

water

1 2	0836G019 D	11 1	080911AS	21		31	
2 2	0836G020 D	12 2	080917AS	22		32	
3 2	0836G022	13		23		33	
4 2	0836X004 TB	14		24		34	
5 1	0836G021	15		25		35	
6 2	0836G021RE	16		26		36	
7 1	0836G024**	17		27		37	
8 1	0836G024DL**	18		28		38	
9 2	0836G018 TB	19		29		39	
10 2	0836X005 TB	20		30		40	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 196194c
SDG #: per cover

VALIDATION FINDINGS CHECKLIST

Reviewer: FZ
2nd Reviewer: NV

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) > 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?		✓		
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?	✓	N		
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.			✓	
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 19619C/c
SDG #: all cover

VALIDATION FINDINGS CHECKLIST

Reviewer: PT
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?			✓	
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 19679/c
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

All circled dates have exceeded the technical holding times.
Y N N/A Were all cooler temperatures within validation criteria?

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Sample ID	Matrix	Preserved	Sampling Date	Extraction date	Analysis date	Total # of Days	Qualifier
10	water	yes	all VOAs	contained	Head space		J/UJ/A
							ND (2)

TECHNICAL HOLDING TIME CRITERIA

Water unpreserved: Aromatic within 7 days, non-aromatic within 14 days of sample collection.
Water preserved: Both within 14 days of sample collection.
Soil: Both within 14 days of sample collection.

SDG #: [illegible]

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

(7)

Blank analysis date: 9/11/08
Conc. units: ug/l
Associated Samples: 5, 7, 8

Compound	Blank ID	Sample Identification								
	080911AS		5							
~~Methylene chloride~~	0.057		0.049/0.1U							
~~Acetone~~	0.044		0.039/0.1U							
CRQL										

Blank analysis date:
Conc. units:
Associated Samples:

Compound	Blank ID	Sample Identification								
Methylene chloride										
Acetone										
CRQL										

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 11061C4
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Surrogate Spikes

Page: 1 of 1
Reviewer: FT
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all surrogate %R within QC limits?

Y N N/A If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria?

#	Date	Sample ID	Surrogate	%Recovery (Limits)	Qualifications
		1	DFM	122 (85-115)	J/Pdet (ND) (13)
				( )	
				( )	
		2	↓	120 (↓)	↓
				( )	
		3	↓	127 (↓)	↓
				( )	
		5	DCE	128 (70-120)	J/Pdet (ND+Det) (13)
				( )	(8 + 9 detect)
				( )	
		6	DFM	125 (85-115)	J/Pdet (ND) (13)
				( )	
		10	DFM	119 (85-115)	J/Pdet (ND) (13)
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	QC Limits (Soil)	QC Limits (Water)
SMC1 (TOL) = Toluene-d8	81-117	88-110
SMC2 (BFB) = Bromofluorobenzene	74-121	86-115
SMC3 (DCE) = 1,2-Dichloroethane-d4	80-120	80-120
SMC4 (DFM) = Dibromofluoromethane	80-120	86-118

SUR.1SB

LDC #: 196/9C/c
SDG #: per comm

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and CRQLs

Reviewer: M
2nd Reviewer: U

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Y N N/A Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

#	Date	~~Sample ID~~ compd	Finding	Associated Samples	Qualifications
		C	x'd cal Range	7	J/A det (20)

Comments: See sample calculation verification worksheet for recalculations

LDC #: 17617 C/C
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Date	~~Sample~~ compound ID	Finding	Associated Samples	Qualifications
		C	x'd cal range	7	R/A (22)
		D	was re-analyzed	5	R/A (22)
			(ND on re-analysis)		

Comments:

OVR.1SB

LDC #: 19619C1c
SDG #: all cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (s std)	Recalculated RRF (s std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL sweetpea	9/11/08	vinylchloride (1st internal standard)	1.017	1.017	0.8774	0.8774	29	29
			(2nd internal standard)						
			(3rd internal standard)						
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19619C1C
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1			(1st internal standard)	samples				
			(2nd internal standard)	analyzed after	IAL			
			(3rd internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19619C1c
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 8

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	11.527	12.14229	105	105	0
Bromofluorobenzene	11.717	11.21287	95.7	95.7	
1,2-Dichloroethane-d4	11.276	11.58253	103	103	
Dibromofluoromethane	13.174	12.51774	95.0	95	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 19619C/c
SDG #: pll cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCS - LCSD I * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: 080911AS

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~1,1-Dichloroethene~~ L	10.0	na	8.90	na	89.0	89.0				
Trichloroethene a	↓	↓	9.39	↓	93.9	93.9				
Benzene c	↓	↓	8.62	↓	86.2	86.2	na			
Toluene										
~~Chlorobenzene~~										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 19619C/c
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: PJ
2nd reviewer: M

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. #8, C:

Conc. = $\frac{(543719)(75)(2000)}{(425380)(0.8774)(\quad)(\quad)}$

= 73,000 ug/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Hunters Point Shipyard, 3Q08 GW Sampling Event
Data Validation Reports
LDC# 19619

Hexavalent Chromium

LDC

LDC Report# 19619B6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 3Q08 GW Sampling Event

Collection Date: September 3, 2008

LDC Report Date: October 28, 2008

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 56895

Sample Identification

0836G016**
0836G017
0836G016MS
0836G016MSD

**Indicates sample underwent Level IV review

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 7199 for Hexavalent Chromium.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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.

No field blanks were identified in this SDG.

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 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 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.

Hunters Point Shipyard, 3Q08 GW Sampling Event
Hexavalent Chromium - Data Qualification Summary - SDG 56895

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 3Q08 GW Sampling Event
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 56895

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 3Q08 GW Sampling Event
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG 56895

No Sample Data Qualified in this SDG

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0836G016

Sample Collection Date: 09/03/08

Loc ID: IR02MW375A

APPL ID: AX83294

ARF: 56895

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	Not detected	0.5	0.09	ug/L	09/04/08	09/04/08

4/10/2008

Printed: 09/24/08 1:16:05 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0836G017

Sample Collection Date: 09/03/08

Loc ID: IR02MW374A

APPL ID: AX83296

ARF: 56895

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	Not detected	0.5	0.09	ug/L	09/04/08	09/04/08

L/07/08

Printed: 09/24/08 1:16:05 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19619B6
SDG #: 56895
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 10-20-09
Page: 1 of 1
Reviewer: MG
2nd Reviewer: [illegible]

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7199)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	~~A~~ SW	Sampling dates: 9-3-08
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation
all water

1	0836G016**	11		21		31	
2	0836G017	12		22		32	
3	0836G016MS	13		23		33	
4	0836G016MSD	14		24		34	
5	PBW	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 19619B6
SDG #: 56895

VALIDATION FINDINGS CHECKLIST

Reviewer: MG
2nd Reviewer: ✓

Method: Inorganics (EPA Method 7199)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓	✓		
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 1961B6
SDG #: 56895

VALIDATION FINDINGS CHECKLIST

Reviewer: MG
2nd Reviewer: ✓

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 19619B6
SDG #: 56895

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: MG
2nd Reviewer: ✓

METHOD: Inorganics, Method 7199

The correlation coefficient (r) for the calibration of Cr VI was recalculated. Calibration date: 8-26-08

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found / True x 100 Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte		Conc (units)	Area (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration	Cr VI	Blank	–	–	r^2=0.999869	r^2=0.999869	Y
Calibration verification		Standard 1	0.5 (µg/L)	6575			
		Standard 2	1.0 ( )	12235			
		Standard 3	5.0 ( )	73519			
		Standard 4	10. ( )	149136			
		Standard 5	20. ( )	305933			
		Standard 6	–	–			
		Standard 7	–	–			
Calibration verification	0849 Cr VI	CCV1	9.995 (µg/L)	10 (µg/L)	100.0	99.9	↓
Calibration verification	–	–	–	–	–	–	–
Calibration verification	–	–	–	–	–	–	–

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CALCLC.6

LDC #: 19619B6
SDG #: 56895

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MG
2nd Reviewer: ✓

METHOD: Inorganics, Method 7199

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
0856 LCS	Laboratory control sample	Cr VI	10.034 (µg/L)	10.0 (µg/L)	100	100	Y
1433 3	Matrix spike sample	Cr VI	(SSR-SR) 10.743 (µg/L)	10.0 (µg/L)	107	107	↓
1433/1439 3/4	Duplicate sample	Cr VI	10.743 (µg/L)	10.686 (µg/L)	* 0.5	0.0	↓

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results. ~~* > 10% D but close enough ; no qual~~ ✓

TOTCLC.6

LDC #: 19619B6
SDG #: 56895

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MG
2nd reviewer: [illegible]

METHOD: Inorganics, Method 7199

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for level IV sample = N.D. ~~reported with a positive detect were recalculated and verified using the following equation:~~

Concentration = Recalculation:

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)

Note:

RECALC.6

LDC Report# 19619A7

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 3Q08 GW Sampling Event

Collection Date: August 26 through August 27, 2008

LDC Report Date: October 22, 2008

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 56855

Sample Identification

0835G010
0835G011**
0835G012
0835G013**
0835X002

**Indicates sample underwent Level IV review

Introduction

This data review covers 5 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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
0835G010	TPH as gasoline	A headspace was apparent in the sample containers.	There should be no headspace in the sample containers.	UJ2 (all non-detects)	A

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

Samples 0835G010 and 0835X002 were identified as trip blanks. No total petroleum hydrocarbons as gasoline contaminants were found in these 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 a Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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 0835G011** and 0835G012 were identified as field duplicates. No total petroleum hydrocarbons as gasoline were detected in any of the samples.

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 56855

SDG	Sample	Compound	Flag	A or P	Reason
56855	0835G010	TPH as gasoline	UJ2 (all non-detects)	A	Sample condition (headspace)

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 56855

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG 56855

No Sample Data Qualified in this SDG

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0835G010
Sample Collection Date: 08/26/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 56855
APPL ID: AX83108
QCG: $GAHP-080906A-125775

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected UJ2	20.0	8.60	ug/L	09/06/08	09/06/08
8015	Surrogate: BFB-FID	89.2	75-125		%	09/06/08	09/06/08

2/02/08

Quant Method: HBTXGOK.M
Run #: 0905H28
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 09/24/08 1:47:18 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0835G011
Sample Collection Date: 08/26/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW47A
ARF: 56855
APPL ID: AX83109
QCG: $GAHP-080906A-125775

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/06/08	09/06/08
8015	Surrogate: BFB-FID	93.1	75-125		%	09/06/08	09/06/08

L 10/7/08

Quant Method: HBTXGOK.M
Run #: 0905H30
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 09/24/08 1:47:18 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0835G012
Sample Collection Date: 08/26/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW47A
ARF: 56855
APPL ID: AX83110
QCG: $GAHP-080905A-125774

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/06/08	09/06/08
8015	Surrogate: BFB-FID	92.3	75-125		%	09/06/08	09/06/08

R 10/27/08

Quant Method: HBTXGOK.M
Run #: 0905H20
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 09/24/08 1:47:18 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0835G013
Sample Collection Date: 08/26/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR24MW05A
ARF: 56855
APPL ID: AX83111
QCG: $GAHP-080906A-125775

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/06/08	09/06/08
8015	Surrogate: BFB-FID	94.9	75-125		%	09/06/08	09/06/08

N 10/27/08

Quant Method: HBTXGOK.M
Run #: 0905H31
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 09/24/08 1:47:18 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0835X002
Sample Collection Date: 08/27/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 56855
APPL ID: AX83113
QCG: $GAHP-080906A-125775

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	09/06/08	09/06/08
8015	Surrogate: BFB-FID	89.7	75-125		%	09/06/08	09/06/08

R 10/27/08

Quant Method: HBTXGOK.M
Run #: 0905H29
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 09/24/08 1:47:18 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19619A7
SDG #: 56855
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 10/20/08
Page: 1 of 1
Reviewer: FT
2nd Reviewer: n

METHOD: GC TPH as Gasoline (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 8/26 – 8/27/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	D – 2 + 3
X.	Field blanks	ND	TB – 1, 5

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

Water

1	2	0835G010	TB	11	1	080905A – BLK	21		31
2	2	0835G011**	D	12	2	080906A – BLK	22		32
3	1	0835G012	D	13			23		33
4	2	0835G013**		14			24		34
5	2	0835X002	TB	15			25		35
6				16			26		36
7				17			27		37
8				18			28		38
9				19			29		39
10				20			30		40

Notes:

LDC #: 196197
SDG #: per cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: PZ
2nd Reviewer: [illegible]

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?		✓		
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.			✓	
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 19619A7
SDG #: per cover

VALIDATION FINDINGS CHECKLIST

Reviewer: FA
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?			✓	
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 19619A /
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: FT
2nd Reviewer: [illegible]

All circled dates have exceeded the technical holding times.
Y N N/A Were all cooler temperatures within validation criteria?

METHOD: GC HPLC

Sample ID	Matrix	Preserved	Sampling Date	Extraction date	Analysis date	Total # of Days	Qualifier
1	W	y	contained	headspace			J/UJ/A NO(2)

TECHNICAL HOLDING TIME CRITERIA

VOLATILES:
- Water unpreserved: Aromatic within 7 days, non-aromatic within 14 days of sample collection.
- Water preserved: Both within 14 days of sample collection.
- Soils: Both within 14 days of sample collection.

EXTRACTABLES:
- Water: Extracted within 7 days, analyzed within 40 days.
- Soil: Extracted within 14 days, analyzed within 40 days.

LDC #: 19619A7
SDG #: pu cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: PR
2nd Reviewer: K

METHOD: GC_____ HPLC_____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (300 std)	Recalculated CF (300 std)	Reported Average CF (Initial)	Recalculated Average CF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL Harpo	7/23/08	gasoline	26028	26028	26995	26995	7.3	7.3
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19619A7
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	0905M25	9/6/08	gasoline	26995	30316	30316	12	12
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19619A7
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: __ GC __ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #2

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
BFB	DB-624	25.0	23.269	93.1	93	0

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 19619A7
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

_____METHOD: ___GC ___HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked concentration, SA = Spike added, SC = Sample concentration

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100 LCS = Laboratory Control Sample percent recovery LCSD = Laboratory Control Sample duplicate percent recovery

LCS/LCSD samples: 080906A - LCS

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	300	NA	0	315	NA	105	105	79	—	—	—
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 196197
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ___ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID._____ Compound Name _____

Concentration =_____

ND

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

SAMPCALew.wpd

LDC Report# 19619A8

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 3Q08 GW Sampling Event

Collection Date: August 26, 2008

LDC Report Date: October 22, 2008

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 56855

Sample Identification

0835G011**
0835G012
0835G013**

**Indicates sample underwent Level IV review

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 8015 for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

No field blanks were identified in this SDG.

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) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

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

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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 0835G011** and 0835G012 were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	0835G011**	0835G012	
TPH as diesel	220	150	38
TPH as motor oil	340	280	32

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 56855

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 56855

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 3Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG 56855

No Sample Data Qualified in this SDG

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0835G011
Sample Collection Date: 08/26/08

Loc ID: IR46MW47A
ARF: 56855
APPL ID: AX83109
QCG: $DIHP-080902A-125609

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	220 ++	40.0	13.07	ug/L	09/02/08	09/04/08
EPA 8015B-	Motor Oil	340	40.0	5.54	ug/L	09/02/08	09/04/08
EPA 8015B-	Surrogate: Octacosane	75.1	60-140		%	09/02/08	09/04/08
EPA 8015B-	Surrogate: Ortho-Terphenyl	87.1	60-140		%	09/02/08	09/04/08

vL 102708

+(T3M) The analyst has noted that the chromatogram of this sample is mainly higher boiling hydrocarbons.

Quant Method:	TPHD0407.M
Run #:	830037
Instrument:	Apollo
Sequence:	080830
Dilution Factor:	1
Initials:	EJ

Printed: 09/05/08 8:35:16 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0835G012
Sample Collection Date: 08/26/08

Loc ID: IR46MW47A
ARF: 56855
APPL ID: AX83110
QCG: $DIHP-080902A-125609

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	150 ++	40.0	13.07	ug/L	09/02/08	09/04/08
EPA 8015B-	Motor Oil	280	40.0	5.54	ug/L	09/02/08	09/04/08
EPA 8015B-	Surrogate: Octacosane	78.2	60-140		%	09/02/08	09/04/08
EPA 8015B-	Surrogate: Ortho-Terphenyl	87.7	60-140		%	09/02/08	09/04/08

L/02/08

++(T3M) The analyst has noted that the chromatogram of this sample is mainly higher boiling hydrocarbons.

Quant Method: TPHD0407.M
Run #: 830038
Instrument: Apollo
Sequence: 080830
Dilution Factor: 1
Initials: EJ

Printed: 09/05/08 8:35:16 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0835G013
Sample Collection Date: 08/26/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR24MW05A
ARF: 56855
APPL ID: AX83111
QCG: $DIHP-080902A-125609

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	300 ++	40.0	13.07	ug/L	09/02/08	09/04/08
EPA 8015B-	Motor Oil	230	40.0	5.54	ug/L	09/02/08	09/04/08
EPA 8015B-	Surrogate: Octacosane	78.2	60-140		%	09/02/08	09/04/08
EPA 8015B-	Surrogate: Ortho-Terphenyl	88.0	60-140		%	09/02/08	09/04/08

L 102708

+(T3M) The analyst has noted that the chromatogram of this sample is mainly higher oiling hydrocarbons.

Quant Method: TPHD0407.M
Run #: 830039
Instrument: Apollo
Sequence: 080830
Dilution Factor: 1
Initials: EJ

Printed: 09/05/08 8:35:16 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19619A8
SDG #: 56855
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 10/20/08
Page: 1 of 1
Reviewer: FZ
2nd Reviewer: L

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/26/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS/D
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	D	D = 1+2
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

Water

1 +	0835G011** D	11	0810902A	21		31	
2 +	0835G012 D	12		22		32	
3	0835G013**	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 19619A8
SDG #: per cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: ✓ GC ____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial Calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.			✓	
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 19619A8
SDG #: per cover

VALIDATION FINDINGS CHECKLIST

Reviewer: FA
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 196198

SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: ___ GC ___ HPLC

Y N N/A Were field duplicate pairs identified in this SDG?

Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/L)		%RPD Limit____	Qualification Parent only / All Samples
	1	2		
Diesel fuel	220	150	38	
Motor Oil	340	280	32	

Compound	Concentration ( )		%RPD Limit _____	Qualification Parent only / All Samples

FLDUPNew.wpd

LDC #: 1961918
SDG #: pu cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: PR
2nd Reviewer: R

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (40 ng/ml std)	Recalculated CF (40 ng/ml std)	Reported Average CF (Initial)	Recalculated Average CF (Initial)	Reported %RSD	Recalculated %RSD
1	Apollo	4/7/08	Diesel	197448	197448	21206	21206	16	16
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

See 19526 follow for level 2 → 6

INICLCMSB

LDC #: 19619A8
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC _____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	830030	9/4/08	Dieldrin	212061	237318	237318	12	12
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 196198
SDG #: per cover
METHOD: ✓ GC __ HPLC

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: M
2nd reviewer: K

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
octacosane	DB-5	33.333	25.028	75.1	75.1	0
o-Terphenyl	↓	↓	29.043	87.1	87.1	0

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 19619A8
SDG #: see cover

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: EZ
2nd Reviewer:

_____METHOD: ✓ GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked concentration, SA = Spike added, SC = Sample concentration

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100 LCS = Laboratory Control Sample percent recovery LCSD = Laboratory Control Sample duplicate percent recovery

LCS/LCSD samples: 080902A - LCS P

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)	667	667	0	723	725	108	108	109	109	0.28	0.28
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19619A8
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: ✓ GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. #1 Compound Name Diesel

Concentration = 693 82235 (2) (1000) / 212061 (2) (1500)

= 220 ug/L

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments:

SAMPCALew.wpd

4Q2008 Sampling Event

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

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612
ATTN: Ms. Tricia Walters

January 12, 2009

SUBJECT: Hunters Point Shipyard, 4Q08 GW Sampling Event, Data Validation

Dear Ms. Walters,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on December 22, 2008. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 20017:

SDG #	Fraction
57463, 57474, 57477, 57485	Volatiles, Dissolved Nickel, Hexavalent Chromium, TPH as Gasoline, TPH as Extractables

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

- Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA, June 17, 2008
- 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

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

Sincerely,

Stella Cuenco

Stella S. Cuenco
Project Manager/Senior Chemist

V:\LOGIN\CE2\HUNTERS\20017COV.wpd

Attachment 1

EDD

LDC #20017 (CE2-San Diego / Hunters Point Shipyard, 4Q08 GW Sampling Event)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		VOA (8260B -SIM)		Diss. Ni (6010B)		TPH-G (8015)		TPH-E (8015)		Cr(VI) (7199)																							
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	57463	12/22/08	01/14/09	13	0	13	0	8	0	-	-	-	-	8	0																						
A	57463	12/22/08	01/14/09	2	0	2	0	0	0	-	-	-	-	1	0																						
B	57474	12/22/08	01/14/09	12	0	12	0	-	-	-	-	-	-	-	-																						
B	57474	12/22/08	01/14/09	3	0	3	0	-	-	-	-	-	-	-	-																						
C	57477	12/22/08	01/14/09	14	0	14	0	2	0	-	-	-	-	10	0																						
C	57477	12/22/08	01/14/09	4	0	4	0	2	0	-	-	-	-	4	0																						
D	57485	12/22/08	01/14/09	9	0	8	0	3	0	3	0	2	0	4	0																						
D	57485	12/22/08	01/14/09	2	0	2	0	1	0	1	0	1	0	2	0																						
Total	T/SC			59	0	58	0	16	0	4	0	3	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	169

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

20017ST.wpd

Hunters Point Shipyard, 4Q08 GW Sampling Event
Data Validation Reports
LDC# 20017

Volatiles

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 6, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57463

Sample Identification

0845D024
0845D025**
0845H030
0845H031
0845H029
0845H032
0845H033
0845D023
0845D026
0845D027
0845B027
0845B028**
0845B029
0845B030
0845X010
0845H030MS
0845H030MSD

**Indicates sample underwent 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 8260B for Volatiles.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
11/10/08	Methyl-tert-butyl ether cis-1,3-Dichloropropene trans-1,3-Dichloropropene Tetrachloroethene	31 28 26 27	0845D024 0845D025** 0845H030 0845H031 0845H029 0845H032 0845H033 0845D023 0845D026 0845D027 0845B027	UJ5 (all non-detects) UJ5 (all non-detects) UJ5 (all non-detects) UJ5 (all non-detects)	A
11/19/08	1,2-Dibromo-3-chloropropane	60	0845B028** 0845B029 0845B030 0845X010	UJ5 (all non-detects)	A

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

Samples 0845H029, 0845D023, 0845B027, and 0845X010 were identified as trip blanks. No volatile contaminants were found in these 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
0845H030MS/MSD (0845H030)	Methyl-tert-butyl ether	60.7 (65-125)	-	46.4 (≤30)	UJ8,9 (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
081119WLCS	1,2-Dibromo-3-chloropropane	160 (50-130)	0845B028** 0845B029 0845B030 0845X010	NA	-

Although the above listed %R flagged "NA" demonstrates a high bias, the affected compound in the associated samples was non-detected and did not warrant the qualification of the data.

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 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 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 acceptable for samples on which a 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 the report if data has been qualified.

XVI. Field Duplicates

Samples 0845H032 and 0845H033 and samples 0845D026 and 0845D027 were identified as field duplicates. No volatiles were detected in any of the samples.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 57463

SDG	Sample	Compound	Flag	A or P	Reason
57463	0845D024 0845D025** 0845H030 0845H031 0845H029 0845H032 0845H033 0845D023 0845D026 0845D027 0845B027	Methyl-tert-butyl ether cis-1,3-Dichloropropene trans-1,3-Dichloropropene Tetrachloroethene	UJ5 (all non-detects) UJ5 (all non-detects) UJ5 (all non-detects) UJ5 (all non-detects)	A	Initial calibration (RRF)
57463	0845B028** 0845B029 0845B030 0845X010	1,2-Dibromo-3-chloropropane	UJ5 (all non-detects)	A	Continuing calibration (%D)
57463	0845H030	Methyl-tert-butyl ether	UJ8,9 (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)(RPD)

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 57463

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 57463

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D024
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: PA33MW37A
ARF: 57463
APPL ID: AX86872
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/10/08	11/10/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/10/08	11/10/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/10/08	11/10/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected UJS	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/10/08	11/10/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/10/08	11/10/08
EPA 8260B	MTBE	Not detected UJS	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Tetrachloroethene	Not detected ↓	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected UJS	0.5	0.18	ug/L	11/10/08	11/10/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/10/08	11/10/08

Quant Method: S86HPW1.M
Run #: 1110S08
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

11/10/09

Printed: 11/20/08 2:46:29 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D024
Sample Collection Date: 11/6/08

Loc ID: PA33MW37A
ARF: 57463
APPL ID: AX86872
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	100	70-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	97.0	75-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	100	85-115		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Toluene-D8 (S)	96.6	85-120		%	11/10/08	11/10/08

11/10/08

Quant Method:	S86HPW1.M
Run #:	1110S08
Instrument:	Sweetpea
Sequence:	S081105A
Dilution Factor:	1
Initials:	SV

Printed: 11/20/08 2:46:29 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D025
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR33MW120B
ARF: 57463
APPL ID: AX86873
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/10/08	11/10/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/10/08	11/10/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/10/08	11/10/08
EPA 8260B	Chloromethane	2.2	0.5	0.31	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected UJ5	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/10/08	11/10/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/10/08	11/10/08
EPA 8260B	MTBE	Not detected UJ5	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Tetrachloroethene	Not detected ↓	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected UJ5	0.5	0.18	ug/L	11/10/08	11/10/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/10/08	11/10/08

12/10/09

Quant Method: S86HPW1.M
Run #: 1110S09
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

Printed: 11/20/08 2:46:30 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D025
Sample Collection Date: 11/6/08

Loc ID: IR33MW120B
ARF: 57463
APPL ID: AX86873
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	98.3	70-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	95.3	75-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	101	85-115		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Toluene-D8 (S)	101	85-120		%	11/10/08	11/10/08

Quant Method: S86HPW1.M
Run #: 1110S09
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

Printed: 11/20/08 2:46:30 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H031
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P042A
ARF: 57463
APPL ID: AX86875
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/10/08	11/10/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/10/08	11/10/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/10/08	11/10/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected UJS	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/10/08	11/10/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/10/08	11/10/08
EPA 8260B	MTBE	Not detected UJS	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Tetrachloroethene	Not detected ↓	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected UJS	0.5	0.18	ug/L	11/10/08	11/10/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/10/08	11/10/08

Quant Method: S86HPW1.M
Run #: 1110S11
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

11/07/09

Printed: 11/20/08 2:46:30 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H031
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P042A
ARF: 57463
APPL ID: AX86875
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	95.0	70-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	92.2	75-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	99.2	85-115		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Toluene-D8 (S)	100	85-120		%	11/10/08	11/10/08

11/10/09

Quant Method:	S86HPW1.M
Run #:	1110S11
Instrument:	Sweetpea
Sequence:	S081105A
Dilution Factor:	1
Initials:	SV

Printed: 11/20/08 2:46:30 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H029
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57463
APPL ID: AX86876
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/10/08	11/10/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/10/08	11/10/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/10/08	11/10/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected UJS	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/10/08	11/10/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/10/08	11/10/08
EPA 8260B	MTBE	Not detected UJS	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Tetrachloroethene	Not detected ↓	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected UJS	0.5	0.18	ug/L	11/10/08	11/10/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/10/08	11/10/08

Quant Method: S86HPW1.M
Run #: 1110S05
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

Printed: 11/20/08 2:46:30 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H029
Sample Collection Date: 11/6/08

Loc ID: TRIP BLANK
ARF: 57463
APPL ID: AX86876
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	94.2	70-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	96.5	75-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	92.5	85-115		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Toluene-D8 (S)	97.8	85-120		%	11/10/08	11/10/08

TG 10709

Quant Method: S86HPW1.M
Run #: 1110S05
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

Printed: 11/20/08 2:46:30 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H032
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P043A
ARF: 57463
APPL ID: AX86877
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/10/08	11/10/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/10/08	11/10/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/10/08	11/10/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected UJS	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/10/08	11/10/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/10/08	11/10/08
EPA 8260B	MTBE	Not detected UJS	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Tetrachloroethene	Not detected ↓	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected UJS	0.5	0.18	ug/L	11/10/08	11/10/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/10/08	11/10/08

Quant Method: S86HPW1.M
Run #: 1110S12
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

4/10/09

Printed: 11/20/08 2:46:31 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H032
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P043A
ARF: 57463
APPL ID: AX86877
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	98.4	70-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	94.8	75-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	100	85-115		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Toluene-D8 (S)	100	85-120		%	11/10/08	11/10/08

Quant Method:	S86HPW1.M
Run #:	1110S12
Instrument:	Sweetpea
Sequence:	S081105A
Dilution Factor:	1
Initials:	SV

11/10/09

Printed: 11/20/08 2:46:31 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H033
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P043A
ARF: 57463
APPL ID: AX86878
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/10/08	11/10/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/10/08	11/10/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/10/08	11/10/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected UJ5	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/10/08	11/10/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/10/08	11/10/08
EPA 8260B	MTBE	Not detected UJ5	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Tetrachloroethene	Not detected ↓	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected UJ5	0.5	0.18	ug/L	11/10/08	11/10/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/10/08	11/10/08

Quant Method: S86HPW1.M
Run #: 1110S13
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

10/07/09

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H033
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P043A
ARF: 57463
APPL ID: AX86878
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	92.6	70-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	92.6	75-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	95.0	85-115		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Toluene-D8 (S)	104	85-120		%	11/10/08	11/10/08

Quant Method: S86HPW1.M
Run #: 1110S13
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

Printed: 11/20/08 2:46:31 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D023
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57463
APPL ID: AX86879
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/10/08	11/10/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/10/08	11/10/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/10/08	11/10/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected UJ5	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/10/08	11/10/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/10/08	11/10/08
EPA 8260B	MTBE	Not detected UJ5	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Tetrachloroethene	Not detected ↓	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected UJ5	0.5	0.18	ug/L	11/10/08	11/10/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/10/08	11/10/08

Quant Method: S86HPW1.M
Run #: 1110S06
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

11/10/08

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D023
Sample Collection Date: 11/6/08

Loc ID: TRIP BLANK
ARF: 57463
APPL ID: AX86879
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	94.0	70-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	98.4	75-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	96.0	85-115		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Toluene-D8 (S)	101	85-120		%	11/10/08	11/10/08

Quant Method: S86HPW1.M
Run #: 1110S06
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

11/07/09

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D027
Sample Collection Date: 11/6/08

Loc ID: IR09MW35A
ARF: 57463
APPL ID: AX86881
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/10/08	11/10/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/10/08	11/10/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/10/08	11/10/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected UJ5	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/10/08	11/10/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/10/08	11/10/08
EPA 8260B	MTBE	Not detected UJ5	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Tetrachloroethene	Not detected ↓	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected UJ5	0.5	0.18	ug/L	11/10/08	11/10/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/10/08	11/10/08

Quant Method: S86HPW1.M
Run #: 1110S15
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

11/10/08

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D027
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW35A
ARF: 57463
APPL ID: AX86881
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	103	70-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	93.7	75-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	103	85-115		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Toluene-D8 (S)	103	85-120		%	11/10/08	11/10/08

Quant Method: S86HPW1.M
Run #: 1110S15
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

Printed: 11/20/08 2:46:32 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B027
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57463
APPL ID: AX86882
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/10/08	11/10/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/10/08	11/10/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/10/08	11/10/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/10/08	11/10/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/10/08	11/10/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/10/08	11/10/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected UJ5	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/10/08	11/10/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/10/08	11/10/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/10/08	11/10/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/10/08	11/10/08
EPA 8260B	MTBE	Not detected UJ5	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Tetrachloroethene	Not detected ↓	0.5	0.15	ug/L	11/10/08	11/10/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected UJ5	0.5	0.18	ug/L	11/10/08	11/10/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/10/08	11/10/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/10/08	11/10/08

Quant Method: S86HPW1.M
Run #: 1110S07
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

10/07/09

Printed: 11/20/08 2:46:32 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B027
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57463
APPL ID: AX86882
QCG: $86HP-081110AS-127982

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/10/08	11/10/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	95.1	70-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	98.2	75-120		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	94.7	85-115		%	11/10/08	11/10/08
EPA 8260B	Surrogate: Toluene-D8 (S)	106	85-120		%	11/10/08	11/10/08

Quant Method: S86HPW1.M
Run #: 1110S07
Instrument: Sweetpea
Sequence: S081105A
Dilution Factor: 1
Initials: SV

Printed: 11/20/08 2:46:32 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B028
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW38A
ARF: 57463
APPL ID: AX86883
QCG: $86HP-081119AM-127983

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/19/08	11/19/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/19/08	11/19/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/19/08	11/19/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/19/08	11/19/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/19/08	11/19/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/19/08	11/19/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected UJ5	2.0	0.76	ug/L	11/19/08	11/19/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/19/08	11/19/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/19/08	11/19/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/19/08	11/19/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/19/08	11/19/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/19/08	11/19/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/19/08	11/19/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/19/08	11/19/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/19/08	11/19/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/19/08	11/19/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/19/08	11/19/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/19/08	11/19/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/19/08	11/19/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/19/08	11/19/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/19/08	11/19/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/19/08	11/19/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/19/08	11/19/08

Quant Method: MALLW2.M
Run #: 1119M08
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: SV

10/07/09

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B028
Sample Collection Date: 11/6/08

Loc ID: IR09MW38A
ARF: 57463
APPL ID: AX86883
QCG: $86HP-081119AM-127983

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	110	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	108	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	116	85-120		%	11/19/08	11/19/08

Quant Method: MALLW2.M
Run #: 1119M08
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: SV

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B029
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW39A
ARF: 57463
APPL ID: AX86884
QCG: $86HP-081119AM-127983

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/19/08	11/19/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/19/08	11/19/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/19/08	11/19/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/19/08	11/19/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/19/08	11/19/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/19/08	11/19/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected UJ5	2.0	0.76	ug/L	11/19/08	11/19/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/19/08	11/19/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/19/08	11/19/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/19/08	11/19/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/19/08	11/19/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/19/08	11/19/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/19/08	11/19/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/19/08	11/19/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/19/08	11/19/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/19/08	11/19/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/19/08	11/19/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/19/08	11/19/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/19/08	11/19/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/19/08	11/19/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/19/08	11/19/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/19/08	11/19/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/19/08	11/19/08

Quant Method: MALLW2.M
Run #: 1119M09
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: SV

10/07/09

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B029
Sample Collection Date: 11/6/08

Loc ID: IR09MW39A
ARF: 57463
APPL ID: AX86884
QCG: $86HP-081119AM-127983

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	104	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	105	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	102	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	115	85-120		%	11/19/08	11/19/08

Quant Method: MALLW2.M
Run #: 1119M09
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: SV

Rto 10/09

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B030
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW44A
ARF: 57463
APPL ID: AX86885
QCG: $86HP-081119AM-127983

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/19/08	11/19/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/19/08	11/19/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/19/08	11/19/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/19/08	11/19/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/19/08	11/19/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/19/08	11/19/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected UJS	2.0	0.76	ug/L	11/19/08	11/19/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/19/08	11/19/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/19/08	11/19/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/19/08	11/19/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/19/08	11/19/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/19/08	11/19/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/19/08	11/19/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	Chloroform	0.30 J	0.5	0.07	ug/L	11/19/08	11/19/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/19/08	11/19/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/19/08	11/19/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/19/08	11/19/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/19/08	11/19/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/19/08	11/19/08
EPA 8260B	MTBE	0.56	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/19/08	11/19/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/19/08	11/19/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/19/08	11/19/08
EPA 8260B	Trichloroethene	0.26 J	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/19/08	11/19/08

I = Estimated value.

Quant Method: MALLW2.M
Run #: 1119M10
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: SV

11/20/09

Printed: 11/20/08 2:46:33 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B030
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW44A
ARF: 57463
APPL ID: AX86885
QCG: $86HP-081119AM-127983

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	107	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	107	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	115	85-120		%	11/19/08	11/19/08

= Estimated value.

Quant Method: MALLW2.M
Run #: 1119M10
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: SV

Printed: 11/20/08 2:46:33 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845X010
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57463
APPL ID: AX86886
QCG: $86HP-081119AM-127983

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/19/08	11/19/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/19/08	11/19/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/19/08	11/19/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/19/08	11/19/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/19/08	11/19/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/19/08	11/19/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected UJS	2.0	0.76	ug/L	11/19/08	11/19/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/19/08	11/19/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/19/08	11/19/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/19/08	11/19/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/19/08	11/19/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/19/08	11/19/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/19/08	11/19/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/19/08	11/19/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/19/08	11/19/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/19/08	11/19/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/19/08	11/19/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/19/08	11/19/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/19/08	11/19/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/19/08	11/19/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/19/08	11/19/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/19/08	11/19/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/19/08	11/19/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/19/08	11/19/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/19/08	11/19/08

Quant Method: MALLW2.M
Run #: 1119M06
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: SV

11/07/09

Printed: 11/20/08 2:46:33 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845X010
Sample Collection Date: 11/6/08

Loc ID: TRIP BLANK
ARF: 57463
APPL ID: AX86886
QCG: $86HP-081119AM-127983

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	103	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	106	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	101	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	117	85-120		%	11/19/08	11/19/08

Quant Method: MALLW2.M
Run #: 1119M06
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: SV

Printed: 11/20/08 2:46:33 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017A1a
SDG #: 57463
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 1/5/09
Page: 1 of 1
Reviewer: 9
2nd Reviewer: M

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/6/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD. Y2
IV.	Continuing calibration/ICV	SW	ICV = 75/70
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	ND	D = 6+7. 9+10
XVII.	Field blanks	ND	TB = 5. 8. 11. 15

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

MH2O5

1	0845D024		11	0845B027	T	21	081110WMB	31	(S)
2	0845D025**		12	0845B028**		22	081119WMB	32	(M)
3	0845H030		13	0845B029		23		33	
4	0845H031		14	0845B030		24		34	
5	0845H029	T	15	0845X010	T	25		35	
6	0845H032		16	0845H030MS		26		36	
7	0845H033		17	0845H030MSD		27		37	
8	0845D023	T	18			28		38	
9	0845D026		19			29		39	
10	0845D027		20			30		40	

LDC #: 20017A19
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Reviewer: a
2nd Reviewer: k

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 20017A1a
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 2001TA1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 1

METHOD: GC/MS VOA (EPA SW 846 Method 8260)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	11/10/08	1110S01W	LL	31		1-11 (ND)	J/UJ/A (5)
			R	28			
			W	26			
			AA	27			
	11/9/08	1119M02W	MM	60		12-15 (ND)	J/UJ/A (5)

CONCAL1S

LDC #: 20017A1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: a
2nd Reviewer: [illegible]

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		16/17	LL	60.7 (65-125)	( )	46.4 (≤30)	3 (ND)	J/UJ/A (8,9)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
H.	1,1-Dichloroethene	59-172%	≤ 22%	61-145%	≤ 14%
S.	Trichloroethene	62-137%	≤ 24%	71-120%	≤ 14%
V.	Benzene	66-142%	≤ 21%	76-127%	≤ 11%
CC.	Toluene	59-139%	≤ 21%	76-125%	≤ 13%
DD.	Chlorobenzene	60-133%	≤ 21%	75-130%	≤ 13%

LDC #: 20017A12
SDG #: 57463

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a LCS required?
Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		081119WLCS	MN	160 (50-130)	( )	( )	12-15 (ND)	Vdets/P (UD)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		

LDC #: 20017A19
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL (8)	11/5/08	S (1st internal standard)	1.026	1.026	1.062	1.062	6.5	6.5
			ZE (2nd internal standard)	6.621	6.621	6.468	6.468	3.8	3.8
			HHH (3rd internal standard)	5.544	5.544	5.623	5.623	2.2	2.2
2	ICAL (M)	11/17/08	S (1st internal standard)	0.9123	0.9123	0.9070	0.9070	2.7	2.7
			ZE (2nd internal standard)	6.183	6.183	5.926	5.926	2.6	2.6
			HHH (3rd internal standard)	4.955	4.955	5.029	5.029	12	12
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017A19
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	111050/W	11/10/08	S (1st internal standard)	1.062	1.103	1.103	3.9	3.9
			ZZ (2nd internal standard)	6.468	6.207	6.207	4.0	4.0
			HHH (3rd internal standard)	5.623	5.362	5.362	4.6	4.6
2	1119M02W	11/19/08	S (1st internal standard)	0.9070	0.9578	0.9578	5.6	5.6
			ZZ (2nd internal standard)	5.926	6.249	6.249	5.5	5.5
			HHH (3rd internal standard)	5.029	4.722	4.722	6.1	6.1
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 2001TA19
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 12

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	19.158	22.20967	116	116	0
Bromofluorobenzene	21.053	22.75004	108	108	
1,2-Dichloroethane-d4	20.611	22.59875	110	110	
Dibromofluoromethane	20.313	21.11018	104	104	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 20017A19
SDG #: 57463

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD sample: 16/17

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	10.0	10.0	ND	8.62	10.2	86.2	86.2	102	102	16.8	16.8
Trichloroethene	↓	↓	↓	8.63	9.94	86.3	86.3	99.4	99.4	14.1	14.1
Benzene	↓	↓	↓	8.96	9.99	89.6	89.6	99.9	99.9	10.9	10.9
Toluene	↓	↓	↓	7.97	9.70	79.7	79.7	97.0	97.0	19.6	19.6
Chlorobenzene	↓	↓	↓	8.69	10.0	86.9	86.9	100	100	14.0	14.0

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017A108
SDG #: 57463

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer: A

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 081110W

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	10.0	NA	9.82	NA	98.2	98.2				
Trichloroethene	↓	↓	10.4	↓	104	104				
Benzene	↓	↓	9.91	↓	99.1	99.1				
Toluene	↓	↓	9.18	↓	91.8	91.8				
Chlorobenzene	↓	↓	9.87	↓	98.7	98.7				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 26017A-19
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: R

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 2 , A :

Conc. = $\left[\frac{996}{(91956)(0.585)} + (0.0408)\right]\frac{(25.000)(1)}{(\quad)(\quad)}$

= 2.206 µg/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 7, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57474

Sample Identification

0845B032**
0845B033
0845D029
0845D030
0845H034
0845H035
0845B034**
0845H036
0845H037**
0845H038
0845H039
0845B031
0845X011
0845D028
0845D031

**Indicates sample underwent Level IV review

Introduction

This data review covers 15 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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

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

V. Blanks

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

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
081119WMB	11/20/08	Methylene chloride Chloroform	0.87 ug/L 1.1 ug/L	0845D029 0845D030 0845H035 0845B034** 0845H036 0845H037** 0845H038 0845H039 0845B031 0845X011 0845D028
081120WMB	11/20/08	Methylene chloride Chloroform	0.67 ug/L 0.76 ug/L	0845D031

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
0845D029	Chloroform	0.10 ug/L	0.5U ug/L
0845D030	Chloroform	0.19 ug/L	0.5U ug/L
0845H035	Chloroform	0.30 ug/L	0.5U ug/L
0845H038	Chloroform	2.5 ug/L	2.5U ug/L

Samples 0845H034, 0845B031, 0845X011, and 0845D028 were identified as trip blanks. No volatile contaminants were found in these 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
0845B032**	Dibromofluoromethane	117 (85-115)	All TCL compounds	J13 (all detects)	P

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 a 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 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 acceptable for samples on which a 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 the report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 57474

SDG	Sample	Compound	Flag	A or P	Reason
57474	0845B032**	All TCL compounds	J13 (all detects)	P	Surrogate spikes (%R)

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 57474

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	Code	A or P
57474	0845D029	Chloroform	0.5U ug/L	7	A
57474	0845D030	Chloroform	0.5U ug/L	7	A
57474	0845H035	Chloroform	0.5U ug/L	7	A
57474	0845H038	Chloroform	2.5U ug/L	7	A

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 57474

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B032
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR70MW07A
ARF: 57474
APPL ID: AX86970
QCG: $86HP-081117AH-128041

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/17/08	11/17/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/17/08	11/17/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/17/08	11/17/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/17/08	11/17/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/17/08	11/17/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/17/08	11/17/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/17/08	11/17/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/17/08	11/17/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/17/08	11/17/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/17/08	11/17/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/17/08	11/17/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/17/08	11/17/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/17/08	11/17/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/17/08	11/17/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/17/08	11/17/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/17/08	11/17/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/17/08	11/17/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/17/08	11/17/08
EPA 8260B	Chloroform	0.37 J J13	0.5	0.07	ug/L	11/17/08	11/17/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/17/08	11/17/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/17/08	11/17/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/17/08	11/17/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/17/08	11/17/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/17/08	11/17/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/17/08	11/17/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/17/08	11/17/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/17/08	11/17/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/17/08	11/17/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/17/08	11/17/08
EPA 8260B	Trichloroethene	1.4 J13	0.5	0.16	ug/L	11/17/08	11/17/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/17/08	11/17/08

J = Estimated value.
# = Recovery (or RPD) is outside QC limits.

N 01 0709

Quant Method: H86HPW.M
Run #: 1117H11
Instrument: Hewey
Sequence: H081113
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:07 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B032
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR70MW07A
ARF: 57474
APPL ID: AX86970
QCG: $86HP-081117AH-128041

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	112	70-120		%	11/17/08	11/17/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	83.1	75-120		%	11/17/08	11/17/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	117 #	85-115		%	11/17/08	11/17/08
EPA 8260B	Surrogate: Toluene-D8 (S)	97.0	85-120		%	11/17/08	11/17/08

J = Estimated value.
# = Recovery (or RPD) is outside QC limits.

2/01/09

Quant Method: H86HPW.M
Run #: 1117H11
Instrument: Hewey
Sequence: H081113
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:08 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B033
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR67MW04A
ARF: 57474
APPL ID: AX86971
QCG: $86HP-081117AH-128041

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/17/08	11/17/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/17/08	11/17/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/17/08	11/17/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/17/08	11/17/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/17/08	11/17/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/17/08	11/17/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/17/08	11/17/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/17/08	11/17/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/17/08	11/17/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/17/08	11/17/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/17/08	11/17/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/17/08	11/17/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/17/08	11/17/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/17/08	11/17/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/17/08	11/17/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/17/08	11/17/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/17/08	11/17/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/17/08	11/17/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/17/08	11/17/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/17/08	11/17/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/17/08	11/17/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/17/08	11/17/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/17/08	11/17/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/17/08	11/17/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/17/08	11/17/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/17/08	11/17/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/17/08	11/17/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/17/08	11/17/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/17/08	11/17/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/17/08	11/17/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/17/08	11/17/08

Quant Method: H86HPW.M
Run #: 1117H12
Instrument: Hewey
Sequence: H081113
Dilution Factor: 1
Initials: GM

10/07/09

Printed: 11/21/08 2:36:08 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B033
Sample Collection Date: 11/07/08

Loc ID: IR67MW04A
ARF: 57474
APPL ID: AX86971
QCG: $86HP-081117AH-128041

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	111	70-120		%	11/17/08	11/17/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	82.7	75-120		%	11/17/08	11/17/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	114	85-115		%	11/17/08	11/17/08
EPA 8260B	Surrogate: Toluene-D8 (S)	92.7	85-120		%	11/17/08	11/17/08

Quant Method: H86HPW.M
Run #: 1117H12
Instrument: Hewey
Sequence: H081113
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:08 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D029
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: PA50MW07A
ARF: 57474
APPL ID: AX86972
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/20/08	11/20/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/20/08	11/20/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroform	0.10 B J 0.547	0.5	0.07	ug/L	11/20/08	11/20/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/20/08	11/20/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/20/08	11/20/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/20/08	11/20/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/20/08	11/20/08

J = Estimated value.
B = The analyte was found in a method blank, as well as in the sample.

K 01/07/09

Quant Method: MALLW2.M
Run #: 1119M26
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:08 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D029
Sample Collection Date: 11/07/08

Loc ID: PA50MW07A
ARF: 57474
APPL ID: AX86972
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	107	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	108	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	117	85-120		%	11/20/08	11/20/08

I = Estimated value.
B = The analyte was found in a method blank, as well as in the sample.

11/20/08

Quant Method: MALLW2.M
Run #: 1119M26
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:08 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D030
Sample Collection Date: 11/07/08

Loc ID: IR55MW01A
ARF: 57474
APPL ID: AX86973
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/20/08	11/20/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/20/08	11/20/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroform	0.19 B J 0.517	0.5	0.07	ug/L	11/20/08	11/20/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/20/08	11/20/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/20/08	11/20/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/20/08	11/20/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/20/08	11/20/08

J = Estimated value.
B = The analyte was found in a method blank, as well as in the sample.

12/07/09

Quant Method: MALLW2.M
Run #: 1119M27
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:08 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D030
Sample Collection Date: 11/07/08

Loc ID: IR55MW01A
ARF: 57474
APPL ID: AX86973
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	116	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	110	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	107	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	113	85-120		%	11/20/08	11/20/08

I = Estimated value.
B = The analyte was found in a method blank, as well as in the sample.

11/10/09

Quant Method: MALLW2.M
Run #: 1119M27
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:08 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H034
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57474
APPL ID: AX86974
QCG: $86HP-081117AH-128041

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/17/08	11/17/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/17/08	11/17/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/17/08	11/17/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/17/08	11/17/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/17/08	11/17/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/17/08	11/17/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/17/08	11/17/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/17/08	11/17/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/17/08	11/17/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/17/08	11/17/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/17/08	11/17/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/17/08	11/17/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/17/08	11/17/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/17/08	11/17/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/17/08	11/17/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/17/08	11/17/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/17/08	11/17/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/17/08	11/17/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/17/08	11/17/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/17/08	11/17/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/17/08	11/17/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/17/08	11/17/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/17/08	11/17/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/17/08	11/17/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/17/08	11/17/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/17/08	11/17/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/17/08	11/17/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/17/08	11/17/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/17/08	11/17/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/17/08	11/17/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/17/08	11/17/08

Quant Method: H86HPW.M
Run #: 1117H05
Instrument: Hewey
Sequence: H081113
Dilution Factor: 1
Initials: GM

KP 10709

Printed: 11/21/08 2:36:09 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H034
Sample Collection Date: 11/07/08

Loc ID: TRIP BLANK
ARF: 57474
APPL ID: AX86974
QCG: $86HP-081117AH-128041

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/17/08	11/17/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	110	70-120		%	11/17/08	11/17/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	85.2	75-120		%	11/17/08	11/17/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	114	85-115		%	11/17/08	11/17/08
EPA 8260B	Surrogate: Toluene-D8 (S)	94.6	85-120		%	11/17/08	11/17/08

Quant Method: H86HPW.M
Run #: 1117H05
Instrument: Hewey
Sequence: H081113
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:09 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H035
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR70MW11A
ARF: 57474
APPL ID: AX86975
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/20/08	11/20/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/20/08	11/20/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroform	0.30 B J 0.547	0.5	0.07	ug/L	11/20/08	11/20/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,2-Dichloroethene	0.37 J	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/20/08	11/20/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/20/08	11/20/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/20/08	11/20/08
EPA 8260B	Trichloroethene	1.7	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/20/08	11/20/08

J = Estimated value.
B = The analyte was found in a method blank, as well as in the sample.

11/18/08

Quant Method: MALLW2.M
Run #: 1119M28
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:09 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H035
Sample Collection Date: 11/07/08

Loc ID: IR70MW11A
ARF: 57474
APPL ID: AX86975
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	107	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	114	85-120		%	11/20/08	11/20/08

I = Estimated value.
3 = The analyte was found in a method blank, as well as in the sample.

Kol 0709

Quant Method: MALLW2.M
Run #: 1119M28
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:09 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B034
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR33MW121B
ARF: 57474
APPL ID: AX86976
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/20/08	11/20/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/20/08	11/20/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/20/08	11/20/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/20/08	11/20/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/20/08	11/20/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/20/08	11/20/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/20/08	11/20/08

Quant Method: MALLW2.M
Run #: 1119M29
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

K/01 0209

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B034
Sample Collection Date: 11/07/08

Loc ID: IR33MW121B
ARF: 57474
APPL ID: AX86976
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	111	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	107	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	111	85-120		%	11/20/08	11/20/08

Quant Method: MALLW2.M
Run #: 1119M29
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H036
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P035AA
ARF: 57474
APPL ID: AX86977
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/20/08	11/20/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/20/08	11/20/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/20/08	11/20/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/20/08	11/20/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/20/08	11/20/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/20/08	11/20/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/20/08	11/20/08

Quant Method: MALLW2.M
Run #: 1119M30
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

8L010709

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H036
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P035AA
ARF: 57474
APPL ID: AX86977
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	105	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	107	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	101	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	115	85-120		%	11/20/08	11/20/08

10/1/09

Quant Method: MALLW2.M
Run #: 1119M30
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:09 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H037
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P035AB
ARF: 57474
APPL ID: AX86978
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/20/08	11/20/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/20/08	11/20/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/20/08	11/20/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/20/08	11/20/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/20/08	11/20/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/20/08	11/20/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/20/08	11/20/08

Quant Method: MALLW2.M
Run #: 1119M31
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

11/01/09

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H037
Sample Collection Date: 11/07/08

Loc ID: IR09P035AB
ARF: 57474
APPL ID: AX86978
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	110	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	103	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	117	85-120		%	11/20/08	11/20/08

Cd 0109

Quant Method: MALLW2.M
Run #: 1119M31
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:10 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H039
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR36MW16A
ARF: 57474
APPL ID: AX86980
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/20/08	11/20/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/20/08	11/20/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/20/08	11/20/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/20/08	11/20/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/20/08	11/20/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/20/08	11/20/08
EPA 8260B	Trichloroethene	0.20 J	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/20/08	11/20/08

J = Estimated value.

Quant Method: MALLW2.M
Run #: 1119M33
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

11/20/09

Printed: 11/21/08 2:36:10 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H039
Sample Collection Date: 11/07/08

Loc ID: IR36MW16A
ARF: 57474
APPL ID: AX86980
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	107	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	109	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	103	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	117	85-120		%	11/20/08	11/20/08

= Estimated value.

Rolo709

Quant Method:	MALLW2.M
Run #:	1119M33
Instrument:	Max
Sequence:	M081117
Dilution Factor:	1
Initials:	GM

Printed: 11/21/08 2:36:10 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B031
Sample Collection Date: 11/07/08

Loc ID: TRIP BLANK
ARF: 57474
APPL ID: AX86981
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/20/08	11/20/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/20/08	11/20/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/20/08	11/20/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/20/08	11/20/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/20/08	11/20/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/20/08	11/20/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/20/08	11/20/08

Quant Method: MALLW2.M
Run #: 1119M22
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

11/07/09

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B031
Sample Collection Date: 11/07/08

Loc ID: TRIP BLANK
ARF: 57474
APPL ID: AX86981
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	108	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	103	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	113	85-120		%	11/20/08	11/20/08

Quant Method: MALLW2.M
Run #: 1119M22
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:10 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845X011
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57474
APPL ID: AX86982
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/20/08	11/20/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/20/08	11/20/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/20/08	11/20/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/20/08	11/20/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/20/08	11/20/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/20/08	11/20/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/20/08	11/20/08

Quant Method: MALLW2.M
Run #: 1119M23
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

11/20/09

Printed: 11/21/08 2:36:11 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845X011
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57474
APPL ID: AX86982
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	105	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	107	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	102	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	115	85-120		%	11/20/08	11/20/08

Quant Method: MALLW2.M
Run #: 1119M23
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:11 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D028
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57474
APPL ID: AX86983
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/20/08	11/20/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/20/08	11/20/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/20/08	11/20/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/20/08	11/20/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/20/08	11/20/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/20/08	11/20/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/20/08	11/20/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/20/08	11/20/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/20/08	11/20/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/20/08	11/20/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/20/08	11/20/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/20/08	11/20/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/20/08	11/20/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/20/08	11/20/08

Quant Method: MALLW2.M
Run #: 1119M24
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:11 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D028
Sample Collection Date: 11/07/08

Loc ID: TRIP BLANK
ARF: 57474
APPL ID: AX86983
QCG: $86HP-081119BM-128042

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	109	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	108	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	115	85-120		%	11/20/08	11/20/08

Quant Method: MALLW2.M
Run #: 1119M24
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: GM

Printed: 11/21/08 2:36:11 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017B1a
SDG #: 57474
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 1/5/09
Page: 1 of 1
Reviewer: a
2nd Reviewer: u

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/7/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD. 12
IV.	Continuing calibration/ICV	A	ICV ≤ 25%
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	TB = 5. 12. 13. 14

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

MS MSDs

1	1	0845B032**		11	2	0845H039		21	081117WMB	31	H
2	1	0845B033		12	2	0845B031	T	22	081119WMB	32	M
3	2	0845D029		13	2	0845X011	T	23	081120WMB	33	M
4	2	0845D030		14	2	0845D028	T	24		34	
5	1	0845H034	T	15	3	0845D031		25		35	
6	2	0845H035		16				26		36	
7	2	0845B034**		17				27		37	
8	2	0845H036		18				28		38	
9	2	0845H037**		19				29		39	
10	2	0845H038		20				30		40	

LDC #: 20017B19
SDG #: See Cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: M

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Surrogate spikes				
Were all surrogate %R within QC limits?		✓		
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?		✓		
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 20017B1a
SDG #: See Cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: 11

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 20017B19
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 11

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 11/20/08
Conc. units: ug/L
Associated Samples: 3-4, 6-14

Compound	Blank ID	Sample Identification								
08119NMB3		3	4	6	10					
Methylene chloride	0.87									
Acetone										
K	1.1	0.10/0.5U	0.19/0.5U	0.30/0.5U	2.5/U					
CRQL										

Blank analysis date: 11/20/08
Conc. units: ug/L
Associated Samples: 15

Compound	Blank ID	Sample Identification								
08120WMB3										
Methylene chloride	0.67									
Acetone										
K	0.76									
CRQL										

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

VALIDATION FINDINGS WORKSHEET
Surrogate Spikes

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all surrogate %R within QC limits?

Y (N) N/A If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria?

#	Date	Sample ID	Surrogate	%Recovery (Limits)	Qualifications
		1 (dets+ND)	DFM	117 (85-115)	J dets/P (13)
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	QC Limits (Soil)	QC Limits (Water)
SMC1 (TOL) = Toluene-d8	81-117	88-110
SMC2 (BFB) = Bromofluorobenzene	74-121	86-115
SMC3 (DCE) = 1,2-Dichloroethane-d4	80-120	80-120
SMC4 (DFM) = Dibromofluoromethane	80-120	86-118

LDC #: 20017B1a
SDG #: See COC

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	11/13/08	K (1st internal standard)	1.908	1.908	2.020	2.020	30	30
			AA (2nd internal standard)	0.9773	0.9773	curve	fit		
			BB (3rd internal standard)	2.032	2.032	1.907	1.907	12	12
2	ICAL	11/17/08	S (1st internal standard)	0.9123	0.9123	0.9070	0.9070	2.7	2.7
			ZZ (2nd internal standard)	6.183	6.183	5.926	5.926	2.6	2.6
			HHH (3rd internal standard)	4.955	4.955	5.029	5.029	12	12
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017B1a
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: 4

METHOD: EPA SW 846 Method 8260B

Parameter: Tetrachloroethene

Order of regression: LINR

DATE	GCMS ID	Column	(X) CONC RATIO	(Y) AREA ug/L	(Y2) AREA RATIO
11/13/2008	Hewey	CAP	0.0400	0.0372	1.4E-003
			0.2000	0.3026	9.2E-002
			0.4000	0.3909	1.5E-001
			1.6000	1.5179	2.3E+000
			4.0000	3.6749	1.4E+001
			8.0000	7.6557	5.9E+001
			0.0000	0.0000	

Regression Output:

Constant		0.0124
Std Err of Y Est		0.0785
R Squared		0.9994
No. of Observations		7
Degrees of Freedom		5
X Coefficient(s)	9.475E-001	-3.656E-001
Std Err of Coef.	1.071E-002	3.340E-002
Correlation Coefficient (r) =		0.9997
Coefficient of Determination (r^2) =		0.9994

LDC #: 20017B1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	1117H01W	11/17/08	K (1st internal standard)	2.020	1.922	1.922	4.9	4.9
			AA (2nd internal standard)	10.0	8.56210	8.5665	14	14
			BB (3rd internal standard)	1.907	2.072	2.072	8.6	8.7
2	1119M19W	11/19/08	S (1st internal standard)	0.9070	0.9801	0.9801	8.1	8.1
			ZZ (2nd internal standard)	5.926	6.117	6.117	3.2	3.2
			HHH (3rd internal standard)	5.029	4.721	4.721	6.1	6.1
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017B19
SDG #: See CO W

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: 9
2nd reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 7

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	19.158	21.32388	111	111	0
Bromofluorobenzene	21.053	22.55242	107	107	✓
1,2-Dichloroethane-d4	20.611	22.80596	111	111	✓
Dibromofluoromethane	20.313	21.21984	104	104	✓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 20017B1a
SDG #: See COW

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 081119W

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	10.0	NA	10.3	NA	103	103				
Trichloroethene			10.8		108	108				
Benzene			10.5		105	105				
Toluene			10.3		103	103				
Chlorobenzene			10.4		104	104				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 20017B1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: a
2nd reviewer: n

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 1 , 75 :

Conc. = $\frac{(41358)(25)(1)}{(584969)(1.024)(\quad)(\quad)}$

Conc = $\frac{\left(\frac{41358}{584969} - 0.0181\right)(25)(1)}{(0.954)} = 1.378$ µg/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 10, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57477

Sample Identification

0846G007
0846G008
0846G009**
0846G010
0846N002
0846N001
0846N003**
0846N004
0846N005**
0846B035
0846B036
0846B037
0846B038
0846B039
0846B040
0846B041**
0846B042
0846X012

**Indicates sample underwent 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 8260B for Volatiles.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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

Samples 0846G007, 0846N001, 0846B035, and 0846X012 were identified as trip blanks. No volatile contaminants were found in these 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) 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

All target compound identifications were within validation criteria for samples on which a 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 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 acceptable for samples on which a 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 the report if data has been qualified.

XVI. Field Duplicates

Samples 0846B037 and 0846B038 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	0846B037	0846B038	
Chloroform	2.0	2.0	0

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 57477

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 57477

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 57477

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G007
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57477
APPL ID: AX86990
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

Quant Method: MALLW2.M
Run #: 1120M22
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

11/01/07

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G007
Sample Collection Date: 11/10/2008

Loc ID: TRIP BLANK
ARF: 57477
APPL ID: AX86990
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	106	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	105	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	103	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	114	85-120		%	11/21/2008	11/21/2008

NS 10769

Quant Method: MALLW2.M
Run #: 1120M22
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G008
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR34MW02A
ARF: 57477
APPL ID: AX86991
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	0.49 J	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

= Estimated value.

11/07/09

Quant Method: MALLW2.M
Run #: 1120M26
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G008
Sample Collection Date: 11/10/2008

Loc ID: IR34MW02A
ARF: 57477
APPL ID: AX86991
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	115	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	109	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	108	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	113	85-120		%	11/21/2008	11/21/2008

= Estimated value.

Quant Method: MALLW2.M
Run #: 1120M26
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G009
Sample Collection Date: 11/10/2008

Loc ID: PA33MW36A
ARF: 57477
APPL ID: AX86992
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	0.56	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

Quant Method: MALLW2.M
Run #: 1120M27
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Mo/0709

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG.MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G009
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: PA33MW36A
ARF: 57477
APPL ID: AX86992
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	104	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	107	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	102	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	117	85-120		%	11/21/2008	11/21/2008

Quant Method: MALLW2.M
Run #: 1120M27
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G010
Sample Collection Date: 11/10/2008

Loc ID: IR71MW04A
ARF: 57477
APPL ID: AX86993
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

10/07/09

Quant Method: MALLW2.M
Run #: 1120M28
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G010
Sample Collection Date: 11/10/2008

Loc ID: IR71MW04A
ARF: 57477
APPL ID: AX86993
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	112	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	108	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	105	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	113	85-120		%	11/21/2008	11/21/2008

11/10/09

Quant Method:	MALLW2.M
Run #:	1120M28
Instrument:	Max
Sequence:	M081117
Dilution Factor:	1
Initials:	ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N002
Sample Collection Date: 11/10/2008

Loc ID: IR33MW66A
ARF: 57477
APPL ID: AX86994
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	0.53	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

Quant Method: MALLW2.M
Run #: 1120M32
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N002
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR33MW66A
ARF: 57477
APPL ID: AX86994
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	107	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	114	85-120		%	11/21/2008	11/21/2008

9/10/09

Quant Method: MALLW2.M
Run #: 1120M32
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N001
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57477
APPL ID: AX86995
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

Quant Method: MALLW2.M
Run #: 1120M23
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

11.07.9

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N001
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57477
APPL ID: AX86995
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	109	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	109	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	114	85-120		%	11/21/2008	11/21/2008

12/10/09

Quant Method: MALLW2.M
Run #: 1120M23
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N003
Sample Collection Date: 11/10/2008

Loc ID: IR33MW65A
ARF: 57477
APPL ID: AX86996
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	1.9	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

Quant Method: MALLW2.M
Run #: 1120M30
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

11/07/09

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N003
Sample Collection Date: 11/10/2008

Loc ID: IR33MW65A
ARF: 57477
APPL ID: AX86996
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	112	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	107	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	106	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	114	85-120		%	11/21/2008	11/21/2008

12/07/09

Quant Method: MALLW2.M
Run #: 1120M30
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N004
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR33MW64A
ARF: 57477
APPL ID: AX86997
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	5.0	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	0.22 J	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

= Estimated value.

11/01/09

Quant Method: MALLW2.M
Run #: 1120M31
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N004
Sample Collection Date: 11/10/2008

Loc ID: IR33MW64A
ARF: 57477
APPL ID: AX86997
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	104	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	106	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	102	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	115	85-120		%	11/21/2008	11/21/2008

= Estimated value.

12/10/09

Quant Method: MALLW2.M
Run #: 1120M31
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N005
Sample Collection Date: 11/10/2008

Loc ID: IR09MW55B
ARF: 57477
APPL ID: AX86998
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

Quant Method: MALLW2.M
Run #: 1120M37
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N005
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW55B
ARF: 57477
APPL ID: AX86998
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	110	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	111	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	116	85-120		%	11/21/2008	11/21/2008

Quant Method: MALLW2.M
Run #: 1120M37
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Z010709

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B035
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57477
APPL ID: AX86999
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

Quant Method: MALLW2.M
Run #: 1120M24
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

W 10/09

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B035
Sample Collection Date: 11/10/2008

Loc ID: TRIP BLANK
ARF: 57477
APPL ID: AX86999
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	108	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	103	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	115	85-120		%	11/21/2008	11/21/2008

12/01/09

Quant Method: MALLW2.M
Run #: 1120M24
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B036
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR34MW01A
ARF: 57477
APPL ID: AX87000
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	0.28 J	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	0.32 J	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

= Estimated value.

Quant Method: MALLW2.M
Run #: 1120M38
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

11/21/09

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B036
Sample Collection Date: 11/10/2008

Loc ID: IR34MW01A
ARF: 57477
APPL ID: AX87000
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	101	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	107	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	100	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	116	85-120		%	11/21/2008	11/21/2008

= Estimated value.

12/17/08

Quant Method: MALLW2.M
Run #: 1120M38
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B040
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW31A
ARF: 57477
APPL ID: AX87004
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	0.31 J	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

J = Estimated value.

Quant Method: MALLW2.M
Run #: 1120M42
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

ND 10/09

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B040
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW31A
ARF: 57477
APPL ID: AX87004
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	106	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	108	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	103	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	115	85-120		%	11/21/2008	11/21/2008

= Estimated value.

12/10/09

Quant Method: MALLW2.M
Run #: 1120M42
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B041
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW54B
ARF: 57477
APPL ID: AX87005
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

Quant Method: MALLW2.M
Run #: 1120M43
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

10/07/09

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B041
Sample Collection Date: 11/10/2008

Loc ID: IR09MW54B
ARF: 57477
APPL ID: AX87005
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	112	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	110	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	107	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	115	85-120		%	11/21/2008	11/21/2008

12/01/08

Quant Method:	MALLW2.M
Run #:	1120M43
Instrument:	Max
Sequence:	M081117
Dilution Factor:	1
Initials:	ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B042
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW45F
ARF: 57477
APPL ID: AX87006
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

Quant Method: MALLW2.M
Run #: 1120M44
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

11/21/09

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B042
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW45F
ARF: 57477
APPL ID: AX87006
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	111	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	110	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	105	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	114	85-120		%	11/21/2008	11/21/2008

12/01/09

Quant Method: MALLW2.M
Run #: 1120M44
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846X012
Sample Collection Date: 11/10/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57477
APPL ID: AX87007
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

Quant Method: MALLW2.M
Run #: 1120M25
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

12/10/09

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846X012
Sample Collection Date: 11/10/2008

Loc ID: TRIP BLANK
ARF: 57477
APPL ID: AX87007
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	109	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	107	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	114	85-120		%	11/21/2008	11/21/2008

Rev 1/6/09

Quant Method:	MALLW2.M
Run #:	1120M25
Instrument:	Max
Sequence:	M081117
Dilution Factor:	1
Initials:	ND

Printed: 11/23/2008 11:09:52 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017C1a
SDG #: 57477
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 1/5/09
Page: 1 of 1
Reviewer: Q
2nd Reviewer: M

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/10/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD. r²
IV.	Continuing calibration/ICV	A	ICV = >570
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	diesel spiked
VIII.	Laboratory control samples	A	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	D=12+13
XVII.	Field blanks	ND	TB=1.6.10.18

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation
MM H2O

1 1	0846G007 T	11 2	0846B036	21	081120WMB	31	M
2 1	0846G008	12 2	0846B037	22	081121WMB	32	1
3 1	0846G009**	13 2	0846B038	23		33	
4 1	0846G010	14 2	0846B039	24		34	
5 1	0846N002	15 2	0846B040	25		35	
6 1	0846N001 T	16 2	0846B041**	26		36	
7 1	0846N003**	17 2	0846B042	27		37	
8 1	0846N004	18 1	0846X012 T	28		38	
9 2	0846N005**	19		29		39	
10 1	0846B035 T	20		30		40	

LDC #: 20017C19
SDG #: See Cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: n

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 20017e1a
SDG #: Secondary

VALIDATION FINDINGS CHECKLIST

Page: 2 of 3
Reviewer: G
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 2001TC1A
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 4
2nd reviewer: 4

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD
	12	13	
K	2.0	2.0	0

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

LDC #: 2001R19
SDG #: SECCOWN

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	10AL	11/17/08	S (1st internal standard)	0.9123	0.9123	0.9070	0.9070	2.7	2.7
			ZZ (2nd internal standard)	6.183	6.183	5.926	5.926	2.6	2.6
			HHH (3rd internal standard)	4.955	4.955	5.029	5.029	12	12
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017C19
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer: a

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	1120M18W	11/21/18	S (1st internal standard)	0.9070	0.9464	0.9464	4.3	4.3
			ZZ (2nd internal standard)	5.926	5.896	5.896	0.50	0.5
			HHH (3rd internal standard)	5.029	4.605	4.605	8.4	8.4
2	1120M32W	11/21/18	S (1st internal standard)	0.9070	0.9324	0.9324	2.8	2.8
			ZZ (2nd internal standard)	5.926	5.860	5.860	1.1	1.1
			HHH (3rd internal standard)	5.029	4.640	4.640	7.7	7.7
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 200TC19
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 3

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	19.158	22.36966	117	117	0
Bromofluorobenzene	21.053	22.55597	107	107	✓
1,2-Dichloroethane-d4	20.611	21.36852	104	104	✓
Dibromofluoromethane	20.313	20.68863	102	102	✓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 2001TC1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 081121W

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	10.0	NA	10.3	NA	103	103				
Trichloroethene	↓	↓	10.4	↓	104	104				
Benzene	↓	↓	10.2	↓	102	102				
Toluene	↓	↓	9.92	↓	99.2	99.2				
Chlorobenzene	↓	↓	9.85	↓	98.5	98.5				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 20017C19
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: R

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?

Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 7, K:

Conc. = $\frac{(71922)(25)(1)(\quad)}{(687552)(1.361)(\quad)(\quad)}$

= 1.92 µg/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 11, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57485

Sample Identification

0846B043
0846G012
0846G013**
0846G014
0846B044**
0846B045
0846B046
0846B047
0846B048
0846G019
0846G011
0846B047MS
0846B047MSD

**Indicates sample underwent Level IV review

Introduction

This data review covers 13 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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

Samples 0846B043 and 0846G011 were identified as trip blanks. No volatile contaminants were found in these 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 a 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 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 acceptable for samples on which a 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 the report if data has been qualified.

XVI. Field Duplicates

Samples 0846G013** and 0846G014 were identified as field duplicates. No volatiles were detected in any of the samples.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B043
Sample Collection Date: 11/11/2008

Loc ID: TRIP BLANK
ARF: 57485
APPL ID: AX87027
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/22/2008	11/22/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/22/2008	11/22/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/22/2008	11/22/2008

ND|0709

Quant Method: MALLW2.M
Run #: 1120M54
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:25:33 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B043
Sample Collection Date: 11/11/2008

Loc ID: TRIP BLANK
ARF: 57485
APPL ID: AX87027
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	111	70-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	112	75-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	116	85-120		%	11/22/2008	11/22/2008

Kl 10709

Quant Method: MALLW2.M
Run #: 1120M54
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:25:34 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G012
Sample Collection Date: 11/11/2008

Loc ID: IR33MW116A
ARF: 57485
APPL ID: AX87028
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	0.45 J	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

J = Estimated value.

6/10/09

Quant Method: MALLW2.M
Run #: 1120M45
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:25:34 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G012
Sample Collection Date: 11/11/2008

Loc ID: IR33MW116A
ARF: 57485
APPL ID: AX87028
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	106	70-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	108	75-120		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/21/2008	11/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	116	85-120		%	11/21/2008	11/21/2008

J = Estimated value.

Quant Method: MALLW2.M
Run #: 1120M45
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:25:34 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G013
Sample Collection Date: 11/11/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P041A
ARF: 57485
APPL ID: AX87029
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/22/2008	11/22/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/22/2008	11/22/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/22/2008	11/22/2008

Quant Method: MALLW2.M
Run #: 1120M46
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

11/07/09

Printed: 11/23/2008 11:25:34 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G013
Sample Collection Date: 11/11/2008

Loc ID: IR09P041A
ARF: 57485
APPL ID: AX87029
QCG: $86HP-081121AM-128073

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	109	70-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	108	75-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	111	85-120		%	11/22/2008	11/22/2008

Quant Method: MALLW2.M
Run #: 1120M46
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:25:34 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G014
Sample Collection Date: 11/11/2008

Loc ID: IR09P041A
ARF: 57485
APPL ID: AX87030
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/22/2008	11/22/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/22/2008	11/22/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/22/2008	11/22/2008

Quant Method: MALLW2.M
Run #: 1120M55
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

KS 10709

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G014
Sample Collection Date: 11/11/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P041A
ARF: 57485
APPL ID: AX87030
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	104	70-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	110	75-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	102	85-115		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	115	85-120		%	11/22/2008	11/22/2008

Quant Method: MALLW2.M
Run #: 1120M55
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B044
Sample Collection Date: 11/11/08

Loc ID: IR09MW61A
ARF: 57485
APPL ID AX87031
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/22/08	11/22/08
EPA 8260B	1,1,1-Trichloroethane	0.33 J	0.5	0.14	ug/L	11/22/08	11/22/08
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/22/08	11/22/08
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/22/08	11/22/08
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/22/08	11/22/08
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/22/08	11/22/08
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/22/08	11/22/08
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/22/08	11/22/08
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/22/08	11/22/08
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/22/08	11/22/08
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/22/08	11/22/08
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/22/08	11/22/08
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/22/08	11/22/08
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/22/08	11/22/08
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/22/08	11/22/08
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/22/08	11/22/08
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/22/08	11/22/08
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/22/08	11/22/08
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/22/08	11/22/08
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/22/08	11/22/08
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/22/08	11/22/08
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/22/08	11/22/08
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/22/08	11/22/08
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/22/08	11/22/08
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/22/08	11/22/08
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/22/08	11/22/08
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/22/08	11/22/08
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/22/08	11/22/08
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/22/08	11/22/08
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/22/08	11/22/08
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/22/08	11/22/08
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/22/08	11/22/08
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/22/08	11/22/08
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/22/08	11/22/08
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/22/08	11/22/08
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/22/08	11/22/08
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/22/08	11/22/08

J = Estimated value.

Quant Method: MALLW2.M
Run #: 1120M56
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

10/26/09

AMENDED PAGE

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B044
Sample Collection Date: 11/11/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW61A
ARF: 57485
APPL ID AX87031
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/22/08	11/22/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	111	70-120		%	11/22/08	11/22/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	112	75-120		%	11/22/08	11/22/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/22/08	11/22/08
EPA 8260B	Surrogate: Toluene-D8 (S)	115	85-120		%	11/22/08	11/22/08

J = Estimated value.

Quant Method: MALLW2.M
Run #: 1120M56
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

AMENDED PAGE

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B045
Sample Collection Date: 11/11/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW52A
ARF: 57485
APPL ID: AX87032
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/22/2008	11/22/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/22/2008	11/22/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/22/2008	11/22/2008

Quant Method: MALLW2.M
Run #: 1120M57
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Ro|0709

Printed: 11/23/2008 11:25:34 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B045
Sample Collection Date: 11/11/2008

Loc ID: IR09MW52A
ARF: 57485
APPL ID: AX87032
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	107	70-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	113	75-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	101	85-115		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	117	85-120		%	11/22/2008	11/22/2008

Quant Method: MALLW2.M
Run #: 1120M57
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:25:34 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B046
Sample Collection Date: 11/11/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW36A
ARF: 57485
APPL ID: AX87033
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/22/2008	11/22/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/22/2008	11/22/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/22/2008	11/22/2008

Quant Method: MALLW2.M
Run #: 1120M58
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

11/01/09

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B046
Sample Collection Date: 11/11/2008

Loc ID: IR09MW36A
ARF: 57485
APPL ID: AX87033
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	110	70-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	111	75-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	103	85-115		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	113	85-120		%	11/22/2008	11/22/2008

Quant Method: MALLW2.M
Run #: 1120M58
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

10/07/09

Printed: 11/23/2008 11:25:34 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B047
Sample Collection Date: 11/11/2008

Loc ID: IR55MW02A
ARF: 57485
APPL ID: AX87034
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/22/2008	11/22/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/22/2008	11/22/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/22/2008	11/22/2008

Quant Method: MALLW2.M
Run #: 1120M59
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B047
Sample Collection Date: 11/11/2008

Loc ID: IR55MW02A
ARF: 57485
APPL ID: AX87034
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	107	70-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	111	75-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	103	85-115		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	113	85-120		%	11/22/2008	11/22/2008

Quant Method: MALLW2.M
Run #: 1120M59
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:25:34 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B048
Sample Collection Date: 11/11/2008

Loc ID: IR70MW12A
ARF: 57485
APPL ID: AX87035
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/22/2008	11/22/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/22/2008	11/22/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/22/2008	11/22/2008

Quant Method: MALLW2.M
Run #: 1120M60
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B048
Sample Collection Date: 11/11/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR70MW12A
ARF: 57485
APPL ID: AX87035
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	110	70-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	113	75-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	107	85-115		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	113	85-120		%	11/22/2008	11/22/2008

Quant Method: MALLW2.M
Run #: 1120M60
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G019
Sample Collection Date: 11/11/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: G13
ARF: 57485
APPL ID: AX87036
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/21/2008	11/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/21/2008	11/21/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloroform	18	0.5	0.07	ug/L	11/21/2008	11/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/21/2008	11/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/21/2008	11/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/21/2008	11/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/21/2008	11/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/21/2008	11/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/21/2008	11/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/21/2008	11/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/21/2008	11/21/2008

Quant Method: MALLW2.M
Run #: 1120M29
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Ko/o709

Printed: 11/23/2008 11:25:34 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G019
Sample Collection Date: 11/11/08

Loc ID: G13
ARF: 57485
APPL ID AX87036
QCG: $86HP-081120BM-128071

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Chloroform	18	0.5	0.07	ug/L	11/21/08	11/21/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	104	70-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	108	75-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	103	85-115		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Toluene-D8 (S)	118	85-120		%	11/21/08	11/21/08

1-16-09

AMENDED PAGE

Quant Method: MALLW2.M
Run #: 1120M29
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 01/16/09 7:59:26 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G011
Sample Collection Date: 11/11/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57485
APPL ID: AX87182
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	11/22/2008	11/22/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	11/22/2008	11/22/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	11/22/2008	11/22/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	11/22/2008	11/22/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	11/22/2008	11/22/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	11/22/2008	11/22/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	11/22/2008	11/22/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	11/22/2008	11/22/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	11/22/2008	11/22/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	11/22/2008	11/22/2008

Quant Method: MALLW2.M
Run #: 1120M53
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

11/18/09

Printed: 11/23/2008 11:25:34 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G011
Sample Collection Date: 11/11/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57485
APPL ID: AX87182
QCG: $86HP-081121BM-128072

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	105	70-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	109	75-120		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	103	85-115		%	11/22/2008	11/22/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	115	85-120		%	11/22/2008	11/22/2008

ND/07/09

Quant Method: MALLW2.M
Run #: 1120M53
Instrument: Max
Sequence: M081117
Dilution Factor: 1
Initials: ND

Printed: 11/23/2008 11:25:34 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017D1a
SDG #: 57485
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 1/5/09
Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/11/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD .12
IV.	Continuing calibration/ICV	A	ICV = 75%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	ND	D = 3+4
XVII.	Field blanks	ND	TB = 1, 11.

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

MH 1/5/09

1 3	0846B043	11 3	0846G011	21	081120WMB	31	M
2 2	0846G012	12 3	0846B047MS	22	08112WMB	32	
3 2	0846G013**	13 3	0846B047MSD	23	08112WMB1	33	
4 3	0846G014	14		24		34	
5 3	0846B044**	15		25		35	
6 3	0846B045	16		26		36	
7 3	0846B046	17		27		37	
8 3	0846B047	18		28		38	
9 3	0846B048	19		29		39	
10 1	0846G019	20		30		40	

LDC #: 20017 B1a
SDG #: Seccover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: a
2nd Reviewer: M

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 20017D1a
SDG #: See COVER

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: AL

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 20017D19
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: Q
2nd Reviewer: U

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	11/17/18	S (1st internal standard)	0.9123	0.9123	0.9070	0.9070	2.7	2.7
			ZZ (2nd internal standard)	6.183	6.183	5.926	5.926	2.6	2.6
			HHH (3rd internal standard)	4.955	4.955	5.029	5.029	12	12
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017B19
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: M

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	1120M34W	11/21/08	S (1st internal standard)	0.9070	0.9324	0.9324	2.8	2.8
			ZZ (2nd internal standard)	5.926	5.860	5.860	1.1	1.1
			HHH (3rd internal standard)	5.029	4.640	4.640	7.7	7.7
2	1120M48W	11/22/08	S (1st internal standard)	0.9070	0.9771	0.9771	7.7	7.7
			ZZ (2nd internal standard)	5.926	5.902	5.902	0.41	0.41
			HHH (3rd internal standard)	5.029	4.550	4.550	9.5	9.5
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017D1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: a
2nd reviewer: A

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 3

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	19.158	21.33602	111	111	0
Bromofluorobenzene	21.053	22.78048	108	108	
1,2-Dichloroethane-d4	20.611	22.50417	109	109	
Dibromofluoromethane	20.313	21.13593	104	104	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 20017019
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD sample: 12/13

Compound	Spike Added (µg/L)		Sample Concentration (µg/L)	Spiked Sample Concentration (µg/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	10.00	10.00	ND	10.4	10.4	104	104	104	104	0.0	0.0
Trichloroethene	↓	↓	↓	9.98	9.77	99.8	99.8	97.7	97.7	2.1	2.1
Benzene	↓	↓	↓	9.90	9.83	99.0	99.0	98.3	98.3	0.71	0.71
Toluene	↓	↓	↓	9.60	9.57	96.0	96.0	95.7	95.7	0.31	0.31
Chlorobenzene	↓	↓	↓	9.72	9.37	97.2	97.2	93.7	93.7	3.7	3.7

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

MSDCLC.1SB

LDC #: 20017D1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 081121WLCS1

Compound	Spike Added (ug/L)		Spiked Sample Concentration ug/L		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	10.0	NA	10.3	NA	103	103				
Trichloroethene			10.4		104	104				
Benzene			10.2		102	102				
Toluene			9.92		99.2	99.2				
Chlorobenzene			9.85		98.5	98.5				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 20017819
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 5, ~~#~~N:

Conc. = $\frac{(11436)(25.00)(1)}{(68752)(1.262)(\quad)(\quad)}$

= 0.3295 µg/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 6, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57463

Sample Identification

0845D024
0845D025**
0845H030
0845H031
0845H029
0845H032
0845H033
0845D023
0845D026
0845D027
0845B027
0845B028**
0845B029
0845B030
0845X010
0845H030MS
0845H030MSD

**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 8260B using Selected Ion Monitoring (SIM) for Volatiles.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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

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

V. Blanks

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

Samples 0845H029, 0845D023, 0845B027, and 0845X010 were identified as trip blanks. No volatile contaminants were found in these 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 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 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.

XV. Overall Assessment of Data

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

XVI. Field Duplicates

Samples 0845H032 and 0845H033 and samples 0845D026 and 0845D027 were identified as field duplicates. No volatiles were detected in any of the samples.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 57463

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 57463

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 57463

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D024
Sample Collection Date: 11/06/08

Loc ID: PA33MW37A
ARF: 57463
APPL ID: AX86872
QCG: $86HPS-081118AS-128015

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	98.0	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	97.6	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	104	85-120		%	11/19/08	11/19/08

A 1/07/09

Quant Method: S86SIM.M
Run #: 1118S22
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 12:05:43 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

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1970 Broadway, Suite 710
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APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D025
Sample Collection Date: 11/06/08

Loc ID: IR33MW120B
ARF: 57463
APPL ID: AX86873
QCG: $86HPS-081118AS-128015

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	110	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	105	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	98.3	85-120		%	11/19/08	11/19/08

11/01/09

Quant Method: S86SIM.M
Run #: 1118S23
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 12:05:43 PM
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EPA 8260B

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Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H031
Sample Collection Date: 11/06/08

Loc ID: IR09P042A
ARF: 57463
APPL ID: AX86875
QCG: $86HPS-081118AS-128015

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	99.0	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	97.1	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	101	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	100	85-120		%	11/19/08	11/19/08

12/8/08

Quant Method:	S86SIM.M
Run #:	1118S24
Instrument:	Sweetpea
Sequence:	S081118
Dilution Factor:	1
Initials:	ND

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

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Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H029
Sample Collection Date: 11/06/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57463
APPL ID: AX86876
QCG: $86HPS-081118AS-128015

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	98.5	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	99.8	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	98.7	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	102	85-120		%	11/19/08	11/19/08

KO|0709

Quant Method: S86SIM.M
Run #: 1118S18
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

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Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H032
Sample Collection Date: 11/06/08

Loc ID: IR09P043A
ARF: 57463
APPL ID: AX86877
QCG: $86HPS-081118AS-128015

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	112	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	106	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	108	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	101	85-120		%	11/19/08	11/19/08

Ro|0709

Quant Method: S86SIM.M
Run #: 1118S25
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

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Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H033
Sample Collection Date: 11/06/08

Loc ID: IR09P043A
ARF: 57463
APPL ID: AX86878
QCG: $86HPS-081118AS-128015

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	104	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	97.2	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	103	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	97.6	85-120		%	11/19/08	11/19/08

KO/0709

Quant Method: S86SIM.M
Run #: 1118S26
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 12:05:43 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

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APPL Inc.
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Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D023
Sample Collection Date: 11/06/08

Loc ID: TRIP BLANK
ARF: 57463
APPL ID: AX86879
QCG: $86HPS-081118AS-128015

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	110	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	105	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	99.3	85-120		%	11/19/08	11/19/08

AO|8709

Quant Method: S86SIM.M
Run #: 1118S19
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 12:05:43 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

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APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D027
Sample Collection Date: 11/06/08

Loc ID: IR09MW35A
ARF: 57463
APPL ID: AX86881
QCG: $86HPS-081118AS-128015

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	106	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	102	85-120		%	11/19/08	11/19/08

12/2/09

Quant Method: S86SIM.M
Run #: 1118S21
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 12:05:43 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B027
Sample Collection Date: 11/06/08

Loc ID: TRIP BLANK
ARF: 57463
APPL ID: AX86882
QCG: $86HPS-081118AS-128015

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	101	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	98.9	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	104	85-120		%	11/19/08	11/19/08

ND/6709

Quant Method:	S86SIM.M
Run #:	1118S20
Instrument:	Sweetpea
Sequence:	S081118
Dilution Factor:	1
Initials:	ND

Printed: 11/25/08 12:05:43 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B028
Sample Collection Date: 11/06/08

Loc ID: IR09MW38A
ARF: 57463
APPL ID: AX86883
QCG: $86HPS-081119AS-128016

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	99.7	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	100	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	97.1	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	103	85-120		%	11/19/08	11/19/08

KD 8/09

Quant Method: S86SIM.M
Run #: 1119S07
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 12:05:43 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B029
Sample Collection Date: 11/06/08

Loc ID: IR09MW39A
ARF: 57463
APPL ID: AX86884
QCG: $86HPS-081119AS-128016

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	106	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	102	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	103	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	101	85-120		%	11/19/08	11/19/08

12/01/08

Quant Method: S86SIM.M
Run #: 1119S08
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 12:05:43 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B030
Sample Collection Date: 11/06/08

Loc ID: IR09MW44A
ARF: 57463
APPL ID: AX86885
QCG: $86HPS-081119AS-128016

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	106	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	102	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	101	85-120		%	11/19/08	11/19/08

KD 10/09

Quant Method: S86SIM.M
Run #: 1119S09
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 12:05:43 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845X010
Sample Collection Date: 11/06/08

Loc ID: TRIP BLANK
ARF: 57463
APPL ID: AX86886
QCG: $86HPS-081119AS-128016

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	103	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	102	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	98.3	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	102	85-120		%	11/19/08	11/19/08

12/8/08

Quant Method: S86SIM.M
Run #: 1119S06
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 12:05:43 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017A1c
SDG #: 57463
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 1/5/09
Page: 1 of 1
Reviewer: 9
2nd Reviewer: 11

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/6/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	RF ≤ 25%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	ND	D=6+7. 9+10
XVII.	Field blanks	ND	TB=5. 8. 11. 15

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

MH 2-07

1	0845D024	11	0845B027 T	21	081118WMB	31	
2	0845D025**	12 2	0845B028**	22	081119WMB	32	
3 2	0845H030	13 2	0845B029	23		33	
4	0845H031	14 2	0845B030	24		34	
5	0845H029 T	15 2	0845X010 T	25		35	
6 1	0845H032	16 2	0845H030MS	26		36	
7 1	0845H033	17 2	0845H030MSD	27		37	
8	0845D023 T	18		28		38	
9 1	0845D026	19		29		39	
10	0845D027	20		30		40	

LDC #: 20017A1C
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: M

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) > 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 20017A1c
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: 9
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 20017A1c
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer: A

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	1CA2	11/18/08	0 (1st internal standard)	1.499	1.499	1.381	1.381	7.7	7.7
			(2nd internal standard)						
			(3rd internal standard)						
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017A1c
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	1118S1W	11/18/08	0 (1st internal standard)	1.381	1.506	1.506	9.1	9.0
			(2nd internal standard)					
			(3rd internal standard)					
2	1119S0W	11/19/08	0 (1st internal standard)	1.381	1.473	1.473	6.6	6.6
			(2nd internal standard)					
			(3rd internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017A1C
SDG #: 3ec00W

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: A

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	20.135	19.79671	98.3	98.3	0
Bromofluorobenzene	19.764	19.88830	101	101	
1,2-Dichloroethane-d4	21.367	23.57293	110	110	
Dibromofluoromethane	21.965	23.05683	105	105	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 20017A1C
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = | MSC - MSC | * 2/(MSC + MSDC)

MSC = Matrix spike concentration; MSDC = Matrix spike duplicate concentration

MS/MSD sample: 16/17

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
~~1,1-Dichloroethene~~ D	10.00	10.00	ND	10.3	10.3	103	103	103	103	0.0	0.0
Trichloroethene											
Benzene											
Toluene											
~~Chlorobenzene~~											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017A1c
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: A
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 081118W

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~1,1-Dichloroethene~~ 0	10.00	NA	10.9	NA	109	109				
Trichloroethene										
Benzene										
Toluene										
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 20017A1c
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?

Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. ND, _____:

Conc. = ( ) ( ) ( ) / ( ) ( ) ( ) ( )

=

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 7, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57474

Sample Identification

0845B032**
0845B033
0845D029
0845D030
0845H034
0845H035
0845B034**
0845H036
0845H037**
0845H038
0845H039
0845B031
0845X011
0845D028
0845D031

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 15 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B using Selected Ion Monitoring (SIM) for Volatiles.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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

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

V. Blanks

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

Samples 0845H034, 0845B031, 0845X011, and 0845D028 were identified as trip blanks. No volatile contaminants were found in these 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 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 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.

XV. Overall Assessment of Data

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

XVI. Field Duplicates

No field duplicates were identified in this SDG.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 57474

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 57474

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 57474

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B032
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR70MW07A
ARF: 57474
APPL ID: AX86970
QCG: $86HPS-081119AS-128016

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	102	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	98.0	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	100	85-120		%	11/19/08	11/19/08

11/0709

Quant Method: S86SIM.M
Run #: 1119S10
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: GM

Printed: 11/25/08 11:47:11 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B033
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR67MW04A
ARF: 57474
APPL ID: AX86971
QCG: $86HPS-081119AS-128016

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	103	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	99.7	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	103	85-120		%	11/19/08	11/19/08

12/07/08

Quant Method: S86SIM.M
Run #: 1119S11
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: GM

Printed: 11/25/08 11:47:11 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D029
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: PA50MW07A
ARF: 57474
APPL ID: AX86972
QCG: $86HPS-081119AS-128016

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	103	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	102	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	97.5	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	100	85-120		%	11/19/08	11/19/08

KL 04709

Quant Method: S86SIM.M
Run #: 1119S12
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: GM

Printed: 11/25/08 11:47:11 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D030
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR55MW01A
ARF: 57474
APPL ID: AX86973
QCG: $86HPS-081119AS-128016

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/19/08	11/19/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	112	70-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	105	75-120		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	11/19/08	11/19/08
EPA 8260B	Surrogate: Toluene-D8 (S)	98.2	85-120		%	11/19/08	11/19/08

12/01/09

Quant Method: S86SIM.M
Run #: 1119S13
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: GM

Printed: 11/25/08 11:47:11 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H034
Sample Collection Date: 11/07/08

Loc ID: TRIP BLANK
ARF: 57474
APPL ID: AX86974
QCG: $86HPS-081119BS-128048

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	107	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	103	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	99.5	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	99.4	85-120		%	11/20/08	11/20/08

Ykl 0209

Quant Method: S86SIM.M
Run #: 1119S24
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: GM

Printed: 11/25/08 11:47:11 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H035
Sample Collection Date: 11/07/08

Loc ID: IR70MW11A
ARF: 57474
APPL ID: AX86975
QCG: $86HPS-081120AS-128049

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	113	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	98.3	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	102	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	96.4	85-120		%	11/20/08	11/20/08

N 11/07/09

Quant Method: S86SIM.M
Run #: 1120S06
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: GM

Printed: 11/25/08 11:47:11 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B034
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR33MW121B
ARF: 57474
APPL ID: AX86976
QCG: $86HPS-081120AS-128049

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Vinyl chloride	0.064 J	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	105	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	103	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	99.1	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	107	85-120		%	11/20/08	11/20/08

K010709

J = Estimated value.

Quant Method: S86SIM.M
Run #: 1120S07
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: GM

Printed: 11/25/08 11:47:11 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H036
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P035AA
ARF: 57474
APPL ID: AX86977
QCG: $86HPS-081120AS-128049

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	106	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	99.2	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	102	85-120		%	11/20/08	11/20/08

12/10/09

Quant Method:	S86SIM.M
Run #:	1120S08
Instrument:	Sweetpea
Sequence:	S081118
Dilution Factor:	1
Initials:	GM

Printed: 11/25/08 11:47:11 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H037
Sample Collection Date: 11/07/08

Loc ID: IR09P035AB
ARF: 57474
APPL ID: AX86978
QCG: $86HPS-081120AS-128049

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	111	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	99.7	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	102	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	99.1	85-120		%	11/20/08	11/20/08

110709

Quant Method: S86SIM.M
Run #: 1120S09
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: GM

Printed: 11/25/08 11:47:11 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H039
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR36MW16A
ARF: 57474
APPL ID: AX86980
QCG: $86HPS-081120AS-128049

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	105	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	100	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	98.4	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	103	85-120		%	11/20/08	11/20/08

R 01 07009

Quant Method: S86SIM.M
Run #: 1120S11
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: GM

Printed: 11/25/08 11:47:11 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B031
Sample Collection Date: 11/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57474
APPL ID: AX86981
QCG: $86HPS-081119BS-128048

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	104	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	93.5	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	101	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	98.0	85-120		%	11/20/08	11/20/08

R 010709

Quant Method: S86SIM.M
Run #: 1119S25
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: GM

Printed: 11/25/08 11:47:12 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845X011
Sample Collection Date: 11/07/08

Loc ID: TRIP BLANK
ARF: 57474
APPL ID: AX86982
QCG: $86HPS-081119BS-128048

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	107	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	103	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	98.4	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	100	85-120		%	11/20/08	11/20/08

Z 이터09

Quant Method: S86SIM.M
Run #: 1119S26
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: GM

Printed: 11/25/08 11:47:12 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845D028
Sample Collection Date: 11/07/08

Loc ID: TRIP BLANK
ARF: 57474
APPL ID: AX86983
QCG: $86HPS-081119BS-128048

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	102	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	98.0	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	99.9	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	101	85-120		%	11/20/08	11/20/08

12/10/09

Quant Method: S86SIM.M
Run #: 1119S27
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: GM

Printed: 11/25/08 11:47:12 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017B1c
SDG #: 57474
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 1/5/09
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/17/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	RRF<70
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	TB- 5, 12, 13, 14

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

MW +20

1 1	0845B032**	11 3	0845H039	21	081119WMB	31	
2 1	0845B033	12 3	0845B031	22	081119WMB1	32	
3 1	0845D029	13 3	0845X011	23	081120WMB	33	
4 1	0845D030	14 3	0845D028	24	081121WMB	34	
5 2	0845H034	15 4	0845D031	25		35	
6 3	0845H035	16		26		36	
7 3	0845B034**	17		27		37	
8 3	0845H036	18		28		38	
9 3	0845H037**	19		29		39	
10 3	0845H038	20		30		40	

LDC #: 20017B1a
SDG #: See COC

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 20017B1a
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 20017B1c
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer: a

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	11/18/08	0 (1st internal standard)	1.499	1.499	1.381	1.381	7.7	7.7
			(2nd internal standard)						
			(3rd internal standard)						
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017B1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	111950IW	11/19/08	0 (1st internal standard)	1.381	~~1.506~~	~~1.506~~	~~9.1~~	~~9.0~~
			(2nd internal standard)		1.473	1.437	6.6	6.6
			(3rd internal standard)					
2	112050IW	11/20/08	0 (1st internal standard)	1.381	1.455	1.455	5.4	5.3
			(2nd internal standard)					
			(3rd internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 20017B19
SDG #: 20C0K1

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: a
2nd reviewer: a

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	20.125	20.18978	100	100	0
Bromofluorobenzene	19.761	20.00042	101	101	✓
1,2-Dichloroethane-d4	21.367	21.78712	102	102	✓
Dibromofluoromethane	21.965	21.52664	98.0	98.0	✓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 20017B1c
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 081119W

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
~~1,1-Dichloroethene~~ 0	10.00	NA	10.7	NA	107	107				
Trichloroethene										
Benzene										
Toluene										
~~Chlorobenzene~~										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 200178/c
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 7, C:

Conc. = $\frac{(911)(25)(1)}{(18047)(1.916)(\quad)(\quad)}$

= 0.0635 ug/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 10, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57477

Sample Identification

0846G007
0846G008
0846G009**
0846G010
0846N002
0846N001
0846N003**
0846N004
0846N005**
0846B035
0846B036
0846B037
0846B038
0846B039
0846B040
0846B041**
0846B042
0846X012

**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 8260B using Selected Ion Monitoring (SIM) for Volatiles.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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

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

V. Blanks

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

Samples 0846G007, 0846N001, 0846B035, and 0846X012 were identified as trip blanks. No volatile contaminants were found in these 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 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 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.

XV. Overall Assessment of Data

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

XVI. Field Duplicates

Samples 0846B037 and 0846B038 were identified as field duplicates. No volatiles were detected in any of the samples.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 57477

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 57477

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 57477

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G007
Sample Collection Date: 11/10/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57477
APPL ID: AX86990
QCG: $86HPS-081121AS-128094

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	102	70-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	90.2	75-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	92.2	85-115		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Toluene-D8 (S)	94.0	85-120		%	11/21/08	11/21/08

11/21/08

Quant Method:	S86SIM.M
Run #:	1121S07
Instrument:	Sweetpea
Sequence:	S081118
Dilution Factor:	1
Initials:	SV

Printed: 11/24/08 11:20:26 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G008
Sample Collection Date: 11/10/08

Loc ID: IR34MW02A
ARF: 57477
APPL ID: AX86991
QCG: $86HPS-081120AS-128049

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	107	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	100	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	100.0	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	107	85-120		%	11/20/08	11/20/08

Kolo709

Quant Method: S86SIM.M
Run #: 1120S13
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: SV

Printed: 11/24/08 11:20:26 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G009
Sample Collection Date: 11/10/08

Loc ID: PA33MW36A
ARF: 57477
APPL ID: AX86992
QCG: $86HPS-081120AS-128049

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	97.4	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	101	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	101	85-120		%	11/20/08	11/20/08

7/10/09

Quant Method: S86SIM.M
Run #: 1120S14
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: SV

Printed: 11/24/08 11:20:26 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G010
Sample Collection Date: 11/10/08

Loc ID: IR71MW04A
ARF: 57477
APPL ID: AX86993
QCG: $86HPS-081120AS-128049

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	102	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	96.1	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	97.5	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	100	85-120		%	11/20/08	11/20/08

M 010709

Quant Method: S86SIM.M
Run #: 1120S15
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: SV

Printed: 11/24/08 11:20:26 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N002
Sample Collection Date: 11/10/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR33MW66A
ARF: 57477
APPL ID: AX86994
QCG: $86HPS-081120AS-128049

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/20/08	11/20/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	112	70-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	98.3	75-120		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	101	85-115		%	11/20/08	11/20/08
EPA 8260B	Surrogate: Toluene-D8 (S)	98.9	85-120		%	11/20/08	11/20/08

NS|0709

Quant Method: S86SIM.M
Run #: 1120S16
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: SV

Printed: 11/24/08 11:20:26 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N001
Sample Collection Date: 11/10/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57477
APPL ID: AX86995
QCG: $86HPS-081121AS-128094

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	103	70-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	93.0	75-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	89.9	85-115		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Toluene-D8 (S)	92.8	85-120		%	11/21/08	11/21/08

N 11/24/09

Quant Method: S86SIM.M
Run #: 1121S08
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: SV

Printed: 11/24/08 11:20:27 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N003
Sample Collection Date: 11/10/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR33MW65A
ARF: 57477
APPL ID: AX86996
QCG: $86HPS-081121AS-128094

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	105	70-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	92.9	75-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	92.6	85-115		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Toluene-D8 (S)	92.5	85-120		%	11/21/08	11/21/08

xLO/07/09

Quant Method: S86SIM.M
Run #: 1121S11
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: SV

Printed: 11/24/08 11:20:27 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N004
Sample Collection Date: 11/10/08

Loc ID: IR33MW64A
ARF: 57477
APPL ID: AX86997
QCG: $86HPS-081121AS-128094

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Carbon tetrachloride	0.72	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	98.7	70-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	93.8	75-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	90.5	85-115		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Toluene-D8 (S)	98.2	85-120		%	11/21/08	11/21/08

KJ 10709

Quant Method: S86SIM.M
Run #: 1121S12
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: SV

Printed: 11/24/08 11:20:27 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N005
Sample Collection Date: 11/10/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW55B
ARF: 57477
APPL ID: AX86998
QCG: $86HPS-081121AS-128094

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	104	70-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	94.9	75-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	87.7	85-115		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Toluene-D8 (S)	92.3	85-120		%	11/21/08	11/21/08

L 010709

Quant Method: S86SIM.M
Run #: 1121S13
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: SV

Printed: 11/24/08 11:20:27 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B035
Sample Collection Date: 11/10/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57477
APPL ID: AX86999
QCG: $86HPS-081121AS-128094

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	105	70-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	92.6	75-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	92.3	85-115		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Toluene-D8 (S)	93.1	85-120		%	11/21/08	11/21/08

KO|0709

Quant Method: S86SIM.M
Run #: 1121S09
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: SV

Printed: 11/24/08 11:20:27 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B036
Sample Collection Date: 11/10/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR34MW01A
ARF: 57477
APPL ID: AX87000
QCG: $86HPS-081121AS-128094

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	99.3	70-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	92.2	75-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	89.8	85-115		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Toluene-D8 (S)	95.6	85-120		%	11/21/08	11/21/08

KS/0709

Quant Method: S86SIM.M
Run #: 1121S14
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: SV

Printed: 11/24/08 11:20:27 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B040
Sample Collection Date: 11/10/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW31A
ARF: 57477
APPL ID: AX87004
QCG: $86HPS-081123AS-128095

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	107	70-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	95.4	85-115		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Toluene-D8 (S)	105	85-120		%	11/23/08	11/23/08

R01/07/09

Quant Method: S86SIM.M
Run #: 1123S09
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: SV

Printed: 11/24/08 11:20:27 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B041
Sample Collection Date: 11/10/08

Loc ID: IR09MW54B
ARF: 57477
APPL ID: AX87005
QCG: $86HPS-081123AS-128095

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	106	70-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	100	75-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	95.8	85-115		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Toluene-D8 (S)	105	85-120		%	11/23/08	11/23/08

11/5/09

Quant Method: S86SIM.M
Run #: 1123S10
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: SV

Printed: 11/24/08 11:20:28 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B042
Sample Collection Date: 11/10/08

Loc ID: IR09MW45F
ARF: 57477
APPL ID: AX87006
QCG: $86HPS-081123AS-128095

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	114	70-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	103	75-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	97.1	85-115		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Toluene-D8 (S)	102	85-120		%	11/23/08	11/23/08

Kol 0705

Quant Method:	S86SIM.M
Run #:	1123S11
Instrument:	Sweetpea
Sequence:	S081118
Dilution Factor:	1
Initials:	SV

Printed: 11/24/08 11:20:28 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846X012
Sample Collection Date: 11/10/08

Loc ID: TRIP BLANK
ARF: 57477
APPL ID: AX87007
QCG: $86HPS-081121AS-128094

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/21/08	11/21/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	99.3	70-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	91.3	75-120		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	90.5	85-115		%	11/21/08	11/21/08
EPA 8260B	Surrogate: Toluene-D8 (S)	93.9	85-120		%	11/21/08	11/21/08

12/01/09

Quant Method: S86SIM.M
Run #: 1121S10
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: SV

Printed: 11/24/08 11:20:28 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017C1c
SDG #: 57477
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 1/5/09
Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/10/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	ICV ≥ 75%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	ND	D = 12 + 13
XVII.	Field blanks	ND	TB = 1 . 6 . 10 . 18

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

MH 3/3

1 2	0846G007	11 2	0846B036	21	081120W MB 3	31	
2 1	0846G008	12 2	0846B037	22	081121W MB	32	
3 1	0846G009**	13 3	0846B038	23	081123W MB	33	
4 1	0846G010	14 3	0846B039	24		34	
5 1	0846N002	15 3	0846B040	25		35	
6 2	0846N001	16 3	0846B041**	26		36	
7 2	0846N003**	17 3	0846B042	27		37	
8 2	0846N004	18 2	0846X012	28		38	
9 2	0846N005**	19		29		39	
10 2	0846B035	20		30		40	

LDC #: 20017C/C
SDG #: See Cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: 11

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 2001TC1c
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 2 of 3
Reviewer: Q
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 20017C1C
SDG #: See COVER

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	11/18/08	0 (1st internal standard)	1.499	1.499	1.381	1.381	7.7	7.7
			(2nd internal standard)						
			(3rd internal standard)						
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017C1c
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer: a

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	112050W	11/20/08	0 (1st internal standard)	1.381	1.455	1.455	5.4	5.3
			(2nd internal standard)					
			(3rd internal standard)					
2	112501W	11/21/08	0 (1st internal standard)	1.381	1.429	1.429	3.5	3.5
			(2nd internal standard)					
			(3rd internal standard)					
3	112350 2W	11/23/08	0 (1st internal standard)	1.381	1.318	1.318	4.5	4.5
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017C1c
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: a
2nd reviewer: KL

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 3

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	20.135	20.24844	101	101	0
Bromofluorobenzene	19.764	19.24499	97.4	97.4	✓
1,2-Dichloroethane-d4	21.367	23.05971	108	108	✓
Dibromofluoromethane	21.965	22.07824	101	101	✓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 20077c1c
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 081121N

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
~~1,1-Dichloroethene~~ 0	10.00	NA	10.3	NA	103	103				
Trichloroethene										
Benzene										
Toluene										
~~Chlorobenzene~~										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 2001TC1e
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: a
2nd reviewer: M

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. ND , _____:

Conc. = ( ) ( ) ( ) / ( ) ( ) ( ) ( )

=

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 11, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57485

Sample Identification

0846B043
0846G012
0846G013**
0846G014
0846B044**
0846B045
0846B046
0846B047
0846B048
0846G011
0846B047MS
0846B047MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 12 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B using Selected Ion Monitoring (SIM) for Volatiles.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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

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

V. Blanks

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

Samples 0846B043 and 0846G011 were identified as trip blanks. No volatile contaminants were found in these 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 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 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.

XV. Overall Assessment of Data

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

XVI. Field Duplicates

Samples 0846G013** and 0846G014 were identified as field duplicates. No volatiles were detected in any of the samples.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B043
Sample Collection Date: 11/11/08

Loc ID: TRIP BLANK
ARF: 57485
APPL ID: AX87027
QCG: $86HPS-081123AS-128095

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	107	70-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	105	75-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	95.0	85-115		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Toluene-D8 (S)	108	85-120		%	11/23/08	11/23/08

N 010709

Quant Method: S86SIM.M
Run #: 1123S06
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 2:02:38 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G012
Sample Collection Date: 11/11/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR33MW116A
ARF: 57485
APPL ID: AX87028
QCG: $86HPS-081123AS-128095

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	103	70-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	99.1	75-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	93.8	85-115		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Toluene-D8 (S)	107	85-120		%	11/23/08	11/23/08

K 010709

Quant Method: S86SIM.M
Run #: 1123S12
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 2:02:38 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G013
Sample Collection Date: 11/11/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P041A
ARF: 57485
APPL ID: AX87029
QCG: $86HPS-081123AS-128095

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	111	70-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	104	75-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	96.7	85-115		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Toluene-D8 (S)	104	85-120		%	11/23/08	11/23/08

N 9/10/09

Quant Method: S86SIM.M
Run #: 1123S13
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 2:02:38 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G014
Sample Collection Date: 11/11/08

Loc ID: IR09P041A
ARF: 57485
APPL ID: AX87030
QCG: $86HPS-081123AS-128095

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	103	75-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	96.5	85-115		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Toluene-D8 (S)	109	85-120		%	11/23/08	11/23/08

rl 12/07/09

Quant Method: S86SIM.M
Run #: 1123S14
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 2:02:38 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B044
Sample Collection Date: 11/11/08

Loc ID: IR09MW61A
ARF: 57485
APPL ID AX87031
QCG: $86HPS-081123AS-128095

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	106	70-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	94.9	85-115		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Toluene-D8 (S)	104	85-120		%	11/23/08	11/23/08

Quant Method: S86SIM.M
Run #: 1123S15
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

1/12/09

AMENDED PAGE

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B045
Sample Collection Date: 11/11/08

Loc ID: IR09MW52A
ARF: 57485
APPL ID: AX87032
QCG: $86HPS-081123AS-128095

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/23/08	11/23/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	100	75-120		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	96.1	85-115		%	11/23/08	11/23/08
EPA 8260B	Surrogate: Toluene-D8 (S)	107	85-120		%	11/23/08	11/23/08

12/01/09

Quant Method: S86SIM.M
Run #: 1123S16
Instrument: Sweetpea
Sequence: S081118
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 2:02:39 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B046
Sample Collection Date: 11/11/08

Loc ID: IR09MW36A
ARF: 57485
APPL ID: AX87033
QCG: $86HPS-081124AS-128136

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/24/08	11/24/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/24/08	11/24/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/24/08	11/24/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	99.7	70-120		%	11/24/08	11/24/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	114	75-120		%	11/24/08	11/24/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	98.8	85-115		%	11/24/08	11/24/08
EPA 8260B	Surrogate: Toluene-D8 (S)	105	85-120		%	11/24/08	11/24/08

12/10/09

Quant Method: S86SIM.M
Run #: 1124S16
Instrument: Sweetpea
Sequence: S081124
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 2:02:39 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B047
Sample Collection Date: 11/11/08

Loc ID: IR55MW02A
ARF: 57485
APPL ID: AX87034
QCG: $86HPS-081124AS-128136

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/24/08	11/24/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/24/08	11/24/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/24/08	11/24/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	98.4	70-120		%	11/24/08	11/24/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	114	75-120		%	11/24/08	11/24/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	99.6	85-115		%	11/24/08	11/24/08
EPA 8260B	Surrogate: Toluene-D8 (S)	102	85-120		%	11/24/08	11/24/08

N/01/09

Quant Method: S86SIM.M
Run #: 1124S17
Instrument: Sweetpea
Sequence: S081124
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 2:02:39 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B048
Sample Collection Date: 11/11/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR70MW12A
ARF: 57485
APPL ID: AX87035
QCG: $86HPS-081124AS-128136

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/24/08	11/24/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/24/08	11/24/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/24/08	11/24/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	100	70-120		%	11/24/08	11/24/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	119	75-120		%	11/24/08	11/24/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	99.7	85-115		%	11/24/08	11/24/08
EPA 8260B	Surrogate: Toluene-D8 (S)	107	85-120		%	11/24/08	11/24/08

T010709

Quant Method: S86SIM.M
Run #: 1124S18
Instrument: Sweetpea
Sequence: S081124
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 2:02:39 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G011
Sample Collection Date: 11/11/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57485
APPL ID: AX87182
QCG: $86HPS-081124AS-128136

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	11/24/08	11/24/08
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	11/24/08	11/24/08
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	11/24/08	11/24/08
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	101	70-120		%	11/24/08	11/24/08
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	116	75-120		%	11/24/08	11/24/08
EPA 8260B	Surrogate: Dibromofluoromethane (S)	98.1	85-115		%	11/24/08	11/24/08
EPA 8260B	Surrogate: Toluene-D8 (S)	103	85-120		%	11/24/08	11/24/08

R010709

Quant Method: S86SIM.M
Run #: 1124S15
Instrument: Sweetpea
Sequence: S081124
Dilution Factor: 1
Initials: ND

Printed: 11/25/08 2:02:39 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017D1c
SDG #: 57485
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 1/5/09
Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/10/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD. r²
IV.	Continuing calibration/ICV	A	ICV ≥ 25%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	ND	D = 3+4
XVII.	Field blanks	ND	TB = 1.10

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

MeOH

1	1	0846B043	T	11	0846B047MS	21	081123WMB	31	
2	1	0846G012		12	0846B047MSD	22	081124WMB	32	
3	1	0846G013**		13		23		33	
4	1	0846G014		14		24		34	
5	1	0846B044**		15		25		35	
6	1	0846B045		16		26		36	
7		0846B046		17		27		37	
8		0846B047		18		28		38	
9		0846B048		19		29		39	
10		0846G011	T	20		30		40	

LDC #: 20017D1a
SDG #: See Comb

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: A

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 20017DIC
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: 11

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 20017D1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	11/18/08	0 (1st internal standard)	1.499	1.499	1.381	1.381	7.7	7.7
			(2nd internal standard)						
			(3rd internal standard)						
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 2001T01c
SDG #: See COW

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	1123502W	11/23/08	O (1st internal standard)	1.381	1.318	1.318	4.5	4.5
			(2nd internal standard)					
			(3rd internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017B1C
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: 9
2nd reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 3

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	20.135	20.9669	104	104	0
Bromofluorobenzene	19.764	20.62144	104	104	↓
1,2-Dichloroethane-d4	21.367	23.68641	111	111	↓
Dibromofluoromethane	21.965	21.23316	96.7	96.7	↓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 20017012
SDG #: [illegible]

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD sample: 11/12

Compound	Spike Added (µg/L)		Sample Concentration (µg/L)	Spiked Sample Concentration (µg/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
~~1,1-Dichloroethene~~ 0	10.00	10.00	ND	9.81	10.4	98.1	98.1	104	104	5.8	5.8
Trichloroethene											
Benzene											
Toluene											
~~Chlorobenzene~~											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017D1c
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 081123W

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
~~1,1-Dichloroethene~~ 0	10.00	NA	9.55	NA	95.5	95.5				
Trichloroethene										
Benzene										
Toluene										
~~Chlorobenzene~~										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 20017B1c
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
RRF	=	Relative response factor of the calibration standard.
V_o	=	Volume or weight of sample pruged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. N0, _____:

Conc. = (_____)(_____)(_____) / (_____)(_____)(_____)(_____)

=

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Hunters Point Shipyard, 4Q08 GW Sampling Event
Data Validation Reports
LDC# 20017

Dissolved Nickel

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 6, 2008

LDC Report Date: January 8, 2009

Matrix: Water

Parameters: Dissolved Nickel

Validation Level: Level III

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57463

Sample Identification

0845H030
0845H031
0845H032
0845H033
0845D026
0845D027
0845B029
0845B030
0845H030MS
0845H030DUP

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 6010B for Dissolved Nickel.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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.

No field blanks were identified in this SDG.

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

VI. Duplicate Sample Analysis

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

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

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

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

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

XIII. Field Duplicates

Samples 0845H032 and 0845H033 and samples 0845D026 and 0845D027 were identified as field duplicates. No dissolved nickel was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	0845H032	0845H033	
Nickel	67.2	67.9	1

Analyte	Concentration (ug/L)		RPD
	0845D026	0845D027	
Nickel	11.0	12.6	14

Hunters Point Shipyard, 4Q08 GW Sampling Event
Dissolved Nickel - Data Qualification Summary - SDG 57463

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Dissolved Nickel - Laboratory Blank Data Qualification Summary - SDG 57463

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Dissolved Nickel - Field Blank Data Qualification Summary - SDG 57463

No Sample Data Qualified in this SDG

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H030
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P040A
ARF: 57463
APPL ID: AX86874

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	Not detected	5.0	0.39	ug/L	1	11/10/08	11/11/08

R 011709

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PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H031
Sample Collection Date: 11/6/08

Loc ID: IR09P042A
ARF: 57463
APPL ID: AX86875

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	Not detected	5.0	0.39	ug/L	1	11/10/08	11/11/08

11/10/09

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PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H032
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P043A
ARF: 57463
APPL ID: AX86877

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	67.2	5.0	0.39	ug/L	1	11/10/08	11/11/08

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PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845H033
Sample Collection Date: 11/6/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P043A
ARF: 57463
APPL ID: AX86878

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	67.9	5.0	0.39	ug/L	1	11/10/08	11/11/08

11/10/09

Printed: 11/11/08 1:25:15 PM

PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B029
Sample Collection Date: 11/6/08

Loc ID: IR09MW39A
ARF: 57463
APPL ID: AX86884

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	Not detected	5.0	0.39	ug/L	1	11/10/08	11/11/08

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PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0845B030
Sample Collection Date: 11/6/08

Loc ID: IR09MW44A
ARF: 57463
APPL ID: AX86885

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	15.9	5.0	0.39	ug/L	1	11/10/08	11/11/08

11/10/08

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PL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017A4a

SDG #: 57463

Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 1/5/09

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: Dissolved Nickel (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/6/08
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	A	3 MS/DUP
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	A	
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	(3,4) * (5,6)
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; * ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

1	0845H030	11		21		31	
2	0845H031	12		22		32	
3	0845H032	13		23		33	
4	0845H033	14		24		34	
5	0845D026	15		25		35	
6	0845D027	16		26		36	
7	0845B029	17		27		37	
8	0845B030	18		28		38	
9	0845H030MS	19		29		39	
10	0845H030DUP	20		30		40	

Notes:

LDC#: 20017A4a
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: n
2nd Reviewer: n

METHOD: Metals (EPA Method 6010B)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD	
	3	4		
Nickel	67.2	67.9	1	

Compound	Concentration (ug/L)		RPD	
	5	6		
Nickel	11.0	12.6	14	

V:\FIELD DUPLICATES\FD_inorganic\20017A4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 10, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Dissolved Nickel

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57477

Sample Identification

0846G008
0846G009**
0846G010
0846N005**
0846N005MS
0846N005DUP

**Indicates sample underwent Level IV review

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Dissolved Nickel.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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
ICB/CCB	Nickel	0.411 ug/L	All samples in SDG 57477

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.

No field blanks were identified in this SDG.

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

VI. Duplicate Sample Analysis

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

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

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

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a 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.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Dissolved Nickel - Data Qualification Summary - SDG 57477

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Dissolved Nickel - Laboratory Blank Data Qualification Summary - SDG 57477

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Dissolved Nickel - Field Blank Data Qualification Summary - SDG 57477

No Sample Data Qualified in this SDG

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G008
Sample Collection Date: 11/10/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR34MW02A
ARF: 57477
APPL ID: AX86991

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	Not detected	5.0	0.39	ug/L	1	11/12/08	11/13/08

11/0109

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PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G009
Sample Collection Date: 11/10/08

Loc ID: PA33MW36A
ARF: 57477
APPL ID: AX86992

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	3.6 J	5.0	0.39	ug/L	1	11/12/08	11/13/08

20/07/09

J = Estimated value.

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PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G010
Sample Collection Date: 11/10/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR71MW04A
ARF: 57477
APPL ID: AX86993

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	6.8	5.0	0.39	ug/L	1	11/12/08	11/13/08

RL 010709

Printed: 11/13/08 3:02:21 PM
PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846N005
Sample Collection Date: 11/10/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW55B
ARF: 57477
APPL ID: AX86998

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	3.3 J	5.0	0.39	ug/L	1	11/12/08	11/13/08

RL 11/07/09

J = Estimated value.

Printed: 11/13/08 3:02:21 PM
PL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017C4a

SDG #: 57477

Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 1/5/09

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: Dissolved Nickel (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/10/08
II.	Calibration	A	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	A	3 MS/Dup
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	3 not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	A	<50X MDL
XI.	Sample Result Verification	A	Not reviewed for Level III validation.
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0846G008	11	PB	21		31	
2	0846G009**	12		22		32	
3	0846G010	13		23		33	
4	0846N005**	14		24		34	
5	0846N005MS	15		25		35	
6	0846N005DUP	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 20017C4a
SDG #: 57477

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Metals (EPA SW 846 Method 6010/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			
Were all initial calibration correlation coefficients > 0.995? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
IV. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
V. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were < 5X the RL.	✓			
VI. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VII. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients > 0.995?			✓	
Do all applicable analysies have duplicate injections? (Level IV only)			✓	
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%? (Level IV only)			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	

LDC #: 20017C4a
SDG #: 54477

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
VII. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?			✓	60x mn
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
VIII. Internal Standards (EPA SW 846 Method 6020)				
Were all the percent recoveries (%R) within the 30-120% of the intensity of the internal standard in the associated initial calibration?			✓	
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall Assessment of Data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XIII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 20017C4a
SDG #: 54477

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1
Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: _____
Sample Concentration units, unless otherwise noted: ug/L Associated Samples: All (ND or >5X)

Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit	Sample Identification										
Al															
Sb															
As															
Ba															
Be															
Cd															
Ca															
Cr															
Co															
Cu															
Fe															
Pb															
Mg															
Mn															
Hg															
Ni			0.411	2.055											
K															
Se															
Ag															
Na															
Tl															
V															
Zn															
B															
Mo															
Sr															

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

BLNKSMP.4S2

LDC #: 20017C4a
SDG #: 57477

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Ni	1037	1000	104	104.0	Y
	GFAA (Initial calibration)						
	CVAA (Initial calibration)						
CCV	ICP (Continuing calibration)	Ni	777.2	750	104	104	Y
	GFAA (Continuing calibration)						
	CVAA (Continuing calibration)						
	ICP/MS (Initial calibration)						
	ICP/MS (Continuing calibation)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CALCLC.4SW

LDC #: 20017c4a
SDG #: 54477

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$\%D = \frac{|I-SDR|}{I} \times 100$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Ni	950	1000	95.0	95.0	Y
LCS	Laboratory control sample		276.3	250	110	110	
5	Matrix spike		(SSR-SR) 203.3	250	81.3	81.5	
6	Duplicate		3.1	3.3	6	NA	
NA	ICP serial dilution						

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

TOTCLC.4SW

LDC #: 20017 cfa
SDG #: 57477

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
Y N N/A Are all detection limits below the CRDL?

Detected analyte results for 2 were recalculated and verified using the following equation:

Concentration = (RD)(FV)(Dil) / (In. Vol.)(%S)

Recalculation:

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Sample ID	Analyte	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Acceptable (Y/N)
2	✓ ~~Sb~~ Ni	3.6	3.6	Y

RECALC.4S2

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 11, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Dissolved Nickel

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57485

Sample Identification

0846G012
0846G013**
0846G014
0846B046
0846B046MS
0846B046DUP

**Indicates sample underwent Level IV review

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Dissolved Nickel.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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)	Nickel	1.37 ug/L	All samples in SDG 57485
ICB/CCB	Nickel	0.66 ug/L	All samples in SDG 57485

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
0846B046	Nickel	5.4 ug/L	5.4U ug/L

No field blanks were identified in this SDG.

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

VI. Duplicate Sample Analysis

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

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

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

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a 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 0846G013** and 0846G014 were identified as field duplicates. No dissolved nickel was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	0846G013**	0846G014	
Nickel	8.4	7.8	7

Hunters Point Shipyard, 4Q08 GW Sampling Event
Dissolved Nickel - Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Dissolved Nickel - Laboratory Blank Data Qualification Summary - SDG 57485

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
57485	0846B046	Nickel	5.4U ug/L	A	7

Hunters Point Shipyard, 4Q08 GW Sampling Event
Dissolved Nickel - Field Blank Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G012
Sample Collection Date: 11/11/08

Loc ID: IR33MW116A
ARF: 57485
APPL ID: AX87028

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	10.7	5.0	0.39	ug/L	1	11/14/08	11/14/08

11/01/09

Printed: 11/14/08 5:06:43 PM

PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G013
Sample Collection Date: 11/11/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P041A
ARF: 57485
APPL ID: AX87029

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	8.4	5.0	0.39	ug/L	1	11/14/08	11/14/08

11/10/09

Printed: 11/14/08 5:06:43 PM
PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G014
Sample Collection Date: 11/11/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09P041A
ARF: 57485
APPL ID: AX87030

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	7.8	5.0	0.39	ug/L	1	11/14/08	11/14/08

R010109

Printed: 11/14/08 5:06:43 PM
PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846B046
Sample Collection Date: 11/11/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW36A
ARF: 57485
APPL ID: AX87033

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Nickel (Ni) (Dissolved)	5.4 U7	5.0	0.39	ug/L	1	11/14/08	11/14/08

12/10/09

Printed: 11/14/08 5:06:43 PM
PL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017D4a

SDG #: 57485

Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 1/5/09

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: Dissolved Nickel (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/11/08
II.	Calibration	A	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	A	3 MS/DUP
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	Lcs
VIII.	Internal Standard (ICP-MS)	N	3 not utilized.
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	A	
XI.	Sample Result Verification	A	Not reviewed for Level III validation.
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	(2, 3)
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0846G012	11		21		31	
2	0846G013**	12		22		32	
3	0846G014	13		23		33	
4	0846B046	14		24		34	
5	0846B046MS	15		25		35	
6	0846B046DUP	16		26		36	
7	PB	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 20017Dfa
SDG #: 57485

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Metals (EPA SW 846 Method 6010/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			
Were all initial calibration correlation coefficients > 0.995? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
IV. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
IV. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were < 5X the RL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VI. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients > 0.995?			✓	
Do all applicable analysies have duplicate injections? (Level IV only)			✓	
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%? (Level IV only)			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	

LDC #: 20017 D4a
SDG #: 57485

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
VII. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?			✓	<50X IMOL
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
VIII. Internal Standards (EPA SW 846 Method 6020)				
Were all the percent recoveries (%R) within the 30-120% of the intensity of the internal standard in the associated initial calibration?			✓	
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
XIII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 20017D4a
SDG #: 57485

"47"

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1
Reviewer: MY
2nd Reviewer: A

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: _____
Sample Concentration units, unless otherwise noted: ug/L Associated Samples: All

					Sample Identification										
Analyte	Maximum PB* (mg/Kg)	Maximum PB* (ug/L)	Maximum ICB/CCB* (ug/L)	Blank Action Limit	4										
Al															Al
Sb															Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr															Cr
Cc															Co
Cu															Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni		1.37	0.66	6.85	5.4										Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn															Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

BLNKSMP.4S2

LDC#: 20017D4a
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: Metals (EPA Method 6010B)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD	
	2	3		
Nickel	8.4	7.8	7	

V:\FIELD DUPLICATES\FD_inorganic\20017D4.wpd

LDC #: 20017D4a
SDG #: 57485

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$\%R = \frac{Found}{True} \times 100$

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Ni	1017	1000	102	102	Y
	GFAA (Initial calibration)						
	CVAA (Initial calibration)						
CCV	ICP (Continuing calibration)	Ni	966.6	1000	96.7	96.7	Y
	GFAA (Continuing calibration)						
	CVAA (Continuing calibration)						
	ICP/MS (Initial calibration)						
	ICP/MS (Continuing calibation)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017D4a
SDG #: 57485

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$\%D = \frac{|I-SDR|}{I} \times 100$ Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Ni	945	1000	94.5	94.5	Y
LCS	Laboratory control sample		272.5	250	109	109	
5	Matrix spike		(SSR-SR) 211.6	250	84.6	84.6	
6	Duplicate		5.8	5.4	7	NA	
MS	ICP serial dilution						

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

TOTCLC.4SW

LDC #: 20017P4a
SDG #: 57485

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
Y N N/A Are all detection limits below the CRDL?

Detected analyte results for 2 were recalculated and verified using the following equation:

Concentration = (RD)(FV)(Dil) / (In. Vol.)(%S)

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

From raw data

Ni = 8.415 ug/L

Sample ID	Analyte	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Acceptable (Y/N)
2	Ni	8.4	8.4	Y

RECALC.4S2

Hunters Point Shipyard, 4Q08 GW Sampling Event
Data Validation Reports
LDC# 20017

Hexavalent Chromium

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 6, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57463

Sample Identification

0845H030
0845H031
0845H032
0845H033
0845D026
0845D027
0845B028**
0845B029
0845B030
0845H030MS
0845H030MSD
0845H030DUP

**Indicates sample underwent Level IV review

Introduction

This data review covers 12 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7199 for Hexavalent Chromium.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 of each method 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 with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
CCB2	Hexavalent chromium	0.091 ug/L	0845H030 0845H031 0845H032 0845H033
CCB3	Hexavalent chromium	0.102 ug/L	0845D026 0845D027 0845B028** 0845B029 0845B030

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.

No field blanks were identified in this SDG.

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. Results were within QC limits.

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 verification met validation criteria for samples on which a 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 0845H032 and 0845H033 and samples 0845D026 and 0845D027 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	0845D026	0845D027	
Hexavalent chromium	18.5	18.2	2

Hunters Point Shipyard, 4Q08 GW Sampling Event
Hexavalent Chromium - Data Qualification Summary - SDG 57463

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 57463

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG 57463

No Sample Data Qualified in this SDG

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0845H030

Sample Collection Date: 11/06/08

Loc ID: IR09P040A

APPL ID: AX86874

ARF: 57463

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	2.9	0.5	0.09	ug/L	11/07/08	11/07/08

11/07/08

Printed: 11/24/08 3:17:33 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Loc ID: IR09P042A

Sample ID: 0845H031

APPL ID: AX86875

Sample Collection Date: 11/06/08

ARF: 57463

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	Not detected	0.5	0.09	ug/L	11/07/08	11/07/08

12/10/09

Printed: 11/24/08 3:17:33 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0845H032

Sample Collection Date: 11/06/08

Loc ID: IR09P043A

APPL ID: AX86877

ARF: 57463

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	Not detected	0.5	0.09	ug/L	11/07/08	11/07/08

K01709

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0845H033

Sample Collection Date: 11/06/08

Loc ID: IR09P043A

APPL ID: AX86878

ARF: 57463

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	Not detected	0.5	0.09	ug/L	11/07/08	11/07/08

11/07/09

Printed: 11/24/08 3:17:33 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0845B028

Sample Collection Date: 11/06/08

Loc ID: IR09MW38A

APPL ID: AX86883

ARF: 57463

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	1.7	0.5	0.09	ug/L	11/07/08	11/07/08

12/01/09

Printed: 11/24/08 3:17:34 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0845B029

Sample Collection Date: 11/06/08

Loc ID: IR09MW39A

APPL ID: AX86884

ARF: 57463

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	4.4	0.5	0.09	ug/L	11/07/08	11/07/08

Printed: 11/24/08 3:17:34 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0845B030

Sample Collection Date: 11/06/08

Loc ID: IR09MW44A

APPL ID: AX86885

ARF: 57463

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	1.0	0.5	0.09	ug/L	11/07/08	11/07/08

10/07/09

Printed: 11/24/08 3:17:34 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017A6
SDG #: 57463
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 1/5/09
Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7199)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/6/08
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	SW A	
IV	Matrix Spike/Matrix Spike Duplicates	A	3 MS/MSD/DUP
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW *	(3.4)*, (5.6)
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

* ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	1117 0845H030	11	0845H030MSD	21		31	
2	1158 0845H031	12	0845H030DUP	22		32	
3	1334 0845H032	13	MB	23		33	
4	1339 0845H033	14		24		34	
5	1510 0845D026	15		25		35	
6	1515 0845D027	16		26		36	
7	1145 0845B028**	17		27		37	
8	1428 0845B029	18		28		38	
9	1545 0845B030	19		29		39	
10	0845H030MS	20		30		40	

Notes:

LDC #: 20017A6
SDG #: 57463

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Inorganics (EPA Method 7199)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix Spike/Duplicate and Duplicate				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were < 5X the CRDL.	✓			
V. Laboratory Control Samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 20017A6
SDG #: 54763

VALIDATION FINDINGS CHECKLIST

Reviewer: MY
2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall Assessment of Data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field Duplicate Results				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
X. Field Blank Results				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 20017A6
SDG #: 39463

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Inorganics, Method 7199

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y N N/A Were all samples associated with a given method blank?
Y N N/A Were any inorganic contaminants detected above the reporting limit in the method blanks? If yes, please see qualifications below.

Conc. units: ug/L **Associated Samples:** CCB2: 1-4, CCB3: 5-9 (NVA > 5X)

	Analyte	Blank ID	Maximum ICB/CCB	Blank Action Limit	Sample Identification								
CCB 2	Cr6+		0.091	0.455									
CCB 3	Cr6+		0.102	0.61									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC#:20017A6
SDG#:See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer:

Inorganics, Method See Cover

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (ug/L)		RPD	
	5	6		
Cr (VI)	18.5	18.2	2	

V:\FIELD DUPLICATES\FD_inorganic\20017A6.wpd

LDC #: 20017A6
SDG #: 57463

Validatin Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Inorganics, Method 7199

The correlation coefficient (r) for the calibration of Cr6+ was recalculated. Calibration date: 11/7/08

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/L)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	Cr (VI)	s1	0.5	9932	*0.999944*	0.999943	Y
		s2	1	19440			
		s3	5	92498			
		s4	10	188691			
		s5	20	379020			
CCV Calibration verification	Cr6+	10	10.03		100	100	Y
Calibration verification							
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017A6
SDG #: 54463

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Inorganics, Method 7199

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Cr6+	9.927	10	99.3	99.3	Y
10	Matrix spike sample	↓	(SSR-SR) 10.4	10	104	104	↓
12	Duplicate sample	↓	2.9	2.9	0	0	✓

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

TOTCLC.6

LDC #: 20017A6
SDG #: 57463

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MH
2nd reviewer: M

METHOD: Inorganics, Method 7199

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 8 reported with a positive detect were recalculated and verified using the following equation:

Concentration =

$C_{bt} = 5.2799 \times 10^{-5} \times A_{bm} + 0.018155$

Recalculation:

$C_{bt} = 32142 \times 5.2799 \times 10^{-5} + 0.018155$

$= 1.715$

#	Sample ID	Analyte	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Acceptable (Y/N)
1	8	1.7	1.7	1.7	Y

Note:

RECALC.6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 10, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57477

Sample Identification

0846G008
0846G009**
0846G010
0846N002
0846N003**
0846N004
0846N005**
0846B036
0846B037
0846B038
0846B039
0846B040
0846B041**
0846B042
0846B042MS
0846B042MSD
0846B042DUP

**Indicates sample underwent 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 7199 for Hexavalent Chromium.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 of each method 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 with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
ICB/CCB	Hexavalent chromium	0.133 ug/L	0846G008 0846B036

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.

No field blanks were identified in this SDG.

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. Results were within QC limits.

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 verification met validation criteria for samples on which a 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 0846B037 and 0846B038 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	0846B037	0846B038	
Hexavalent chromium	1.7	1.6	6

Hunters Point Shipyard, 4Q08 GW Sampling Event
Hexavalent Chromium - Data Qualification Summary - SDG 57477

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 57477

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG 57477

No Sample Data Qualified in this SDG

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846G008

Sample Collection Date: 11/10/08

Loc ID: IR34MW02A

APPL ID: AX86991

ARF: 57477

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	Not detected	0.5	0.09	ug/L	11/10/08	11/10/08

SL 10/09

Printed: 12/02/08 11:30:17 AM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846G009

Sample Collection Date: 11/10/08

Loc ID: PA33MW36A

APPL ID: AX86992

ARF: 57477

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	0.47 J	0.5	0.09	ug/L	11/11/08	11/11/08

J = Estimated value.

RS 12/09

Printed: 12/02/08 11:30:17 AM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846G010

Sample Collection Date: 11/10/08

Loc ID: IR71MW04A

APPL ID: AX86993

ARF: 57477

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	3.0	0.5	0.09	ug/L	11/11/08	11/11/08

12/5/08 09

Printed: 12/02/08 11:30:17 AM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846N002

Sample Collection Date: 11/10/08

Loc ID: IR33MW66A

APPL ID: AX86994

ARF: 57477

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	Not detected	0.5	0.09	ug/L	11/11/08	11/11/08

12/1/09

Printed: 12/02/08 11:30:17 AM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846N003

Sample Collection Date: 11/10/08

Loc ID: IR33MW65A

APPL ID: AX86996

ARF: 57477

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	6.8	0.5	0.09	ug/L	11/11/08	11/11/08

8/01/09

Printed: 12/02/08 11:30:17 AM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846N004

Sample Collection Date: 11/10/08

Loc ID: IR33MW64A

APPL ID: AX86997

ARF: 57477

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	4.6	0.5	0.09	ug/L	11/11/08	11/11/08

12/01/09

Printed: 12/02/08 11:30:17 AM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846N005

Sample Collection Date: 11/10/08

Loc ID: IR09MW55B

APPL ID: AX86998

ARF: 57477

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	Not detected	0.5	0.09	ug/L	11/11/08	11/11/08

N 100709

Printed: 12/02/08 11:30:17 AM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard
Sample ID: 0846B036
Sample Collection Date: 11/10/08

Loc ID: IR34MW01A
APPL ID: AX87000
ARF: 57477

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	2.5	0.5	0.09	ug/L	11/10/08	11/10/08

RJ 11/7/09

Printed: 12/02/08 11:30:17 AM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846B040

Sample Collection Date: 11/10/08

Loc ID: IR09MW31A

APPL ID: AX87004

ARF: 57477

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	1.2	0.5	0.09	ug/L	11/11/08	11/11/08

12/10/09

Printed: 12/02/08 11:30:17 AM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Loc ID: IR09MW54B

Sample ID: 0846B041

APPL ID: AX87005

Sample Collection Date: 11/10/08

ARF: 57477

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	16.4	0.5	0.09	ug/L	11/11/08	11/11/08

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846B042

Sample Collection Date: 11/10/08

Loc ID: IR09MW45F

APPL ID: AX87006

ARF: 57477

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	9.7	0.5	0.09	ug/L	11/11/08	11/11/08

12/10/08

Printed: 12/02/08 11:30:17 AM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017C6
SDG #: 57477
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 1/5/09
Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7199)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/10/08
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	SW	
IV	Matrix Spike/Matrix Spike Duplicates	A	3 MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	(9,10)
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0846G008	11	0846B039	21	MB	31	
2	0846G009**	12	0846B040	22		32	
3	0846G010	13	0846B041**	23		33	
4	0846N002	14	0846B042	24		34	
5	0846N003**	15	0846B042MS	25		35	
6	0846N004	16	0846B042MSD	26		36	
7	0846N005**	17	0846B042DUP	27		37	
8	0846B036	18		28		38	
9	0846B037	19		29		39	
10	0846B038	20		30		40	

Notes:

LDC #: 20017 c6
SDG #: 54497

VALIDATION FINDINGS CHECKLIST

Reviewer: pm
2nd Reviewer: [illegible]

Method: Inorganics (EPA Method 7199)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
IV. Matrix Spike Samples and Duplicate Samples				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were < 5X the CRDL.	✓			
V. Laboratory Control Samples				
Was an LCS anaytzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 20017 c6
SDG #: 57497

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
[illegible]				
Overall assessment of data was found to be acceptable.	✓			
[illegible]				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
[illegible]				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 20017C6
SDG #: 74447

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: MH
2nd Reviewer: K

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a given method blank?

~~Y~~ N N/A Were any inorganic contaminants detected above the reporting limit in the method blanks? If yes, please see qualifications below.

Conc. units: ug/L

Associated Samples: 1, 8 (ND or > 5X)

Analyte	Blank ID	Maximum ICB/CCB	Blank Action Limit	Sample Identification								
Cr6+		0.133	0.665									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the methoc blank concentration were qualified as not detected, "U".

LDC#:20017C6
SDG#:See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer:

Inorganics, Method See Cover

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (ug/L)		RPD	
	9	10		
Cr (VI)	1.7	1.6	6	

V:\FIELD DUPLICATES\FD_inorganic\20017C6.wpd

LDC #: 200176
SDG #: 47477

Validatin Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: MCH
2nd Reviewer: L

Method: Inorganics, Method 7199

The correlation coefficient (r) for the calibration of Cr^{6+} was recalculated. Calibration date: 11/10/08

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/L)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	Cr (VI)	s1	0.5	8451	0.999927	0.999927	Y
		s2	1	16127			
		s3	5	85489			
		s4	10	177411			
		s5	20	354164			
CCV Calibration verification	Cr^{6+}	10	9.58		95.8	95.8	Y
CCV Calibration verification	Cr^{6+}	10	9.42		94.2	94.2	Y
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20176
SDG #: 54477

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Inorganics, Method 7199

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Cr6+	9.781	10	97.8	97.8	Y
15	Matrix spike sample	↓	(SSR-SR) 9.37	10	94.0	94.0	↓
17	Duplicate sample	↓	9.76	9.72	0	1.0	↓

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

TOTCLC.6

LDC #: 2001766
SDG #: 57477

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MH
2nd reviewer: A

METHOD: Inorganics, Method 7199

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 5 reported with a positive detect were recalculated and verified using the following equation:

Concentration = Recalculation:

$Cr^{6+} = Area \times 0.000056215 + 0.08601$

$Cr^{6+} = 119080 \times 0.000056215 + 0.08601$

$= 6.780$

#	Sample ID	Analyte	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Acceptable (Y/N)
1	5	Cr^{6+}	6.8	6.8	Y

Note:

RECALC.6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 11, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57485

Sample Identification

0846G012
0846G013**
0846G014
0846B044**
0846B045
0846B046
0846B046MS
0846B046MSD
0846B046DUP

**Indicates sample underwent Level IV review

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 7199 for Hexavalent Chromium.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 of each method 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.

No field blanks were identified in this SDG.

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. Results were within QC limits.

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 verification met validation criteria for samples on which a 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 0846G013** and 0846G014 were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Hexavalent Chromium - Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846G012

Sample Collection Date: 11/11/08

Loc ID: IR33MW116A

APPL ID: AX87028

ARF: 57485

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	Not detected	0.5	0.09	ug/L	11/12/08	11/12/08

1/20/09

Printed: 11/25/08 1:57:16 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846G013

Sample Collection Date: 11/11/08

Loc ID: IR09P041A

APPL ID: AX87029

ARF: 57485

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	Not detected	0.5	0.09	ug/L	11/12/08	11/12/08

11/10/09

Printed: 11/25/08 1:57:16 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846G014

Sample Collection Date: 11/11/08

Loc ID: IR09P041A

APPL ID: AX87030

ARF: 57485

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	Not detected	0.5	0.09	ug/L	11/12/08	11/12/08

N01010/09

Printed: 11/25/08 1:57:16 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846B044

Sample Collection Date: 11/11/08

Loc ID: IR09MW61A

APPL ID: AX87031

ARF: 57485

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	6.6	0.5	0.09	ug/L	11/12/08	11/12/08

2/12/09

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AMENDED PAGE

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846B045

Sample Collection Date: 11/11/08

Loc ID: IR09MW52A

APPL ID: AX87032

ARF: 57485

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	Not detected	0.5	0.09	ug/L	11/12/08	11/12/08

RD/0709

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

Wet Lab Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Project: 91399 Hunters Point Shipyard

Sample ID: 0846B046

Sample Collection Date: 11/11/08

Loc ID: IR09MW36A

APPL ID: AX87033

ARF: 57485

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
EPA 7199	Hexavalent Chromium	Not detected	0.5	0.09	ug/L	11/12/08	11/12/08

RD/07/09

Printed: 11/25/08 1:57:16 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017D6
SDG #: 57485
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 1/5/09
Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7199)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/11/08
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	3 MS/MSD/DUP
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	(2,3)
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0846G012	11	MB	21		31	
2	0846G013**	12		22		32	
3	0846G014	13		23		33	
4	0846B044**	14		24		34	
5	0846B045	15		25		35	
6	0846B046	16		26		36	
7	0846B046MS	17		27		37	
8	0846B046MSD	18		28		38	
9	0846B046DUP	19		29		39	
10		20		30		40	

Notes:

LDC #: 2001706
SDG #: 54485

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Inorganics (EPA Method 7199)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were < 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaytzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 20017D6
SDG #: 54485

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall Assessment of Data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field Duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.				
X. Field Blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 20017006
SDG #: 57485

Validatin Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Inorganics, Method 7199

The correlation coefficient (r) for the calibration of Cr6+ was recalculated.Calibration date: 11/12/08

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found X 100 / True

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/L)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	Cr (VI)	s1	0.5	7807	0.999937	0.999937	Y
		s2	1	16238			
		s3	5	80686			
		s4	10	163725			
		s5	20	322856			
CCV Calibration verification	Cr6+	10			101	101	Y
Calibration verification							
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20176b
SDG #: 54485

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Inorganics, Method 7199

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Cr6+	10.02	10	100	100	Y
7	Matrix spike sample	↓	(SSR-SR) 10.268	10	103	103	↓
7/8	Duplicate sample	↓	10.157	10.268	1.1	0.98	✓

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

TOTCLC.6

LDC #: 20017B6
SDG #: 51485

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MH
2nd reviewer: M

METHOD: Inorganics, Method 7199

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 4 reported with a positive detect were recalculated and verified using the following equation:

Concentration =

$Cr^{6+} = 6.183 \times 10^{-5} \times Area - 0.0253$

Recalculation:

$Cr^{6+} = 6.183 \times 10^{-5} \times (106589) - 0.0253$
$= 6.58$ ug/L

#	Sample ID	Analyte	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Acceptable (Y/N)
1	4	Cr^{6+}	6.6	6.6	Y

Note:

RECALC.6

Hunters Point Shipyard, 4Q08 GW Sampling Event
Data Validation Reports
LDC# 20017

TPH as Gasoline

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 11, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57485

Sample Identification

0846G015
0846G016
0846G017
0846G018**

**Indicates sample underwent Level IV review

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 8015 for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

Sample 0846G015 was identified as a trip blank. No total petroleum hydrocarbons as gasoline contaminants were found in this blank.

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) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

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

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G015
Sample Collection Date: 11/11/08

Loc ID: TRIP BLANK
ARF: 57485
APPL ID: AX87037
QCG: $GAHP-081114A-128236

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	11/14/08	11/14/08
8015	Surrogate: BFB-FID (S)	124	75-125		%	11/14/08	11/14/08

12/16/09

Quant Method:	HBTXGOK.M
Run #:	1114H05
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 12/04/08 10:26:38 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G016
Sample Collection Date: 11/11/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW50A
ARF: 57485
APPL ID: AX87038
QCG: $GAHP-081114A-128236

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	11/14/08	11/14/08
8015	Surrogate: BFB-FID (S)	121	75-125		%	11/14/08	11/14/08

10/0709

Quant Method: HBTXGOK.M
Run #: 1114H08
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 12/04/08 10:26:39 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G017
Sample Collection Date: 11/11/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW52A
ARF: 57485
APPL ID: AX87039
QCG: $GAHP-081114A-128236

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	11/14/08	11/14/08
8015	Surrogate: BFB-FID (S)	123	75-125		%	11/14/08	11/14/08

*010709

Quant Method:	HBTXGOK.M
Run #:	1114H09
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 12/04/08 10:26:39 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G018
Sample Collection Date: 11/11/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW51A
ARF: 57485
APPL ID: AX87040
QCG: $GAHP-081114A-128236

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	11/14/08	11/14/08
8015	Surrogate: BFB-FID (S)	120	75-125		%	11/14/08	11/14/08

Ro|0709

Quant Method:	HBTXGOK.M
Run #:	1114H10
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 12/04/08 10:26:39 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20017D7
SDG #: 57485
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 12/09
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC TPH as Gasoline (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/11/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV=15%
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS/D
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	TB=1

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0846G015 W	11	081114WMB	21		31	
2	0846G016	12		22		32	
3	0846G017	13		23		33	
4	0846G018**	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 200707
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: a

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 20011TDT
SDG #: See Cover

VALIDATION FINDINGS CHECKLIST

Page: 3 of 3
Reviewer: 9
2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 20017DT
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC ✓ HPLC _____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (20 std)	Recalculated CF (20 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	1ct2	7/23/08	4RO	30078	30078	26995	26995	7.3	7.3
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INICLC.1SB

LDC #: 20017D7
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 1

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	111410	11/14/08	4RO	26995	25652	25652	5.0	5.0
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 2001T07
SDG #: See cover

METHOD: ✓ GC __ HPLC

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: 9
2nd reviewer: 4

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
BFB	NS	25.00	30.123	120	120	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 20017DT
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: 9
2nd Reviewer: K

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory control sample percent recovery
SC = Concentration
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 081114W

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	300	300	275	257	91.7	91.7	85.7	85.7	6.8	6.8
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20017D7
SDG # See Cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: a
2nd Reviewer: a

METHOD: ✓ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 4 Compound Name ND

Concentration = _____

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

SAMPCALew.wpd

Hunters Point Shipyard, 4Q08 GW Sampling Event
Data Validation Reports
LDC# 20017

TPH as Extractables

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: November 11, 2008

LDC Report Date: January 5, 2009

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57485

Sample Identification

0846G016
0846G017
0846G018**

**Indicates sample underwent Level IV review

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 8015 for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
11/11/08	Motor oil range organics	61	All samples in SDG 57485	J5 (all detects) UJ5 (all non-detects)	A

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

No field blanks were identified in this SDG.

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

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 57485

SDG	Sample	Compound	Flag	A or P	Reason
57485	0846G016 0846G017 0846G018**	Motor oil range organics	J5 (all detects) UJ5 (all non-detects)	A	Continuing calibration (ICV %D)

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG 57485

No Sample Data Qualified in this SDG

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G016
Sample Collection Date: 11/11/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW50A
ARF: 57485
APPL ID: AX87038
QCG: $DIHP-081113A-128013

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	11/13/08	11/21/08
EPA 8015B-	Motor Oil	Not detected UJ5	40.0	5.54	ug/L	11/13/08	11/21/08
EPA 8015B-	Surrogate: Octacosane (S)	92.3	60-140		%	11/13/08	11/21/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	87.3	60-140		%	11/13/08	11/21/08

10/07/09

Quant Method: TPH1111.M
Run #: 1117228
Instrument: Apollo
Sequence: 081117
Dilution Factor: 1
Initials: EJ

Printed: 12/02/08 9:44:56 AM
APPL-F1-SC-MCResOnly-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G017
Sample Collection Date: 11/11/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW52A
ARF: 57485
APPL ID: AX87039
QCG: $DIHP-081113A-128013

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	160 ++	40.0	13.07	ug/L	11/13/08	11/21/08
EPA 8015B-	Motor Oil	Not detected UJ5	40.0	5.54	ug/L	11/13/08	11/21/08
EPA 8015B-	Surrogate: Octacosane (S)	92.7	60-140		%	11/13/08	11/21/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	91.6	60-140		%	11/13/08	11/21/08

12/16/09

++(T8) The analyst has noted that the chromatogram of this sample includes a match to hydrocarbon profiles within the range of diesel fuel.

Quant Method: TPH1111.M
Run #: 1117229
Instrument: Apollo
Sequence: 081117
Dilution Factor: 1
Initials: EJ

Printed: 12/02/08 9:44:56 AM
APPL-F1-SC-MCResOnly-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0846G018
Sample Collection Date: 11/11/08

Loc ID: IR46MW51A
ARF: 57485
APPL ID: AX87040
QCG: $DIHP-081113A-128013

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	2500 ++	40.0	13.07	ug/L	11/13/08	11/24/08
EPA 8015B-	Motor Oil	1600 J5	40.0	5.54	ug/L	11/13/08	11/24/08
EPA 8015B-	Surrogate: Octacosane (S)	81.3	60-140		%	11/13/08	11/24/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	81.5	60-140		%	11/13/08	11/24/08

20 | 07 09

++(T3M) The analyst has noted that the chromatogram of this sample is mainly higher boiling hydrocarbons.

Quant Method:	TPH1111.M
Run #:	1121089
Instrument:	Apollo
Sequence:	081121
Dilution Factor:	1
Initials:	EJ

Printed: 12/02/08 9:44:56 AM
APPL-F1-SC-MCResOnly-REG MDLs

LDC #: 20017D8
SDG #: 57485
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 1/2/09
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/11/08
IIa.	Initial calibration	A	RSD. 12
IIb.	Calibration verification/ICV	SW	ICV=1570
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0846G016 W	11	081113W MB	21		31	
2	0846G017	12		22		32	
3	0846G018**	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 2001708
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: M

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?		✓		
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: D001708
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 2001708
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: 9

METHOD: ✓ GC __ HPLC

2nd Reviewer: 4

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
What type of continuing calibration calculation was performed? ✓ %D or __ RPD

Y N N/A Were continuing calibration standards analyzed at the required frequencies?

Y N N/A Did the continuing calibration standards meet the %D / RPD validation criteria of ≤15.0%?

Level IV Only

Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Detector/ Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (limit)	Associated Samples	Qualifications
	11/11/08	1111011	NS	MRO	61	( )	M+Blk (dets+ND)	J5/UL5/A
		(ICV)				( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
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						( )		
						( )		
						( )		

LDC #: 2001708
SDG #: Second

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (50 std)	Recalculated CF (50 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	11/11/08	MRD	103201	103201	75406	75406	19	19
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 2001708
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: M

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	1121078	11/24/08	MRD	75406	74023	74023	1.8	1.8
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 2001708
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: ✓ GC __ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 3

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Octacosane	NS	33.333	27.092	81.3	81.3	0
TPH	✓	✓	27.181	81.5	81.5	0

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #2001708
SDG #See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 12

METHOD: ✓GC __HPLC

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory control sample percent recovery

SC = Concentration

LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 081113W

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)	667	NA	488	NA	73.2	73.2				
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 2001708
SDG #: 57485

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 3 Compound Name MEV

Concentration = (36078008)(2000)(5) / (75406)(1500)(2)

= 1594.8 ug/L

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

SAMPCALew.wpd

LDC Report# 19858B4a

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: October 7, 2008

LDC Report Date: December 3, 2008

Matrix: Water

Parameters: Dissolved Metals

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57168

Sample Identification

0841D005
0841D006
0841C002
0841C003
0841C004**
0841C005
0841D007**
0841H009
0841H010
0841B010**
0841B011
0841B007
0841H009MS
0841H009MSD

**Indicates sample underwent 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 Methods 6010B, 6020, and 7470A for Dissolved Metals. The metals analyzed were Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Mercury, Nickel, Selenium, Silver, Thallium, Vanadium, and Zinc.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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
ICB/CCB	Antimony	3.36 ug/L	0841C004** 0841B010** 0841B011 0841B007

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
0841C004**	Antimony	2.3 ug/L	2.3U ug/L

No field blanks were identified in this SDG.

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

VI. Duplicate Sample Analysis

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

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards (ICP-MS)

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

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

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

Diluted Sample	Analyte	%D (Limits)	Associated Samples	Flag	A or P
0841H009L	Barium	12.7 (≤10)	0841C004** 0841B010** 0841B011 0841B007	J16 (all detects)	A

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a 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 0841C002 and 0841C003 and samples 0841B010** and 0841B011 were identified as field duplicates. No metals were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	0841C002	0841C003	
Chromium	9.1	9.2	1

Analyte	Concentration (ug/L)		RPD
	0841B010**	0841B011	
Arsenic	3.6	3.3	9
Barium	174	180	3
Cadmium	0.037	0.029	24
Manganese	143	146	2
Nickel	13.8	13.8	0
Silver	2.4	2.4	0
Vanadium	12.6	12.7	1
Zinc	246	246	0

Hunters Point Shipyard, 4Q08 GW Sampling Event
Dissolved Metals - Data Qualification Summary - SDG 57168

SDG	Sample	Analyte	Flag	A or P	Reason
57168	0841C004** 0841B010** 0841B011 0841B007	Barium	J16 (all detects)	A	ICP serial dilution (%D)

Hunters Point Shipyard, 4Q08 GW Sampling Event
Dissolved Metals - Laboratory Blank Data Qualification Summary - SDG 57168

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
57168	0841C004**	Antimony	2.3U ug/L	A	7

Hunters Point Shipyard, 4Q08 GW Sampling Event
Dissolved Metals - Field Blank Data Qualification Summary - SDG 57168

No Sample Data Qualified in this SDG

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters

Loc ID: IR09PPY1

Project: 91399 Hunters Point Shipyard

ARF: 57168

Sample ID: 0841D005

APPL ID: AX85030

Sample Collection Date: 10/07/08

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Chromium (Cr) (Dissolved)	85.8	5.0	1.37	ug/L	1	10/09/08	10/10/08

2/2/08

Printed: 10/27/08 11:55:17 AM

PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D006
Sample Collection Date: 10/07/08

Loc ID: IR09MW63A
ARF: 57168
APPL ID: AX85031

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Chromium (Cr) (Dissolved)	57.0	5.0	1.37	ug/L	1	10/09/08	10/10/08

N/A 08

Printed: 10/27/08 11:55:17 AM

PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841C002
Sample Collection Date: 10/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW62A
ARF: 57168
APPL ID: AX85037

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Chromium (Cr) (Dissolved)	9.1	5.0	1.37	ug/L	1	10/09/08	10/10/08

2/21078

Printed: 10/27/08 11:55:17 AM

PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841C003
Sample Collection Date: 10/07/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR09MW62A
ARF: 57168
APPL ID: AX85038

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Chromium (Cr) (Dissolved)	9.2	5.0	1.37	ug/L	1	10/09/08	10/10/08

2/2/08

Printed: 10/27/08 11:55:17 AM

PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841B007
Sample Collection Date: 10/07/08

Loc ID: IR09P0438
ARF: 57168
APPL ID: AX85054

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
6010B/3010A	Aluminum (Al) (Dissolved)	Not detected	100.0	19.30	ug/L	1	10/09/08	10/10/08
6010B/3010A	Antimony (Sb) (Dissolved)	Not detected	5.0	1.84	ug/L	1	10/09/08	10/10/08
6010B/3010A	Arsenic (As) (Dissolved)	7.6	5.0	2.45	ug/L	1	10/09/08	10/10/08
6010B/3010A	Barium (Ba) (Dissolved)	406 J16	5.0	0.75	ug/L	1	10/09/08	10/10/08
6020	Beryllium (Be) (Dissolved)	Not detected	0.2	0.04	ug/L	1	10/17/08	10/23/08
6020	Cadmium (Cd) (Dissolved)	0.19 J	0.2	0.02	ug/L	1	10/17/08	10/23/08
6010B/3010A	Chromium (Cr) (Dissolved)	Not detected	5.0	1.37	ug/L	1	10/09/08	10/10/08
6010B/3010A	Cobalt (Co) (Dissolved)	3.5 J	5.0	0.63	ug/L	1	10/09/08	10/10/08
6010B/3010A	Copper (Cu) (Dissolved)	Not detected	5.0	0.97	ug/L	1	10/09/08	10/10/08
6010B/3010A	Lead (Pb) (Dissolved)	Not detected	5.0	1.58	ug/L	1	10/09/08	10/10/08
6010B/3010A	Manganese (Mn) (Dissolved)	3610	5.0	1.23	ug/L	1	10/09/08	10/10/08
6010B/3010A	Nickel (Ni) (Dissolved)	102	5.0	0.39	ug/L	1	10/09/08	10/10/08
6010B/3010A	Selenium (Se) (Dissolved)	Not detected	5.0	3.17	ug/L	1	10/09/08	10/10/08
6010B/3010A	Silver (Ag) (Dissolved)	4.4	1.0	0.25	ug/L	1	10/09/08	10/10/08
6010B/3010A	Thallium (Tl) (Dissolved)	Not detected	5.0	1.77	ug/L	1	10/09/08	10/10/08
6010B/3010A	Zinc (Zn) (Dissolved)	Not detected	50.0	2.30	ug/L	1	10/09/08	10/10/08

12/2/2008

J = Estimated value.

Printed: 10/27/08 11:55:17 AM

PL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19858B4a

SDG #: 57168

Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 12-3-08

Page: 1 of 1

Reviewer: MG

2nd Reviewer: [illegible]

METHOD: Dissolved Metals (EPA SW 846 Method 6010B/6020/7470A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 10-7-08
II.	Calibration	A	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	A	MS
VI.	Duplicate Sample Analysis	A	DUP
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	A	not veriewed for level III
IX.	Furnace Atomic Absorption QC	N	not utilized
X.	ICP Serial Dilution	SW	
XI.	Sample Result Verification	A	Not reviewed for Level III validation.
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D=3+4, D=10+11
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

all water

1	0841D005	11	0841B011	21		31	
2	0841D006	12	0841B007	22		32	
3	0841C002	13	0841H009MS	23		33	
4	0841C003	14	0841H009DUP	24		34	
5	0841C004**	15	PBW	25		35	
6	0841C005	16		26		36	
7	0841D007**	17		27		37	
8	0841H009	18		28		38	
9	0841H010	19		29		39	
10	0841B010**	20		30		40	

Notes:

LDC #: 19858B4a
SDG #: 57168

VALIDATION FINDINGS CHECKLIST

Reviewer: MG
2nd Reviewer: ✓

Method: Metals (EPA SW 846 Method 6010/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			
Were all initial calibration correlation coefficients > 0.995? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
IV. ICP interference check sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
V. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were < 5X the RL.	✓			
VI. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VII. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients > 0.995?			✓	
Do all applicable analysies have duplicate injections? (Level IV only)			✓	
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%? (Level IV only)			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	

LDC #: 19858B4a
SDG #: 57168

VALIDATION FINDINGS CHECKLIST

Reviewer: MG
2nd Reviewer: V

Validation Area	Yes	No	NA	Findings/Comments
VII. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?	✓			
Were all percent differences (%Ds) < 10%?		✓		
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.		✓		
VIII. Internal Standards (EPA SW-846 Method 6020)				
Were all the percent recoveries (%R) within the 30-120% of the intensity of the internal standard in the associated initial calibration?	✓			
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall Assessment of Data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field Duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
XIII. Field Blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 19858B4a
SDG #: 57168

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MG
2nd reviewer: [illegible]

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1→4, 6→9	W	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
5, 12	↓	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
10, 11	↓	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
QC 13, 14	↓	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP Trace	W	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP-MS	↓	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻,

Comments: Mercury by CVAA if performed

LDC #: 19858B4a
SDG #: 57168

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Qual: U 7

Page: 1 of 1
Reviewer: MG
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: NA
Sample Concentration units, unless otherwise noted: mg/L Associated Samples: 5, 10→12

					Sample Identification									
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit	5									
Al														
Sb			3.36	16.80	2.3									
As														
Ba														
Be														
Cd														
Ca														
Cr														
Co														
Cu														
Fe														
Pb														
Mg														
Mn														
Hg														
Mo														
Ni														
K														
Se														
Ag														
Na														
Tl														
V														
Zn														
Sn														
B														

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

BLNKSMP.4SW

LDC #: 19858B4a
SDG #: 57168

VALIDATION FINDINGS WORKSHEET
ICP Serial Dilution

Reviewer: MG
2nd Reviewer: [signature]

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A — If analyte concentrations were > 50X the MDL (ICP) ,or >100X the MDL (ICP/MS), was a serial dilution analyzed?
Y (N) N/A — Were ICP serial dilution percent differences (%D) ≤10%?
Y (N) N/A — Is there evidence of negative interference? If yes, professional judgement will be used to qualify the data.

LEVEL IV ONLY:

(Y) N N/A — Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Diluted Sample ID	Matrix	Analyte	%D (Limits)	Associated Samples	Qualifications
1	10-10-08	8	Water	Ba	12.7 (≤10)	5, 10→12	J dets / A 16 (all dets)

Comments:

LDC#: 19858B4a
SDG#: 57168

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MG
2nd Reviewer: ✓

METHOD: Metals (EPA Method 6010B/7000)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD	
	3	4		
Chromium	9.1	9.2	1	

V:\FIELD DUPLICATES\FD_inorganic\19858B4a.WPD

Compound	Concentration (ug/L)		RPD	
	10	11		
Arsenic	3.6	3.3	9	
Barium	174	180	3	
Cadmium	0.037	0.029	24	
Manganese	143	146	2	
Nickel	13.8	13.8	0	
Silver	2.4	2.4	0	
Vanadium	12.6	12.7	1	
Zinc	246	246	0	

V:\FIELD DUPLICATES\FD_inorganic\19858B4a.WPD

LDC #: 19858B4a
SDG #: 57168

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MG
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found / True x 100 Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
0919 ICV	ICP (Initial calibration)	Mn	1057	1000	105.70	106.00	Y
	GFAA (Initial calibration)						
1634 ICV	CVAA (Initial calibration)	Hg	3.997	4.00	99.9	99.9	
1212 CCV3	ICP (Continuing calibration)	Ni	1047	1000	104.70	105.00	
	GFAA (Continuing calibration)						
1640 CCV1	CVAA (Continuing calibration)	Hg	4.965	5.00	99.3	99.3	
1512 ICV	ICP/MS (Initial calibration)	Be	106.5775	100	107	107	
1540 CCV2	ICP/MS (Continuing calibation)	Cd	51.9477	50	104	104	

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858B4a
SDG #: 57168

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MG
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$\%D = \frac{|I-SDR|}{I} \times 100$ Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
0955 ICSAB	ICP interference check	Se	454.9 (µg/L)	500. (µg/L)	90.98	91.00	Y
1549 LCS	Laboratory control sample	Be	57.66 (µg/L)	50.0 (µg/L)	115	115	↓
1332 13	Matrix spike	Pb	(SSR-SR) 228.2 (µg/L)	250. (µg/L)	91.3	91.2	↓
1310/1327 14	Duplicate	Mn	349.4 (µg/L)	347.7 (µg/L)	* 0.5	0.3	↓
1310/1336 8	ICP serial dilution	Ba	124.8 (µg/L)	140.6 (µg/L)	12.7	12.7	↓

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.
* >10 %D, both in limit, no Quals

TOTCLC.4SW

LDC #: 1985B34a
SDG #: 57168

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MG
2nd reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
(Y) N N/A Are all detection limits below the CRDL?

Detected analyte results for #5, Sb were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

$$\frac{(2.330\ \mu g/L)(0.050\ L)}{0.050\ L} = 2.330\ \mu g/L$$

Sample ID	Analyte	Reported Concentration (µg/L)	Calculated Concentration (µg/L)	Acceptable (Y/N)
5	Sb	2.3	2.3	Y
	As	3.0	3.0	
	Ba	77.7	77.7	
	Cd	0.042	0.042	
	Cr	39.2	39.2	
	Mn	213.	213.	
	Ni	5.6	5.6	
	Ag	0.53	0.53	
	Zn	14.9	15.0	

RECALC.4S2

LDC Report# 19858D7

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: October 9, 2008

LDC Report Date: December 5, 2008

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57197

Sample Identification

0841D019
0841C012
0841D017
0841C017
0841B021
0841B022**
0841D020
0841D021
0841D022
0841X005
0841C017MS
0841C017MSD

**Indicates sample underwent Level IV review

Introduction

This data review covers 12 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

Samples 0841C012, 0841D017, and 0841X005 were identified as trip blanks. No total petroleum hydrocarbons as gasoline contaminants were found in these 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 a Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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 0841D021 and 0841D022 were identified as field duplicates. No total petroleum hydrocarbons as gasoline were detected in any of the samples.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841C012
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85320
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	116	75-125		%	10/19/08	10/19/08

L/21008

Quant Method:	HBTXGOK.M
Run #:	1018H30
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D017
Sample Collection Date: 10/09/08

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85321
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	114	75-125		%	10/19/08	10/19/08

2/2/008

Quant Method: HBTXGOK.M
Run #: 1018H31
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841C017
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW46A
ARF: 57197
APPL ID: AX85324
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	120	75-125		%	10/19/08	10/19/08

11/2/008

Quant Method: HBTXGOK.M
Run #: 1018H34
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841B021
Sample Collection Date: 10/09/08

Loc ID: IR46MW48A
ARF: 57197
APPL ID: AX85325
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	116	75-125		%	10/19/08	10/19/08

R 12/08

Quant Method:	HBTXGOK.M
Run #:	1018H35
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841B022
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW47A
ARF: 57197
APPL ID: AX85326
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	118	75-125		%	10/19/08	10/19/08

RC 12/6/08

Quant Method:	HBTXGOK.M
Run #:	1018H36
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D020
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW49A
ARF: 57197
APPL ID: AX85327
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	22 ++	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	122	75-125		%	10/19/08	10/19/08

++(G1) The analyst has noted that the chromatogram of this sample includes a wide range of hydrocarbons which does not match our gasoline standard.

N 12/2008

Quant Method:	HBTXGOK.M
Run #:	1018H37
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D021
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR24MW05A
ARF: 57197
APPL ID: AX85328
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	119	75-125		%	10/19/08	10/19/08

2/2/08

Quant Method:	HBTXGOK.M
Run #:	1018H38
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D022
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR24MW05A
ARF: 57197
APPL ID: AX85329
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	121	75-125		%	10/19/08	10/19/08

12/24/08

Quant Method: HBTXGOK.M
Run #: 1018H39
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841X005
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85332
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	114	75-125		%	10/19/08	10/19/08

2/2/2008

Quant Method:	HBTXGOK.M
Run #:	1018H32
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19858D7
SDG #: 57197
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 12/4/08
Page: 1 of 1
Reviewer: FT
2nd Reviewer: N

METHOD: GC TPH as Gasoline (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 10/9/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	D = 8 + 9
X.	Field blanks	ND	TB = 2, 3, 10

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	084D019 (water)	11	084C017MS	21	081019A	31	
2	084C012 TB	12	084C017MSD	22		32	
3	084D017 TB	13		23		33	
4	084C017	14		24		34	
5	084B021	15		25		35	
6	084B022**	16		26		36	
7	084D020	17		27		37	
8	084D021 D	18		28		38	
9	084D022 D	19		29		39	
10	084X005 TB	20		30		40	

Notes: Note add 1 after 4 on all sample's ID

LDC #: 19858D7
SDG #: per cover

VALIDATION FINDINGS CHECKLIST

Reviewer: PZ
2nd Reviewer: N

Method: ✓ GC ____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

.DC #: 19858D7
SDG #: per cover

VALIDATION FINDINGS CHECKLIST

Reviewer: FR
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?			✓	
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 1985B7
SDG #: all cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (300 std)	Recalculated CF (300 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL Harpo	7/23/08	gasoline	26028	26028	26995	26995	7.3	7.3
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858D7
SDG #: pre cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ___/___ HPLC _____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	1018H27	10/19/08	gasoline	26995	29984	29984	11	11
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858 D7
SDG #: per cover

METHOD: ~~GC~~ ___ HPLC

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: M
2nd reviewer: K

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #6

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
BFB	DB-624	25	29.619	118	118	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 19858D7
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: A
2nd Reviewer: K

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked concentration SC = Sample concentration
SA = Spike added

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 11 + 12

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	300	300	ND	285	280	95.0	95.0	93.3	93.3	1.8	1.8
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858D7
SDG #: pu conv

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

_____METHOD: ✓ GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

Where SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory Control Sample
SC = Sample concentration
LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 081019A

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	300	NA	0	331	NA	110	110	NA			
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLCNew.wpd

LDC #: 19858 D7
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound in the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID._____ Compound Name _____

Concentration = _____

ND

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

SAMPCALew.wpd

Hunters Point Shipyard, 4Q08 GW Sampling Event
Data Validation Reports
LDC# 19858

TPH as Extractables

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: October 9, 2008

LDC Report Date: December 9, 2008

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57197

Sample Identification

0841D019
0841C017
0841B021
0841B022**
0841D020
0841D021
0841D022
0841C017MS
0841C017MSD

**Indicates sample underwent Level IV review

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 8015 for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

No field blanks were identified in this SDG.

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

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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 0841D021 and 0841D022 were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841B021
Sample Collection Date: 10/09/08

Loc ID: IR46MW48A
ARF: 57197
APPL ID: AX85325
QCG: $DIHP-081014A2-127030

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	10/14/08	10/24/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	10/14/08	10/24/08
EPA 8015B-	Surrogate: Octacosane (S)	84.4	60-140		%	10/14/08	10/24/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	82.9	60-140		%	10/14/08	10/24/08

2/2/08

Quant Method: TPH04DIP.M
Run #: 1023026
Instrument: Apollo
Sequence: 081023
Dilution Factor: 1
Initials: EJ

Printed: 11/04/08 3:11:27 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841B022
Sample Collection Date: 10/09/08

Loc ID: IR46MW47A
ARF: 57197
APPL ID: AX85326
QCG: $DIHP-081014A2-127030

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	220 ++	40.0	13.07	ug/L	10/14/08	10/24/08
EPA 8015B-	Motor Oil	560	40.0	5.54	ug/L	10/14/08	10/24/08
EPA 8015B-	Surrogate: Octacosane (S)	90.1	60-140		%	10/14/08	10/24/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	92.2	60-140		%	10/14/08	10/24/08

+(T3M) The analyst has noted that the chromatogram of this sample is mainly higher oiling hydrocarbons.

2/1608

Quant Method:	TPH04DIP.M
Run #:	1023027
Instrument:	Apollo
Sequence:	081023
Dilution Factor:	1
Initials:	EJ

Printed: 11/04/08 3:11:27 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D020
Sample Collection Date: 10/09/08

Loc ID: IR46MW49A
ARF: 57197
APPL ID: AX85327
QCG: $DIHP-081014A2-127030

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	580 ++	40.0	13.07	ug/L	10/14/08	10/24/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	10/14/08	10/24/08
EPA 8015B-	Surrogate: Octacosane (S)	79.8	60-140		%	10/14/08	10/24/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	84.2	60-140		%	10/14/08	10/24/08

-+(T4I) The analyst has noted that the chromatogram of this sample includes a dominant peak(s) which is not indicative of petroleum hydrocarbons.

2/2/008

Quant Method: TPH04DIP.M
Run #: 1023028
Instrument: Apollo
Sequence: 081023
Dilution Factor: 1
Initials: EJ

Printed: 11/05/08 2:12:38 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D021
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR24MW05A
ARF: 57197
APPL ID: AX85328
QCG: $DIHP-081014A2-127030

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	10/14/08	10/24/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	10/14/08	10/24/08
EPA 8015B-	Surrogate: Octacosane (S)	72.3	60-140		%	10/14/08	10/24/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	76.3	60-140		%	10/14/08	10/24/08

2/2/08

Quant Method: TPH04DIP.M
Run #: 1023029
Instrument: Apollo
Sequence: 081023
Dilution Factor: 1
Initials: EJ

Printed: 11/04/08 3:11:27 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D022
Sample Collection Date: 10/09/08

Loc ID: IR24MW05A
ARF: 57197
APPL ID: AX85329
QCG: $DIHP-081014A2-127030

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	10/14/08	10/24/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	10/14/08	10/24/08
EPA 8015B-	Surrogate: Octacosane (S)	80.5	60-140		%	10/14/08	10/24/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	83.4	60-140		%	10/14/08	10/24/08

2/2/2008

Quant Method: TPH04DIP.M
Run #: 1023030
Instrument: Apollo
Sequence: 081023
Dilution Factor: 1
Initials: EJ

Printed: 11/04/08 3:11:27 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19858D8
SDG #: 57197
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 12/03/08
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: ✓

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 10/9/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	D = 6 & 7
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1 1	084D019 water	11 1	081014A1	21		31	
2 2	084C017 ~~EB~~	12 2	081014A2	22		32	
3 2	084B021	13		23		33	
4 2	084B022**	14		24		34	
5 2	084D020	15		25		35	
6 2	084D021 D	16		26		36	
7 2	084D022 D	17		27		37	
8 2	084C017MS	18		28		38	
9 2	084C017MSD	19		29		39	
10		20		30		40	

Notes: Note Add 1 after 4 on all samples' ID

LDC #: 19058D8
SDG #: per cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: FZ
2nd Reviewer: M

Method: ✓ GC ____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.			✓	
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

_DC #: 19858D8
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Reviewer: FR
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 19858D8
SDG #: all cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: PD
2nd Reviewer: K

METHOD: GC_____ HPLC_____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (400 std)	Recalculated CF (400 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	Apollo ICAL	4/7/08	Diesel	197448	197448	212061	212061	16	16
2	Apollo CTPH04DIP	4/7/08	Diesel	169486	169486	167324	167324	7.8	7.8
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858D8
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: K

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	102302	10/24/08	Diesel	167324	171914	171914	2.7	2.7
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 19858P8
SDG #: per cover
METHOD: ✓ GC ___ HPLC

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: M
2nd reviewer: K

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 4

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
octacosane	PB-5	33.333	30.035	90.1	90.1	0
o-Terphenyl	↓	↓	30.732	92.2	92.2	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 19858D8
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ___ GC ___ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked concentration SC = Sample concentration
SA = Spike added

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 8 & 9

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)	667	667	ND	576	527	86.4	86.4	79	79	8.9	8.9
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858D8
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: FP
2nd Reviewer: K

_____METHOD: ✓ GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

Where SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory Control Sample
SC = Sample concentration
LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 081014A2 LCS

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)	667	NA	0	578	NA	86.7	86.7	NA			
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLCNew.wpd

LDC #: 19858D8
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ___ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. #4 Compound Name Diesel

Concentration = 55970248 (2) (1000) (1.333) / ~~21206~~ (2) (1500)
167324
= 223 ug/L

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments:

SAMPCALew.wpd

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

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612
ATTN: Ms. Tricia Walters

December 15, 2008

SUBJECT: Hunters Point Shipyard, 4Q08 GW Sampling Event, Data Validation

Dear Ms. Walters,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on November 24, 2008. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 19858:

SDG #	Fraction
57154, 57168, 57180, 57197, 57209, 57217, 57181/R810145-8747	Volatiles, Semivolatiles, Chlorinated Pesticides, Polychlorinated Biphenyls, Dissolved Metals, Wet Chemistry, TPH as Gasoline, TPH as Extractables, Organophosphorus Pesticides, Tributyltin, Radium-226, Cesium-137, Strontium-90

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

- Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA, June 17, 2008
- 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

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

Sincerely,

Stella Cuenco

Stella S. Cuenco
Project Manager/Senior Chemist

V:\LOGIN\CE2\HUNTERS\19858COV.wpd

Attachment 1

EDD

LDC #19858 (CE2-San Diego / Hunters Point Shipyard, 4Q08 GW Sampling Event)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		VOA (8260B -SIM)		SVOA (8270C)		Pest. 8081A		PCBs (8082)		TPH-G (8015)		TPH-E (8015)		OPHS Pest. (8141A)		TBT (SIM)		Ra-226 (903.1)		Cs-137 (901.0)		Sr-90 (905.0)													
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	57154	11/24/08	12/17/08	8	0	8	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
A	57154	11/24/08	12/17/08	2	0	2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
B	57168	11/24/08	12/17/08	24	0	26	0	1	0	1	0	1	0	2	0	1	0	1	0	1	0	-	-	-	-	-	-												
B	57168	11/24/08	12/17/08	3	0	3	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	-	-	-	-	-	-												
C	57180	11/24/08	12/17/08	19	0	19	0	2	0	2	0	2	0	6	0	2	0	2	0	1	0	-	-	-	-	-	-												
C	57180	11/24/08	12/17/08	3	0	3	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	-	-	-	-	-	-												
D	57197	11/24/08	12/17/08	13	0	13	0	3	0	1	0	1	0	9	0	6	0	1	0	3	0	-	-	-	-	-	-												
D	57197	11/24/08	12/17/08	4	0	5	0	1	0	0	0	0	0	1	0	1	0	0	0	1	0	-	-	-	-	-	-												
E	57209	11/24/08	12/17/08	8	0	8	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
E	57209	11/24/08	12/17/08	1	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
F	57217	11/24/08	12/17/08	2	0	2	0	-	-	-	-	2	0	4	0	2	0	-	-	-	-	-	-	-	-	-	-												
F	57217	11/24/08	12/17/08	1	0	1	0	-	-	-	-	1	0	1	0	1	0	-	-	-	-	-	-	-	-	-	-												
G	57181/R810145-8747	11/24/08	12/17/08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	0	1	0												
G	57181/R810145-8747	11/24/08	12/17/08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	0	2	0	2	0												
Total	T/SC			88	0	91	0	9	0	6	0	9	0	25	0	15	0	6	0	8	0	3	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	266

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

19858ST.wpd

EDD

LDC #19858 (CE2-San Diego / Hunters Point Shipyard, 4Q08 GW Sampling Event)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Diss. Metals SW846		Diss. Cr (6010B)		Diss. Cu (6010B)		Diss. Pb (6010B)		Diss. Zn (6010B)		Diss. Hg (7470A)		Diss. Ni 6010B																									
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	W	S
B	57168	11/24/08	12/17/08	2	0	7	0	-	-	-	-	-	-	-	-	-	-																								
B	57168	11/24/08	12/17/08	2	0	1	0	-	-	-	-	-	-	-	-	-	-																								
C	57180	11/24/08	12/17/08	2	0	-	-	1	0	-	-	1	0	-	-	0	0																								
C	57180	11/24/08	12/17/08	2	0	-	-	0	0	-	-	0	0	-	-	1	0																								
D	57197	11/24/08	12/17/08	3	0	-	-	-	-	-	-	-	-	-	-	-	-																								
D	57197	11/24/08	12/17/08	1	0	-	-	-	-	-	-	-	-	-	-	-	-																								
E	57209	11/24/08	12/17/08	-	-	-	-	1	0	1	0	1	0	1	0	1	0																								
F	57217	11/24/08	12/17/08	2	0	-	-	-	-	-	-	-	-	-	-	-	-																								
F	57217	11/24/08	12/17/08	1	0	-	-	-	-	-	-	-	-	-	-	-	-																								
Total	T/SC			15	0	8	0	2	0	1	0	2	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

19858ST.wpd

EDD

LDC #19888 (CE2-San Diego / Hunters Point Shipyard, 4Q08 GW Sampling Event)

LDC	SDG#	DATE REC'D	(3) DATE DUE	TSS (160.2)		TKN (351.2)		Cr(VI) (7199)		CN- (9010B /9014)		S= (376.1)		O&G (1664)		Cl (300.0)		Br (300.0)		SO_4 (300.0)		Fl (300.0)		NO_3-N (300.0)		NO_2-N (300.0)		O-PO_4 (300.0)		NH_3 (350.1)											
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	W	S
B	57168	11/24/08	12/17/08	1	0	1	0	10	0	1	0	1	0	1	0	2	0	1	0	2	0	1	0	2	0	1	0	1	0	1	0										
B	57168	11/24/08	12/17/08	1	0	1	0	4	0	1	0	1	0	1	0	2	0	1	0	2	0	1	0	2	0	1	0	1	0	1	0										
C	57180	11/24/08	12/17/08	2	0	2	0	-	-	4	0	2	0	2	0	4	0	2	0	2	0	2	0	2	0	2	0	2	0	3	0										
C	57180	11/24/08	12/17/08	1	0	1	0	-	-	2	0	1	0	1	0	2	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0										
D	57197	11/24/08	12/17/08	3	0	2	0	-	-	3	0	1	0	1	0	2	0	1	0	1	0	1	0	1	0	1	0	1	0	2	0										
D	57197	11/24/08	12/17/08	1	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										
Total	T/SC			9	0	7	0	14	0	11	0	6	0	6	0	12	0	6	0	8	0	6	0	8	0	6	0	6	0	8	0	0	0	0	0	0	0	0	0	0	113

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

19858ST.wpd

Hunters Point Shipyard, 4Q08 GW Sampling Event
Data Validation Reports
LDC# 19858

Volatiles

LDC

LDC Report# 19858D1a

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: October 9, 2008

LDC Report Date: December 9, 2008

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57197

Sample Identification

0841D018**
0841D019
0841B019
0841B020
0841C013
0841C014**
0841C015
0841C016
0841H020**
0841H021
0841H022
0841H022DL
0841H023**
0841C012
0841D017
0841B018
0841X006

**Indicates sample underwent 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 8260B for Volatiles.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
10/20/08	Bromomethane	0.0419 (≥0.05)	0841C012 0841D017 0841B018 0841X006 081021AN-BLK	UJ5 (all non-detects)	A

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
10/23/08	Methylene chloride	101	0841H023** 081023CC-BLK	UJ5 (all non-detects)	A

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

All of the continuing calibration RRF values were within method and validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
10/21/08	Bromomethane	0.0424 (≥0.05)	0841C012 0841D017 0841B018 0841X006 081021AN-BLK	UJ5 (all non-detects)	A

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
081022AM-BLK	10/22/08	1,2,4-Trichlorobenzene 1,3-Dichlorobenzene Chloroform Freon-113 Tetrachloroethene	0.62 ug/L 0.12 ug/L 0.27 ug/L 0.37 ug/L 0.18 ug/L	0841D018** 0841D019 0841B019 0841B020 0841C013 0841C014** 0841C015
081021AN-BLK	10/21/08	Chloroform	0.29 ug/L	0841C012 0841D017 0841B018 0841X006
081022AC-BLK	10/22/08	Chloroform Methylene chloride	0.33 ug/L 1.2 ug/L	0841H020** 0841H021 0841H022

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
0841D018**	1,2,4-Trichlorobenzene 1,3-Dichlorobenzene Freon-113 Tetrachloroethene	0.48 ug/L 0.11 ug/L 0.27 ug/L 0.15 ug/L	0.5U ug/L 0.5U ug/L 0.5U ug/L 0.5U ug/L
0841D019	1,2,4-Trichlorobenzene 1,3-Dichlorobenzene Freon-113	0.42 ug/L 0.17 ug/L 0.26 ug/L	0.5U ug/L 0.5U ug/L 0.5U ug/L
0841B019	1,2,4-Trichlorobenzene	0.34 ug/L	0.5U ug/L
0841B020	1,2,4-Trichlorobenzene	0.31 ug/L	0.5U ug/L
0841C013	1,2,4-Trichlorobenzene	0.31 ug/L	0.5U ug/L
0841C014**	1,2,4-Trichlorobenzene 1,3-Dichlorobenzene	0.26 ug/L 0.17 ug/L	0.5U ug/L 0.5U ug/L
0841C015	1,2,4-Trichlorobenzene Tetrachloroethene	0.25 ug/L 0.18 ug/L	0.5U ug/L 0.5U ug/L
0841C012	Chloroform	0.11 ug/L	0.5U ug/L
0841D017	Chloroform	0.11 ug/L	0.5U ug/L
0841H021	Chloroform	0.98 ug/L	0.98U ug/L

Samples 0841C012, 0841D017, 0841B018, and 0841X006 were identified as trip blanks. No volatile contaminants were found in these blanks with the following exceptions:

Trip Blank ID	Sampling Date	Compound	Concentration	Associated Samples
0841C012	10/9/08	Chloroform Methylene chloride	0.11 ug/L 1.6 ug/L	0841C013 0841C014** 0841C015 0841C016
0841D017	10/9/08	Chloroform Methylene chloride	0.11 ug/L 1.7 ug/L	0841D018** 0841D019 0841H023**

Trip Blank ID	Sampling Date	Compound	Concentration	Associated Samples
0841X006	10/9/08	Methylene chloride	0.91 ug/L	0841D018** 0841D019 0841B019 0841B020 0841C013 0841C014** 0841C015 0841C016 0841H020** 0841H021 0841H022 0841H023**

Sample concentrations were compared to concentrations detected in the field 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 field 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
081015AH-BLK	1,2-Dichloroethane-d4 Dibromofluoromethane	128 (70-120) 125 (85-115)	All TCL compounds	NA	-
0841C016	1,2-Dichloroethane-d4	128 (70-120)	Xylenes, total	J13 (all detects)	P

Although the above listed %Rs flagged "NA" demonstrate a high bias, the affected compounds in the associated sample were non-detected and did not warrant the qualification of the data.

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 with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
081023CC	Methylene chloride	201 (55-140)	0841H023** 081023CC-BLK	NA	-

Although the above listed %Rs flagged "NA" demonstrate a high bias, the affected compound in the associated samples was non-detected and did not warrant the qualification of the data.

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 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 with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
0841H022	Chlorobenzene	Sample result exceeded calibration range.	Reported result should be within calibration range.	J20 (all detects)	A

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

XV. Overall Assessment of Data

The overall assessment of data was acceptable. In the case where more than one result was reported for an individual sample, the least technically acceptable results were rejected as follows:

Sample	Compound	Flag	A or P
0841H022	Chlorobenzene	R22	A

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

XVI. Field Duplicates

No field duplicates were identified in this SDG.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 57197

SDG	Sample	Compound	Flag	A or P	Reason
57197	0841C012 0841D017 0841B018 0841X006	Bromomethane	UJ5 (all non-detects)	A	Initial calibration (RRF)
57197	0841H023**	Methylene chloride	UJ5 (all non-detects)	A	Continuing calibration (%D)
57197	0841C012 0841D017 0841B018 0841X006	Bromomethane	UJ5 (all non-detects)	A	Continuing calibration (RRF)
57197	0841C016	Xylenes, total	J13 (all detects)	P	Surrogate spikes (%R)
57197	0841H022	Chlorobenzene	J20 (all detects)	A	Compound quantitation and CRQLs
57197	0841H022	Chlorobenzene	R22	A	Overall assessment of data

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 57197

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P	Code
57197	0841D018**	1,2,4-Trichlorobenzene 1,3-Dichlorobenzene Freon-113 Tetrachloroethene	0.5U ug/L 0.5U ug/L 0.5U ug/L 0.5U ug/L	A	7
57197	0841D019	1,2,4-Trichlorobenzene 1,3-Dichlorobenzene Freon-113	0.5U ug/L 0.5U ug/L 0.5U ug/L	A	7
57197	0841B019	1,2,4-Trichlorobenzene	0.5U ug/L	A	7
57197	0841B020	1,2,4-Trichlorobenzene	0.5U ug/L	A	7
57197	0841C013	1,2,4-Trichlorobenzene	0.5U ug/L	A	7
57197	0841C014**	1,2,4-Trichlorobenzene 1,3-Dichlorobenzene	0.5U ug/L 0.5U ug/L	A	7

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P	Code
57197	0841C015	1,2,4-Trichlorobenzene Tetrachloroethene	0.5U ug/L 0.5U ug/L	A	7
57197	0841C012	Chloroform	0.5U ug/L	A	7
57197	0841D017	Chloroform	0.5U ug/L	A	7
57197	0841H021	Chloroform	0.98U ug/L	A	7

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841C016
Sample Collection Date: 10/9/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR39MW33A
ARF: 57197
APPL ID: AX85315
QCG: $86HP-081015AH-127009

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	10/15/2008	10/15/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	10/15/2008	10/15/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	10/15/2008	10/15/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	10/15/2008	10/15/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	10/15/2008	10/15/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	10/15/2008	10/15/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	10/15/2008	10/15/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	10/15/2008	10/15/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	10/15/2008	10/15/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	10/15/2008	10/15/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	10/15/2008	10/15/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	10/15/2008	10/15/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	10/15/2008	10/15/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	10/15/2008	10/15/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	10/15/2008	10/15/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	10/15/2008	10/15/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	10/15/2008	10/15/2008
EPA 8260B	Bromomethane	Not detected	1.0	0.24	ug/L	10/15/2008	10/15/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	10/15/2008	10/15/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	10/15/2008	10/15/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	10/15/2008	10/15/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	10/15/2008	10/15/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	10/15/2008	10/15/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	10/15/2008	10/15/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	10/15/2008	10/15/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	10/15/2008	10/15/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	10/15/2008	10/15/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	10/15/2008	10/15/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	10/15/2008	10/15/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	10/15/2008	10/15/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	10/15/2008	10/15/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	10/15/2008	10/15/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	10/15/2008	10/15/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	10/15/2008	10/15/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	10/15/2008	10/15/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	10/15/2008	10/15/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	10/15/2008	10/15/2008

= Estimated value.
= Recovery (or RPD) is outside QC limits.

2/2/2008

Quant Method: H86HPW-1.M
Run #: 1015H08
Instrument: Hewey
Sequence: H081013
Dilution Factor: 1
Initials: GM

Printed: 11/5/2008 1:59:06 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841C016
Sample Collection Date: 10/9/2008

Loc ID: IR39MW33A
ARF: 57197
APPL ID: AX85315
QCG: $86HP-081015AH-127009

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	0.33 J J B	0.5	0.19	ug/L	10/15/2008	10/15/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	128 #	70-120		%	10/15/2008	10/15/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	103	75-120		%	10/15/2008	10/15/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	115	85-115		%	10/15/2008	10/15/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	113	85-120		%	10/15/2008	10/15/2008

J = Estimated value.
# = Recovery (or RPD) is outside QC limits.

2/21008

Quant Method: H86HPW-1.M
Run #: 1015H08
Instrument: Hewey
Sequence: H081013
Dilution Factor: 1
Initials: GM

Printed: 11/5/2008 1:59:06 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841C012
Sample Collection Date: 10/9/2008

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85320
QCG: $86HP-081021AN-126964

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromomethane	Not detected UJ5	1.0	0.24	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chloroform	0.11 B J 0.547	0.5	0.07	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	10/21/2008	10/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	10/21/2008	10/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	10/21/2008	10/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	10/21/2008	10/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	Methylene chloride	1.6 J	5.0	0.35	ug/L	10/21/2008	10/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	10/21/2008	10/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	10/21/2008	10/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	10/21/2008	10/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	10/21/2008	10/21/2008

= Estimated value.
; = The analyte was found in a method blank, as well as in the sample.

11/7/2008

Quant Method: N86HPW.M
Run #: 1021N08
Instrument: Neo
Sequence: N081020A
Dilution Factor: 1
Initials: GM

Printed: 11/5/2008 1:59:06 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841C012
Sample Collection Date: 10/9/2008

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85320
QCG: $86HP-081021AN-126964

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	102	70-120		%	10/21/2008	10/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	104	75-120		%	10/21/2008	10/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	10/21/2008	10/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	105	85-120		%	10/21/2008	10/21/2008

= Estimated value.
= The analyte was found in a method blank, as well as in the sample.

11/4/08

Quant Method:	N86HPW.M
Run #:	1021N08
Instrument:	Neo
Sequence:	N081020A
Dilution Factor:	1
Initials:	GM

Printed: 11/5/2008 1:59:06 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D017
Sample Collection Date: 10/9/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85321
QCG: $86HP-081021AN-126964

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromomethane	Not detected UJS	1.0	0.24	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chloroform	0.11 B J 0.547	0.5	0.07	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	10/21/2008	10/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	10/21/2008	10/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	10/21/2008	10/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	10/21/2008	10/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	Methylene chloride	1.7 J	5.0	0.35	ug/L	10/21/2008	10/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	10/21/2008	10/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	10/21/2008	10/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	10/21/2008	10/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	10/21/2008	10/21/2008

= Estimated value.
= The analyte was found in a method blank, as well as in the sample.

2/21/08

Quant Method: N86HPW.M
Run #: 1021N09
Instrument: Neo
Sequence: N081020A
Dilution Factor: 1
Initials: GM

Printed: 11/5/2008 1:59:06 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D017
Sample Collection Date: 10/9/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85321
QCG: $86HP-081021AN-126964

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	10/21/2008	10/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	96.3	75-120		%	10/21/2008	10/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	108	85-115		%	10/21/2008	10/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	100	85-120		%	10/21/2008	10/21/2008

= Estimated value.
= The analyte was found in a method blank, as well as in the sample.

Quant Method:	N86HPW.M
Run #:	1021N09
Instrument:	Neo
Sequence:	N081020A
Dilution Factor:	1
Initials:	GM

Printed: 11/5/2008 1:59:06 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841B018
Sample Collection Date: 10/9/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85322
QCG: $86HP-081021AN-126964

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromomethane	Not detected UJS	1.0	0.24	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	10/21/2008	10/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	10/21/2008	10/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	10/21/2008	10/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	10/21/2008	10/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	Methylene chloride	Not detected	5.0	0.35	ug/L	10/21/2008	10/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	10/21/2008	10/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	10/21/2008	10/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	10/21/2008	10/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	10/21/2008	10/21/2008

2/5/2008

Quant Method: N86HPW.M
Run #: 1021N10
Instrument: Neo
Sequence: N081020A
Dilution Factor: 1
Initials: GM

Printed: 11/5/2008 1:59:06 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841B018
Sample Collection Date: 10/9/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85322
QCG: $86HP-081021AN-126964

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	106	70-120		%	10/21/2008	10/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	104	75-120		%	10/21/2008	10/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	106	85-115		%	10/21/2008	10/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	104	85-120		%	10/21/2008	10/21/2008

2/4000

Quant Method:	N86HPW.M
Run #:	1021N10
Instrument:	Neo
Sequence:	N081020A
Dilution Factor:	1
Initials:	GM

Printed: 11/5/2008 1:59:06 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841X006
Sample Collection Date: 10/9/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85323
QCG: $86HP-081021AN-126964

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,1,1,2-Tetrachloroethane	Not detected	0.5	0.13	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1,1-Trichloroethane	Not detected	0.5	0.14	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1,2,2-Tetrachloroethane	Not detected	0.5	0.10	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1,2-Trichloroethane	Not detected	0.5	0.20	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1-Dichloroethane	Not detected	1.0	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,1-Dichloroethene	Not detected	0.5	0.30	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2,3-Trichloropropane	Not detected	1.0	0.39	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2,4-Trichlorobenzene	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2-Dibromo-3-Chloropropane	Not detected	2.0	0.76	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2-Dichlorobenzene	Not detected	0.5	0.17	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,2-Dichloropropane	Not detected	0.5	0.17	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,3-Dichlorobenzene	Not detected	0.5	0.11	ug/L	10/21/2008	10/21/2008
EPA 8260B	1,4-Dichlorobenzene	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Benzene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromobenzene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromodichloromethane	Not detected	0.5	0.14	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromoform	Not detected	0.5	0.14	ug/L	10/21/2008	10/21/2008
EPA 8260B	Bromomethane	Not detected UJ5	1.0	0.24	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chlorobenzene	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chloroethane	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chloroform	Not detected	0.5	0.07	ug/L	10/21/2008	10/21/2008
EPA 8260B	Chloromethane	Not detected	0.5	0.31	ug/L	10/21/2008	10/21/2008
EPA 8260B	cis-1,2-Dichloroethene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	cis-1,3-Dichloropropene	Not detected	0.5	0.15	ug/L	10/21/2008	10/21/2008
EPA 8260B	Dibromochloromethane	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Dibromomethane	Not detected	0.5	0.20	ug/L	10/21/2008	10/21/2008
EPA 8260B	Dichlorodifluoromethane	Not detected	1.0	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	10/21/2008	10/21/2008
EPA 8260B	Freon-113	Not detected	0.5	0.21	ug/L	10/21/2008	10/21/2008
EPA 8260B	Methylene chloride	0.91 J	5.0	0.35	ug/L	10/21/2008	10/21/2008
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Tetrachloroethene	Not detected	0.5	0.15	ug/L	10/21/2008	10/21/2008
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	10/21/2008	10/21/2008
EPA 8260B	trans-1,2-Dichloroethene	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	trans-1,3-Dichloropropene	Not detected	0.5	0.18	ug/L	10/21/2008	10/21/2008
EPA 8260B	Trichloroethene	Not detected	0.5	0.16	ug/L	10/21/2008	10/21/2008
EPA 8260B	Trichlorofluoromethane	Not detected	0.5	0.24	ug/L	10/21/2008	10/21/2008

= Estimated value.

2/2/2008

Quant Method: N86HPW.M
Run #: 1021N11
Instrument: Neo
Sequence: N081020A
Dilution Factor: 1
Initials: GM

Printed: 11/5/2008 1:59:06 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841X006
Sample Collection Date: 10/9/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85323
QCG: $86HP-081021AN-126964

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	10/21/2008	10/21/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	10/21/2008	10/21/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	102	75-120		%	10/21/2008	10/21/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	110	85-115		%	10/21/2008	10/21/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	98.8	85-120		%	10/21/2008	10/21/2008

= Estimated value.

Quant Method: N86HPW.M
Run #: 1021N11
Instrument: Neo
Sequence: N081020A
Dilution Factor: 1
Initials: GM

Printed: 11/5/2008 1:59:06 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19858D1a
SDG #: 57197
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 12/8/08
Page: 1 of 1
Reviewer: FD
2nd Reviewer: AL

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	Δ	Sampling dates: 10/9/08
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration	SW	% RSD, r^2 ≥0.990
IV.	Continuing calibration/ICV	SW	ICV ≤ X
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	SW	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	Δ	
XI.	Target compound identification	Δ	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	SW	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation. not reported
XIV.	System performance	Δ	Not reviewed for Level III validation.
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	SW	TB = 14, 15, 16*, 17

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; * ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	4	084D018**	11	3	084H022 D1	21	1	081021AN	31
2	4	084D019	12	3	084H022DL	22	2	081022AC	32
3	4	084B019	13	3	084H023**	23	3	081023CC	33
4	4	084B020	14	1	084C012 TB	24	4	081022AM	34
5	4	084C013	15	1	084D017 TB	25	5	081015AH	35
6	4	084C014**	16	1	084B018 TB	26			36
7	4	084C015	17	1	084X006 TB	27			37
8	5	084C016	18			28			38
9	2	084H020**	19			29			39
10	3	084H021	20			30			40

Add 1 after 4 on all samples' ID

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 19888P/a
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Reviewer: FT
2nd Reviewer: N

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) > 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blank				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Surrogate spike				
Were all surrogate %R within QC limits?		✓		
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?		✓		
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.			✓	
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 19880/a
SDG #: all cover

VALIDATION FINDINGS CHECKLIST

Reviewer: PT
2nd Reviewer: N

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?			✓	
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.	✓			

LDC #: 19858P1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: PR
2nd Reviewer: M

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?
Y N N/A Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
Y N N/A Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?_____
Y N N/A Did the initial calibration meet the acceptance criteria?
Y N N/A Were all %RSDs and RRFs within the validation criteria of ≤30 %RSD and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	10/20/08	ICAL - NeO	B		0.0419	081021AN-BIK, 14 → 17	J/UJ/A (5) ND

INICAL.1SB

SDG #: [illegible]

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: <25.0%)	Finding RRF (Limit: >0.05)	Associated Samples	Qualifications
	10/23/08	1022C37W	E	101	~~101~~	081023CC-BLK, 13	J/W/A (5) ND
	10/21/08	1021N02W	B		0.0424	081021AN-BLK, 14 → 17	J/W/A (5) ND

CONCAL.1SB

LDC #: 19858D/a
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: PJ
2nd Reviewer: R

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

cold (7)

Blank analysis date: 10/22/08
Conc. units: ug/L

Associated Samples: 1 → 7

Compound	Blank ID	Sample Identification								
	081022AW-BLK	1	2	3	4	5	6	7		
~~Methylene chloride~~ KKK	0.62	0.48/0.5U	0.42/0.5U	0.34/0.5U	0.31/0.5U	0.31/0.5U	0.26/0.5U	0.25/0.5U	—	
~~Acetone~~ FFF	0.12	0.11/0.5U	0.17/0.5U	—	—	—	0.17/0.5U	—		
K	0.27	—	—	—	—	—	—	—		
Freon-113	0.37	0.27/0.5U	0.26/0.5U	—	—	—	—	—		
ΔΔ	0.18	0.15/0.5U	—	—	—	0.94	3.7	0.18/0.5U		
CRQL										

Blank analysis date: _____
Conc. units: _____

Associated Samples: _____

Compound	Blank ID	Sample Identification								
Methylene chloride										
Acetone										
CRQL										

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 17856 1/1a
SDG #: all cases

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

code (7)

Blank analysis date: 10/21/08
Conc. units: ug/L
Associated Samples: 14, 15, 16, 17

Compound	Blank ID	Sample Identification								
	081021AN-BLK		14	15						
Methylene chloride K	0.29		0.11/0.54	0.11/0.54				—	—	—
Acetone										
CRQL										

Blank analysis date: 10/22/08
Conc. units: ug/L
Associated Samples: 9 → 11

Compound	Blank ID	Sample Identification								
	081022AC-BLK		10							
Methylene chloride K	0.33		0.98/U							
Acetone E	1.2		—							
CRQL										

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: [illegible] VALIDATION FINDINGS WORKSHEET Page: [illegible]

SDG #: see cover

Field Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

code (18)

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N /N/A Were field blanks identified in this SDG?

Y N N/A Were target compounds detected in the field blanks?

Blank units: ug/L **Associated sample units:** ug/L

Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: TB = 14, 15, 17 Associated Samples: 1-8 13

Compound	Blank ID 14	Blank ID 15	17	Sample Identification						
	10/9/08	10/9/08	10/9/08		10	13				
~~Methylene chloride~~ K	0.11	0.11	–		0.98	12				
~~Acetone~~ E	1.6	1.7	0.91		–					
~~Chloroform~~										
CRQL										

Blank units:_____ **Associated sample units:**_____

Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other:_____ Associated Samples:_____

Compound	Blank ID__	Blank ID__	Sample Identification							
Methylene chloride										
Acetone										
Chloroform										
CRQL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as Methylene chloride, Acetone, 2-Butanone and Carbon disulfide that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".

LDC #: 19858D/a
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Surrogate Spikes

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all surrogate %R within QC limits?

Y N (N/A) If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria?

#	Date	Sample ID	Surrogate	%Recovery	(Limits)	Qualifications		
		081015AH- BLK	DCE	128	(70-120)	J/P det	(13)	ND
			DFM	125	(85-115)	↓		↓
					( )			
		8	DCE	128	(70-120)	J/P det	(13)	ND + Det
					( )			(GG Det)
					( )			
					( )			
					( )			
					( )			
					( )			
					( )			
					( )			
					( )			
					( )			
					( )			
					( )			
					( )			
					( )			
					( )			
					( )			
					( )			

	QC Limits (Soil)	QC Limits (Water)
SMC1 (TOL) = Toluene-d8	81-117	88-110
SMC2 (BFB) = Bromofluorobenzene	74-121	86-115
SMC3 (DCE) = 1,2-Dichloroethane-d4	80-120	80-120
SMC4 (DFM) = Dibromofluoromethane	80-120	86-118

SUR.1SB

LDC #: 19858D/a
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a LCS required?
Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		081023CC	E	201 (55-140)	( )	( )	081023CC-BLK,	J/Pdet (10) ND
				( )	( )	( )	~~[illegible]~~, 13	
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
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				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 19858 P/a
SDG #: per comp

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and CRQLs

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Y N N/A Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

#	Date	compound ~~Sample ID~~	Finding	Associated Samples	Qualifications
		DD	x'd cal range	11	J/A det (20)

Comments: See sample calculation verification worksheet for recalculations

COMQUA.1SB

LDC #: 19858 D/a
SDG #: per conv

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: FT
2nd Reviewer: R

GCMS/8260B

METHOD: __ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Compound Name	Finding	Associated Samples	Qualifications
	DD	x'd cal Range	11	R/A (22)

Comments: _____

OVRNew.wpd

LDC #: 19858 D1a
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (std)	Recalculated RRF (std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL MAX	10/22/08	Benzene (1st internal standard)	3.452	3.452	3.4	3.387	12	12
			Ethyl Benzene (2nd internal standard)	6.347	6.347	6.2	6.2	2.7	2.7
			1,2 - DCB (3rd internal standard)	3.988	3.988	3.9	3.9	2.2	2.2
2	ICAL CHICO	10/18/08	(1st internal standard)	4.224	4.224	4.5	4.481	7.8	7.8
			(2nd internal standard)	6.663	6.663	6.7	6.7	4.2	4.2
			(3rd internal standard)	6.018	6.018	6.1	6.1	6.3	6.3
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858D/a
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	1022M02S	10/22/08	~~Vinyl chloride~~ Benzene (1st internal standard)	~~3.381~~ ~~0.1702~~	~~3.505~~ ~~0.1619~~	~~3.505~~ ~~0.1619~~	~~3.5~~ ~~4.9~~	~~3.5~~ ~~4.9~~
	MAX		Ethyl Benzene (2nd internal standard)	6.240	6.455	6.455	3.4	3.4
			1,2-DCB (3rd internal standard)	3.932	3.862	3.862	1.8	1.8
2	1022C02W	10/22/08	Benzene (1st internal standard)	4.481 ~~0.4946~~	4.695 ~~0.5366~~	4.695 ~~0.5366~~	4.8 ~~8.5~~	4.8 ~~8.5~~
	CHICO		(2nd internal standard)	6.712	6.798	6.798	1.3	1.3
			(3rd internal standard)	6.060	5.720	5.720	5.6	5.6
3	1022C37W	10/23/08	Benzene (1st internal standard)	~~4.481~~	4.226 ~~0.4620~~	4.226 ~~0.4620~~	5.7 ~~6.6~~	5.7 ~~6.6~~
	CHICO		(2nd internal standard)		6.274	6.274	6.5	6.5
			(3rd internal standard)		5.883	5.883	2.9	2.9
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858D1a
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	22.052	21.72352	98.5	98.5	0
Bromofluorobenzene	22.089	22.55790	102	102	
1,2-Dichloroethane-d4	20.612	21.31330	103	103	
Dibromofluoromethane	21.536	21.84930	101	101	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 19858D/a
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCS - LCSD I * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: 081022AM-LCS

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	10.0	NA	10.0	NA	100	10.0				
Trichloroethene			9.73		97.3	97.3				
Benzene			10.3		103	103				
Toluene			10.1		101	101				
Chlorobenzene			10.3		103	103	NA			

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858D/a
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: PR
2nd reviewer: AV

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
RRF	=	Relative response factor of the calibration standard.
V_o	=	Volume or weight of sample pruged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. #1, A:

Conc. = (7539)(25)( )
(1261056)(0.9747)( )( )
= 0.15 ng/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC Report# 19858D1c

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: October 9, 2008

LDC Report Date: December 9, 2008

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57197

Sample Identification

0841D018**
0841D019
0841B019
0841B020
0841C013
0841C013DL
0841C014**
0841C014DL**
0841C015
0841C016
0841H020**
0841H021
0841H022
0841H023**
0841C012
0841D017
0841B018
0841X006

**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 8260B using Selected Ion Monitoring (SIM) for Volatiles.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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

All of the continuing calibration RRF values were within 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
081022BS-BLK	10/23/08	Vinyl chloride	0.03 ug/L	0841H021 0841H023**

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.

Samples 0841C012, 0841D017, 0841B018, and 0841X006 were identified as trip blanks. No volatile contaminants were found in these 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 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 with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
0841C013 0841C014**	Vinyl chloride	Sample result exceeded calibration range.	Reported result should be within calibration range.	J20 (all detects)	A

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 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.

XV. Overall Assessment of Data

The overall assessment of data was acceptable. In the case where more than one result was reported for an individual sample, the least technically acceptable results were rejected as follows:

Sample	Compound	Flag	A or P
0841C013 0841C014**	Vinyl chloride	R22	A

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

XVI. Field Duplicates

No field duplicates were identified in this SDG.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 57197

SDG	Sample	Compound	Flag	A or P	Reason
57197	0841C013 0841C014**	Vinyl chloride	J20 (all detects)	A	Compound quantitation and CRQLs
57197	0841C013 0841C014**	Vinyl chloride	R22	A	Overall assessment of data

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841C016
Sample Collection Date: 10/9/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR39MW33A
ARF: 57197
APPL ID: AX85315
QCG: $86HPS-081016BS-126859

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	10/16/2008	10/16/2008
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	10/16/2008	10/16/2008
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	10/16/2008	10/16/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	95.9	70-120		%	10/16/2008	10/16/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	102	75-120		%	10/16/2008	10/16/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	92.5	85-115		%	10/16/2008	10/16/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	102	85-120		%	10/16/2008	10/16/2008

2/24/08

Quant Method: S86SIM.M
Run #: 1016S19
Instrument: Sweetpea
Sequence: S081013
Dilution Factor: 1
Initials: SV

Printed: 10/24/2008 5:19:03 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841C012
Sample Collection Date: 10/9/2008

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85320
QCG: $86HPS-081022AS-126989

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	10/22/2008	10/22/2008
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	10/22/2008	10/22/2008
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	10/22/2008	10/22/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	86.9	70-120		%	10/22/2008	10/22/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	97.5	75-120		%	10/22/2008	10/22/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	93.4	85-115		%	10/22/2008	10/22/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	101	85-120		%	10/22/2008	10/22/2008

22/2008

Quant Method: S86SIM.M
Run #: 1022S06
Instrument: Sweetpea
Sequence: S081013
Dilution Factor: 1
Initials: SV

Printed: 10/24/2008 5:19:03 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D017
Sample Collection Date: 10/9/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85321
QCG: $86HPS-081022AS-126989

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	10/22/2008	10/22/2008
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	10/22/2008	10/22/2008
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	10/22/2008	10/22/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	88.2	70-120		%	10/22/2008	10/22/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	97.8	75-120		%	10/22/2008	10/22/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	91.4	85-115		%	10/22/2008	10/22/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	100	85-120		%	10/22/2008	10/22/2008

2/2/08

Quant Method: S86SIM.M
Run #: 1022S07
Instrument: Sweetpea
Sequence: S081013
Dilution Factor: 1
Initials: SV

Printed: 10/24/2008 5:19:03 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841B018
Sample Collection Date: 10/9/2008

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85322
QCG: $86HPS-081022AS-126989

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	10/22/2008	10/22/2008
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	10/22/2008	10/22/2008
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	10/22/2008	10/22/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	91.2	70-120		%	10/22/2008	10/22/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	10/22/2008	10/22/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	95.2	85-115		%	10/22/2008	10/22/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	102	85-120		%	10/22/2008	10/22/2008

1/21/2008

Quant Method: S86SIM.M
Run #: 1022S08
Instrument: Sweetpea
Sequence: S081013
Dilution Factor: 1
Initials: SV

Printed: 10/24/2008 5:19:03 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841X006
Sample Collection Date: 10/9/2008

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85323
QCG: $86HPS-081022AS-126989

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	1,2-Dichloroethane	Not detected	0.1	0.03	ug/L	10/22/2008	10/22/2008
EPA 8260B	Carbon tetrachloride	Not detected	0.1	0.03	ug/L	10/22/2008	10/22/2008
EPA 8260B	Vinyl chloride	Not detected	0.1	0.03	ug/L	10/22/2008	10/22/2008
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	98.2	70-120		%	10/22/2008	10/22/2008
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	10/22/2008	10/22/2008
EPA 8260B	Surrogate: Dibromofluoromethane (S)	102	85-115		%	10/22/2008	10/22/2008
EPA 8260B	Surrogate: Toluene-D8 (S)	99.5	85-120		%	10/22/2008	10/22/2008

4/21/008

Quant Method: S86SIM.M
Run #: 1022S09
Instrument: Sweetpea
Sequence: S081013
Dilution Factor: 1
Initials: SV

Printed: 10/24/2008 5:19:03 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19858D1c
SDG #: 57197
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 12/5/08
Page: 1 of 1
Reviewer: R
2nd Reviewer: R

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 10/9/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	% RSD, r^2 ≥0.990
IV.	Continuing calibration/ICV	A	ICV ≤ 25
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	SW	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	TB = 15, 16, 17, 18

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

water

1	2	084D018**		11	4	084H020**		21	1	081016BS		31	
2	2	084D019		12	3	084H021		22	2	081022AS		32	
3	2	084B019		13	4	084H022		23	3	081022BS		33	
4	2	084B020		14	3	084H023**		24	4	081023AS		34	
5	2	084C013		15	2	084C012	TB	25				35	
6	4	084C013DL		16	2	084D017	TB	26				36	
7	2	084C014**		17	2	084B018	TB	27				37	
8	4	084C014DL**		18	2	084X006	TB	28				38	
9	4	084C015		19				29				39	
10	1	084C016		20				30				40	

Add 1 after 4 on all samples' ID

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 19858D1C
SDG #: per cover

VALIDATION FINDINGS CHECKLIST

Reviewer: FZ
2nd Reviewer: D

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) > 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓	NA		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.			✓	
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 19858DIC
SDG #: all cover

VALIDATION FINDINGS CHECKLIST

Reviewer: PT
2nd Reviewer: N

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within + 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?			✓	
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.	✓	✓		
Target compounds were detected in the field blanks.		✓		

LDC #: 14800DK
SDG #: all cases

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 10/23/08
Conc. units: ug/L
Associated Samples: 12, 14 75X

Compound	Blank ID	Sample Identification								
	081022B5-BLK									
~~Methylene chloride~~ C	0.03									
Acetone										
CRQL										

Blank analysis date: _____
Conc. units: _____
Associated Samples: _____

Compound	Blank ID	Sample Identification								
Methylene chloride										
Acetone										
CRQL										

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 19858 D1C
SDG #: per comp

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and CRQLs

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Y N N/A Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

#	Date	compound ~~Sample ID~~	Finding	Associated Samples	Qualifications
		c	x'd cal range	5, 7	J/A det (20)

Comments: See sample calculation verification worksheet for recalculations

COMQUA.1SB

LDC #: 17850 VR
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Date	compound ~~Sample ID~~	Finding	Associated Samples	Qualifications
		c	x'd cal range	5, 7	R/A (22)
		~~all except c~~	~~diluted~~	~~6, 8~~	

Comments:

OVR.1SB

LDC #: 19858DIC
SDG #: all cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (| std)	Recalculated RRF (| std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	sweetpea ICAL	10/13/08	vinyl chloride (1st internal standard)	2.647	2.647	2.874	2.874	3.7	3.7
			(2nd internal standard)						
			(3rd internal standard)						
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858DK
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	1022501W	10/22/08	vinyl chloride (1st internal standard)	2.874	2.666	2.666	7.2	7.2
			(2nd internal standard)					
			(3rd internal standard)					
2	1022519W	10/22/08	vinyl chloride (1st internal standard)	2.874	2.522	2.522	12	12
			(2nd internal standard)					
			(3rd internal standard)					
3	1023502W	10/23/08	vinyl chloride (1st internal standard)	2.874	2.389	2.389	17	17
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19859 DIC
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: KT
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #11

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	12.284	11.72492	95.5	95.5	0
Bromofluorobenzene	12.018	11.90264	99.0	99.0	
1,2-Dichloroethane-d4	11.321	10.70161	94.5	94.5	
Dibromofluoromethane	11.710	11.09285	94.7	94.7	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 19858 D1C
SDG #: pll cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCS - LCSD I * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: 081022BS-LCS

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	10.0	NA	8.42	NA	84.2	84.2				
Trichloroethene	↓	↓	9.83	↓	98.3	98.3				
Benzene	↓	↓	8.78	↓	87.8	87.3	NA			
Toluene										
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 19858 D1C
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: PJ
2nd reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
RRF	=	Relative response factor of the calibration standard.
V_o	=	Volume or weight of sample pruged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. #11, C:

Conc. = (1634)(25)( )( )
(402618)(2.874)( )( )
= 0.035 ug/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC Report# 19858D7

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: October 9, 2008

LDC Report Date: December 5, 2008

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57197

Sample Identification

0841D019
0841C012
0841D017
0841C017
0841B021
0841B022**
0841D020
0841D021
0841D022
0841X005
0841C017MS
0841C017MSD

**Indicates sample underwent Level IV review

Introduction

This data review covers 12 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

Samples 0841C012, 0841D017, and 0841X005 were identified as trip blanks. No total petroleum hydrocarbons as gasoline contaminants were found in these 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 a Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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 0841D021 and 0841D022 were identified as field duplicates. No total petroleum hydrocarbons as gasoline were detected in any of the samples.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841C012
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85320
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	116	75-125		%	10/19/08	10/19/08

L/21008

Quant Method:	HBTXGOK.M
Run #:	1018H30
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D017
Sample Collection Date: 10/09/08

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85321
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	114	75-125		%	10/19/08	10/19/08

2/2/008

Quant Method: HBTXGOK.M
Run #: 1018H31
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841B021
Sample Collection Date: 10/09/08

Loc ID: IR46MW48A
ARF: 57197
APPL ID: AX85325
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	116	75-125		%	10/19/08	10/19/08

R 12/08

Quant Method:	HBTXGOK.M
Run #:	1018H35
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841B022
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW47A
ARF: 57197
APPL ID: AX85326
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	118	75-125		%	10/19/08	10/19/08

RC 12/6/08

Quant Method:	HBTXGOK.M
Run #:	1018H36
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D020
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR46MW49A
ARF: 57197
APPL ID: AX85327
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	22 ++	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	122	75-125		%	10/19/08	10/19/08

++(G1) The analyst has noted that the chromatogram of this sample includes a wide range of hydrocarbons which does not match our gasoline standard.

N 12/2008

Quant Method:	HBTXGOK.M
Run #:	1018H37
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D021
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR24MW05A
ARF: 57197
APPL ID: AX85328
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	119	75-125		%	10/19/08	10/19/08

2/2/08

Quant Method:	HBTXGOK.M
Run #:	1018H38
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D022
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR24MW05A
ARF: 57197
APPL ID: AX85329
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	121	75-125		%	10/19/08	10/19/08

12/24/08

Quant Method: HBTXGOK.M
Run #: 1018H39
Instrument: Harpo
Sequence: 080723
Dilution Factor: 1
Initials: LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841X005
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: TRIP BLANK
ARF: 57197
APPL ID: AX85332
QCG: $GAHP-081019A-126860

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	10/19/08	10/19/08
8015	Surrogate: BFB-FID (S)	114	75-125		%	10/19/08	10/19/08

2/2/2008

Quant Method:	HBTXGOK.M
Run #:	1018H32
Instrument:	Harpo
Sequence:	080723
Dilution Factor:	1
Initials:	LF

Printed: 10/24/08 10:10:20 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19858D7
SDG #: 57197
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 12/4/08
Page: 1 of 1
Reviewer: FT
2nd Reviewer: N

METHOD: GC TPH as Gasoline (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 10/9/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	D = 8 + 9
X.	Field blanks	ND	TB = 2, 3, 10

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	084D019 (water)	11	084C017MS	21	081019A	31	
2	084C012 TB	12	084C017MSD	22		32	
3	084D017 TB	13		23		33	
4	084C017	14		24		34	
5	084B021	15		25		35	
6	084B022**	16		26		36	
7	084D020	17		27		37	
8	084D021 D	18		28		38	
9	084D022 D	19		29		39	
10	084X005 TB	20		30		40	

Notes: Note add 1 after 4 on all sample's ID

LDC #: 19858D7
SDG #: per cover

VALIDATION FINDINGS CHECKLIST

Reviewer: PZ
2nd Reviewer: N

Method: ✓ GC ____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

.DC #: 19858D7
SDG #: per cover

VALIDATION FINDINGS CHECKLIST

Reviewer: FR
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?			✓	
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 1985B7
SDG #: all cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (300 std)	Recalculated CF (300 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL Harpo	7/23/08	gasoline	26028	26028	26995	26995	7.3	7.3
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858D7
SDG #: pre cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ___/___ HPLC _____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	1018H27	10/19/08	gasoline	26995	29984	29984	11	11
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858 D7
SDG #: per cover

METHOD: ~~GC~~ ___ HPLC

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: M
2nd reviewer: K

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #6

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
BFB	DB-624	25	29.619	118	118	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 19858D7
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: A
2nd Reviewer: K

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked concentration SC = Sample concentration
SA = Spike added

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 11 + 12

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	300	300	ND	285	280	95.0	95.0	93.3	93.3	1.8	1.8
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858D7
SDG #: pu conv

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

_____METHOD: ✓ GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

Where SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory Control Sample
SC = Sample concentration
LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 081019A

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	300	NA	0	331	NA	110	110	NA			
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLCNew.wpd

LDC #: 19858 D7
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound in the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID._____ Compound Name _____

Concentration = _____

ND

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

SAMPCALew.wpd

Hunters Point Shipyard, 4Q08 GW Sampling Event
Data Validation Reports
LDC# 19858

TPH as Extractables

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 4Q08 GW Sampling Event

Collection Date: October 9, 2008

LDC Report Date: December 9, 2008

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 57197

Sample Identification

0841D019
0841C017
0841B021
0841B022**
0841D020
0841D021
0841D022
0841C017MS
0841C017MSD

**Indicates sample underwent Level IV review

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 8015 for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

No field blanks were identified in this SDG.

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

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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 0841D021 and 0841D022 were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples.

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 4Q08 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG 57197

No Sample Data Qualified in this SDG

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841B021
Sample Collection Date: 10/09/08

Loc ID: IR46MW48A
ARF: 57197
APPL ID: AX85325
QCG: $DIHP-081014A2-127030

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	10/14/08	10/24/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	10/14/08	10/24/08
EPA 8015B-	Surrogate: Octacosane (S)	84.4	60-140		%	10/14/08	10/24/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	82.9	60-140		%	10/14/08	10/24/08

2/2/08

Quant Method: TPH04DIP.M
Run #: 1023026
Instrument: Apollo
Sequence: 081023
Dilution Factor: 1
Initials: EJ

Printed: 11/04/08 3:11:27 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841B022
Sample Collection Date: 10/09/08

Loc ID: IR46MW47A
ARF: 57197
APPL ID: AX85326
QCG: $DIHP-081014A2-127030

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	220 ++	40.0	13.07	ug/L	10/14/08	10/24/08
EPA 8015B-	Motor Oil	560	40.0	5.54	ug/L	10/14/08	10/24/08
EPA 8015B-	Surrogate: Octacosane (S)	90.1	60-140		%	10/14/08	10/24/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	92.2	60-140		%	10/14/08	10/24/08

+(T3M) The analyst has noted that the chromatogram of this sample is mainly higher oiling hydrocarbons.

2/1608

Quant Method:	TPH04DIP.M
Run #:	1023027
Instrument:	Apollo
Sequence:	081023
Dilution Factor:	1
Initials:	EJ

Printed: 11/04/08 3:11:27 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D020
Sample Collection Date: 10/09/08

Loc ID: IR46MW49A
ARF: 57197
APPL ID: AX85327
QCG: $DIHP-081014A2-127030

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	580 ++	40.0	13.07	ug/L	10/14/08	10/24/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	10/14/08	10/24/08
EPA 8015B-	Surrogate: Octacosane (S)	79.8	60-140		%	10/14/08	10/24/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	84.2	60-140		%	10/14/08	10/24/08

-+(T4I) The analyst has noted that the chromatogram of this sample includes a dominant peak(s) which is not indicative of petroleum hydrocarbons.

2/2/008

Quant Method: TPH04DIP.M
Run #: 1023028
Instrument: Apollo
Sequence: 081023
Dilution Factor: 1
Initials: EJ

Printed: 11/05/08 2:12:38 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D021
Sample Collection Date: 10/09/08

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Loc ID: IR24MW05A
ARF: 57197
APPL ID: AX85328
QCG: $DIHP-081014A2-127030

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	10/14/08	10/24/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	10/14/08	10/24/08
EPA 8015B-	Surrogate: Octacosane (S)	72.3	60-140		%	10/14/08	10/24/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	76.3	60-140		%	10/14/08	10/24/08

2/2/08

Quant Method: TPH04DIP.M
Run #: 1023029
Instrument: Apollo
Sequence: 081023
Dilution Factor: 1
Initials: EJ

Printed: 11/04/08 3:11:27 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Patricia Walters
Project: 91399 Hunters Point Shipyard
Sample ID: 0841D022
Sample Collection Date: 10/09/08

Loc ID: IR24MW05A
ARF: 57197
APPL ID: AX85329
QCG: $DIHP-081014A2-127030

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	10/14/08	10/24/08
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	10/14/08	10/24/08
EPA 8015B-	Surrogate: Octacosane (S)	80.5	60-140		%	10/14/08	10/24/08
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	83.4	60-140		%	10/14/08	10/24/08

2/2/2008

Quant Method: TPH04DIP.M
Run #: 1023030
Instrument: Apollo
Sequence: 081023
Dilution Factor: 1
Initials: EJ

Printed: 11/04/08 3:11:27 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 19858D8
SDG #: 57197
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 12/03/08
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: ✓

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 10/9/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	D = 6 & 7
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1 1	084D019 water	11 1	081014A1	21		31	
2 2	084C017 ~~EB~~	12 2	081014A2	22		32	
3 2	084B021	13		23		33	
4 2	084B022**	14		24		34	
5 2	084D020	15		25		35	
6 2	084D021 D	16		26		36	
7 2	084D022 D	17		27		37	
8 2	084C017MS	18		28		38	
9 2	084C017MSD	19		29		39	
10		20		30		40	

Notes: Note Add 1 after 4 on all samples' ID

LDC #: 19058D8
SDG #: per cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: FZ
2nd Reviewer: M

Method: ✓ GC ____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.			✓	
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

_DC #: 19858D8
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Reviewer: FR
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 19858D8
SDG #: all cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: PD
2nd Reviewer: K

METHOD: GC_____ HPLC_____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (400 std)	Recalculated CF (400 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	Apollo ICAL	4/7/08	Diesel	197448	197448	212061	212061	16	16
2	Apollo CTPH04DIP	4/7/08	Diesel	169486	169486	167324	167324	7.8	7.8
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858D8
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: K

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	102302	10/24/08	Diesel	167324	171914	171914	2.7	2.7
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 19858P8
SDG #: per cover
METHOD: ✓ GC ___ HPLC

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: M
2nd reviewer: K

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 4

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
octacosane	PB-5	33.333	30.035	90.1	90.1	0
o-Terphenyl	↓	↓	30.732	92.2	92.2	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 19858D8
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ___ GC ___ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked concentration SC = Sample concentration
SA = Spike added

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 8 & 9

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)	667	667	ND	576	527	86.4	86.4	79	79	8.9	8.9
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 19858D8
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: FP
2nd Reviewer: K

_____METHOD: ✓ GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

Where SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory Control Sample
SC = Sample concentration
LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 081014A2 LCS

Compound	Spike Added (ug/L)		Sample Conc. (ug/L)	Spike Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)	667	NA	0	578	NA	86.7	86.7	NA			
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLCNew.wpd

LDC #: 19858D8
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ___ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. #4 Compound Name Diesel

Concentration = 55970248 (2) (1000) (1.333) / ~~21206~~ (2) (1500)
167324
= 223 ug/L

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments:

SAMPCALew.wpd

1Q2009 Sampling Event

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

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612
ATTN: Ms. Tricia Walters

April 30, 2009

SUBJECT: Hunters Point Shipyard, 1Q09 GW Sampling Event, Data Validation

Dear Ms. Walters,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on April 21, 2009. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 20642:

SDG #	Fraction
58422, 58459, 58508	Volatiles, Benzene, Polynuclear Aromatic Hydrocarbons, TPH as Gasoline, TPH as Extractables

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

- Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA, June 17, 2008
- USEPA, Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008

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

Sincerely,

Stella Cuenco

Stella S. Cuenco
Data Validation Operations Manager/Senior Chemist

V:\LOGIN\CE2\HUNTERS\20642COV.wpd

2 WEEK TAT

Attachment 1

EDD

LDC #20642 (CE2-San Diego / Hunters Point Shipyard, 1Q09 GW Sampling Event)

LDC	SDG#	DATE REC'D	(3) DATE DUE	TEX & MTBE (8260B)		Benzene (8260B -SIM)		PAHs (8270C -SIM)		TPH-G (8015)		TPH-E (8015)																											
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	58422	04/21/09	05/05/09	13	0	13	0	7	0	13	0	7	0																										
A	58422	04/21/09	05/05/09	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]																										
B	58459	04/21/09	05/05/09	1	0	1	0	0	0	1	0	0	0																										
B	58459	04/21/09	05/05/09	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]																										
C	58508	04/21/09	05/05/09	6	0	6	0	3	0	6	0	3	0																										
C	58508	04/21/09	05/05/09	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]																										
Total	T/SC			25	0	25	0	15	0	25	0	15	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	105

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

20642ST.wpd

Hunters Point Shipyard, 1Q09 GW Sampling Event
Data Validation Reports
LDC# 20642

Volatiles

LDC

LDC Report# 20642A1a

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 20, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58422

Sample Identification

0912W044
0912W045**
0912X010
0912H037
0912H038
0912H039**
0912W046
0912W047
0912A005
0912D043
0912H035
0912D042
0912W043
0912A006**
0912X011
0912A004

**Indicates sample underwent 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 8260B for Volatiles.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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

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

V. Blanks

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

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
090324WBMB	3/25/09	Toluene Xylenes, total	0.22 ug/L 0.59 ug/L	0912H037 0912W046 0912W047 0912A005
090325WAMB	3/25/09	Xylenes, total	0.20 ug/L	0912H035 0912D042 0912W043 0912X011 0912A004

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.

Samples 0912X010, 0912H035, 0912D042, 0912W043, 0912X011, and sample 0912A004 were identified as trip blanks. No volatile contaminants were found in these 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
0912H037	Dibromofluoromethane	83.7 (85-115)	Xylenes, total	UJ13 (all non-detects)	A

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 a 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 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 acceptable for samples on which a 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 the report if data has been qualified.

XVI. Field Duplicates

Samples 0912W046 and 0912W047 were identified as field duplicates. No volatiles were detected in any of the samples.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 58422

SDG	Sample	Compound	Flag	A or P	Reason
58422	0912H037	Xylenes, total	UJ13 (all non-detects)	A	Surrogate recovery (%R)

Hunters Point Shipyard, 1Q09 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 58422

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 58422

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W044
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR07MW26A
ARF: 58422
APPL ID: AX93073
QCG: $86HP-090324AH-131176

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	0.74	0.5	0.23	ug/L	03/24/09	03/24/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/24/09	03/24/09
EPA 8260B	Toluene	2.2	0.5	0.17	ug/L	03/24/09	03/24/09
EPA 8260B	Xylenes	4.0	0.5	0.19	ug/L	03/24/09	03/24/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	97.2	70-120		%	03/24/09	03/24/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	113	75-120		%	03/24/09	03/24/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	96.8	85-115		%	03/24/09	03/24/09
EPA 8260B	Surrogate: Toluene-D8 (S)	101	85-120		%	03/24/09	03/24/09

4/1/09

Quant Method: H86HPW.M
Run #: 0324H16
Instrument: Hewey
Sequence: H090323
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:29 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W045
Sample Collection Date: 03/20/09

Loc ID: IR07MW24A
ARF: 58422
APPL ID: AX93074
QCG: $86HP-090324AH-131176

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	0.43 J	0.5	0.23	ug/L	03/24/09	03/24/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/24/09	03/24/09
EPA 8260B	Toluene	1.1	0.5	0.17	ug/L	03/24/09	03/24/09
EPA 8260B	Xylenes	2.5	0.5	0.19	ug/L	03/24/09	03/24/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	92.6	70-120		%	03/24/09	03/24/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	115	75-120		%	03/24/09	03/24/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	97.7	85-115		%	03/24/09	03/24/09
EPA 8260B	Surrogate: Toluene-D8 (S)	100	85-120		%	03/24/09	03/24/09

4/2/09

J = Estimated value.

Quant Method: H86HPW.M
Run #: 0324H17
Instrument: Hewey
Sequence: H090323
Dilution Factor: 1
Initials: GM

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912X010
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93075
QCG: $86HP-090328AN-131182

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/28/09	03/28/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/28/09	03/28/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/28/09	03/28/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/28/09	03/28/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	102	70-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	87.9	75-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	86.1	85-115		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Toluene-D8 (S)	93.7	85-120		%	03/28/09	03/28/09

8/4/2009

Quant Method: N86HPW.M
Run #: 0328N14
Instrument: Neo
Sequence: N090324
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:29 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H037
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR46MW48A
ARF: 58422
APPL ID: AX93076
QCG: $86HP-090324BH-131178

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/25/09	03/25/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	84.8	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	114	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	91.6	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	108	85-120		%	03/25/09	03/25/09

Sv 4/2/09

Quant Method: H86HPW.M
Run #: 0324H25
Instrument: Hewey
Sequence: H090323
Dilution Factor: 1
Initials: SV

Printed: 04/01/09 9:54:29 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H037
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR46MW48A
ARF: 58422
APPL ID: AX93076
QCG: $86HPR-090328AN-131228

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Xylenes	Not detected KJB	0.5	0.19	ug/L	03/28/09	03/28/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	101	70-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	86.1	75-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	83.7 #	85-115		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Toluene-D8 (S)	91.8	85-120		%	03/28/09	03/28/09

8/2/2009

= Recovery (or RPD) is outside QC limits.

Quant Method:	N86HPW.M
Run #:	0328N15
Instrument:	Neo
Sequence:	N090324
Dilution Factor:	1
Initials:	SV

Printed: 04/03/09 4:38:07 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H038
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR46MW47A
ARF: 58422
APPL ID: AX93077
QCG: $86HP-090328AN-131182

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/28/09	03/28/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/28/09	03/28/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/28/09	03/28/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/28/09	03/28/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	104	70-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	86.7	75-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	90.0	85-115		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Toluene-D8 (S)	89.1	85-120		%	03/28/09	03/28/09

Eo4/2809

Quant Method: N86HPW.M
Run #: 0328N16
Instrument: Neo
Sequence: N090324
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:29 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H039
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR46MW50A
ARF: 58422
APPL ID: AX93078
QCG: $86HP-090328AN-131182

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/28/09	03/28/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/28/09	03/28/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/28/09	03/28/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/28/09	03/28/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	101	70-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	83.1	75-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	87.9	85-115		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Toluene-D8 (S)	88.2	85-120		%	03/28/09	03/28/09

Quant Method: N86HPW.M
Run #: 0328N17
Instrument: Neo
Sequence: N090324
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:29 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W046
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR24MW05A
ARF: 58422
APPL ID: AX93079
QCG: $86HP-090324BH-131178

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/25/09	03/25/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/25/09	03/25/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	84.3	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	108	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	93.7	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	103	85-120		%	03/25/09	03/25/09

5/04/2009

Quant Method: H86HPW.M
Run #: 0324H28
Instrument: Hewey
Sequence: H090323
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:30 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W047
Sample Collection Date: 03/20/09

Loc ID: IR24MW05A
ARF: 58422
APPL ID: AX93080
QCG: $86HP-090324BH-131178

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/25/09	03/25/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/25/09	03/25/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	87.2	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	106	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	93.4	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	103	85-120		%	03/25/09	03/25/09

4/1/09

Quant Method: H86HPW.M
Run #: 0324H29
Instrument: Hewey
Sequence: H090323
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:30 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912A005
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR46MW49A
ARF: 58422
APPL ID: AX93081
QCG: $86HP-090324BH-131178

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/25/09	03/25/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/25/09	03/25/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	80.3	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	102	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	92.9	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	99.6	85-120		%	03/25/09	03/25/09

Robert

Quant Method: H86HPW.M
Run #: 0324H30
Instrument: Hewey
Sequence: H090323
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:30 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912D043
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR33MW02
ARF: 58422
APPL ID: AX93082
QCG: $86HP-090325BH-131186

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/26/09	03/26/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/26/09	03/26/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/26/09	03/26/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/26/09	03/26/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	78.9	70-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	108	75-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	89.9	85-115		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Toluene-D8 (S)	105	85-120		%	03/26/09	03/26/09

SL04/28/09

Quant Method: H86HPW.M
Run #: 0325H26
Instrument: Hewey
Sequence: H090323
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:30 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H035
Sample Collection Date: 03/20/09

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93083
QCG: $86HP-090325AH-131184

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/25/09	03/25/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/25/09	03/25/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	92.7	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	109	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	101	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	98.4	85-120		%	03/25/09	03/25/09

8/04/2009

Quant Method: H86HPW.M
Run #: 0325H13
Instrument: Hewey
Sequence: H090323
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:30 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912D042
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93084
QCG: $86HP-090325AH-131184

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/25/09	03/25/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/25/09	03/25/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	98.2	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	114	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	101	85-120		%	03/25/09	03/25/09

8/04/09

Quant Method: H86HPW.M
Run #: 0325H14
Instrument: Hewey
Sequence: H090323
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:30 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W043
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93085
QCG: $86HP-090325AH-131184

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/25/09	03/25/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/25/09	03/25/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	92.3	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	107	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	100	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	97.4	85-120		%	03/25/09	03/25/09

SC 4/8/09

Quant Method: H86HPW.M
Run #: 0325H15
Instrument: Hewey
Sequence: H090323
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:30 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912A006
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR46MW51A
ARF: 58422
APPL ID: AX93086
QCG: $86HP-090325BH-131186

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/26/09	03/26/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/26/09	03/26/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/26/09	03/26/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/26/09	03/26/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	78.1	70-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	109	75-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	92.1	85-115		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Toluene-D8 (S)	101	85-120		%	03/26/09	03/26/09

SC 04/8/09

Quant Method: H86HPW.M
Run #: 0325H27
Instrument: Hewey
Sequence: H090323
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:30 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912X011
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93087
QCG: $86HP-090325AH-131184

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/25/09	03/25/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/25/09	03/25/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	87.5	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	110	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	96.8	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	101	85-120		%	03/25/09	03/25/09

Rev 4/2/09

Quant Method: H86HPW.M
Run #: 0325H16
Instrument: Hewey
Sequence: H090323
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:30 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912A004
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93088
QCG: $86HP-090325AH-131184

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/25/09	03/25/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/25/09	03/25/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	85.0	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	105	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	95.9	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	97.1	85-120		%	03/25/09	03/25/09

5/20/09

Quant Method: H86HPW.M
Run #: 0325H17
Instrument: Hewey
Sequence: H090323
Dilution Factor: 1
Initials: GM

Printed: 04/01/09 9:54:30 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20642A1a
SDG #: 58422
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 4/23/09
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/20/09
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	ICV ≤ 25%
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	ND	D = 7+8
XVII.	Field blanks	ND	TB=3.11.12.13.15.16

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

MH+20 7

1 1	0912W044	11 3	0912H035	21	090324WBMB	31	
2 1	0912W045**	12 3	0912D042	22	090324WBMB	32	
3 5	0912X010	13 3	0912W043	23	090325WAMB	33	
4 2	0912H037	14 4	0912A006**	24	090325WBMB	34	
5 5	0912H038	15 3	0912X011	25	090328WMB	35	
6 5	0912H039**	16 3	0912A004	26		36	
7 2	0912W046	17		27		37	
8 2	0912W047	18		28		38	
9 7	0912A005	19		29		39	
10 4	0912D043	20		30		40	

LDC #: 20642A19
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: M

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?		✓	✓	
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) > 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?		✓		
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?		✓		
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 20642A19
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: KL

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 20602A19
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 3/25/09
Conc. units: µg/L
Associated Samples: 4. 7-9

Compound	Blank ID	Sample Identification								
	090324WBMB									
Methylene chloride										
Acetone										
CC	0.22									
GG	0.59									
CRQL										

Blank analysis date: 3/25/09
Conc. units: µg/L
Associated Samples: 11-13. 15-16

Compound	Blank ID	Sample Identification								
	090325WAMB									
Methylene chloride										
Acetone										
GG	0.20									
CRQL										

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 20642A19
SDG #: 580W1

VALIDATION FINDINGS WORKSHEET
Surrogate Spikes

Page: 1 of 1
Reviewer:
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all surrogate %R within QC limits?

(Y) N N/A If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria?

#	Date	Sample ID	Surrogate	%Recovery (Limits)	Qualifications
		~~4 (ND)~~	~~DFM~~	~~83.7 (85-115)~~	~~J/UJ/A (GC only)~~
				( )	
				( )	
		4 (ND)	DFM	83.7 (85-115)	J3/UJ3/A (GC only)
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	QC Limits (Soil)	QC Limits (Water)
SMC1 (TOL) = Toluene-d8	81-117	88-110
SMC2 (BFB) = Bromofluorobenzene	74-121	86-115
SMC3 (DCE) = 1,2-Dichloroethane-d4	80-120	80-120
SMC4 (DFM) = Dibromofluoromethane	80-120	86-118

LDC #: 20602-A19
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	10Ac (H)	3/23/09	cc (1st internal standard)	4.066	4.066	4.050	4.050	4.2	4.2
			zz (2nd internal standard)	8.335	8.335	8.431	8.431	6.8	6.8
			(3rd internal standard)						
2	10Ac (N)	3/24/09	cc (1st internal standard)	1.376	1.376	1.358	1.358	3.5	3.5
			zz (2nd internal standard)	5.896	5.896	5.856	5.856	3.0	3.0
			(3rd internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 2069A1a
SDG #: See COW

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	0324H01W	3/24/09	CC (1st internal standard)	4.050	3.693	3.693	8.8	8.8
			ZZ (2nd internal standard)	8.431	8.644	8.644	2.5	2.5
			(3rd internal standard)					
2	0325H20W	3/26/09	CC (1st internal standard)	4.050	3.963	3.963	2.1	2.1
			ZZ (2nd internal standard)	8.431	8.967	8.967	6.4	6.4
			(3rd internal standard)					
3	0328N02W	3/28/09	CC (1st internal standard)	1.358	1.283	1.283	5.5	5.5
			ZZ (2nd internal standard)	5.856	5.503	5.503	6.0	6.0
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 2064-A19
SDG #: See COC

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: A

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	23.042	23.05574	100	100	0
Bromofluorobenzene	21.950	25.34345	115	115	
1,2-Dichloroethane-d4	21.136	19.5730	92.6	92.6	✓
Dibromofluoromethane	23.566	23.0205	97.7	97.7	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 20642A1a
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 090324NALCS

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene										
Trichloroethene										
Benzene										
Toluene	10.00	NA	9.12	NA	91.2	91.2				
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 20642A/a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer:
2nd reviewer: M

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
RRF	=	Relative response factor of the calibration standard.
V_o	=	Volume or weight of sample pruged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 2, CC:

Conc. = (88807)(25.000)(1) / (52142)(4.050)( )( )

= 1.05 ug/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 23, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58459

Sample Identification

0913B035**
0913B032
0913B035MS
0913B035MSD

**Indicates sample underwent Level IV review

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 8260B for Volatiles.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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

Sample 0913B032 was identified as a trip blank. No volatile contaminants were found in this blank.

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 a 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 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 acceptable for samples on which a 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 the report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913B035
Sample Collection Date: 03/23/09

Loc ID: IR46MW52A
ARF: 58459
APPL ID: AX93180
QCG: $86HP-090331AN1-131295

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/31/09	03/31/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/31/09	03/31/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/31/09	03/31/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/31/09	03/31/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	115	70-120		%	03/31/09	03/31/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	84.1	75-120		%	03/31/09	03/31/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	90.7	85-115		%	03/31/09	03/31/09
EPA 8260B	Surrogate: Toluene-D8 (S)	84.6	85-120		%	03/31/09	03/31/09

4/2/09

Quant Method: N86HPW.M
Run #: 0331N09
Instrument: Neo
Sequence: N090324
Dilution Factor: 1
Initials: SV

Printed: 04/02/09 11:03:18 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913B032
Sample Collection Date: 03/23/09

Loc ID: TRIP BLANK
ARF: 58459
APPL ID: AX93181
QCG: $86HP-090331AN1-131295

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/31/09	03/31/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/31/09	03/31/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/31/09	03/31/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/31/09	03/31/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	106	70-120		%	03/31/09	03/31/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	87.7	75-120		%	03/31/09	03/31/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	86.6	85-115		%	03/31/09	03/31/09
EPA 8260B	Surrogate: Toluene-D8 (S)	93.2	85-120		%	03/31/09	03/31/09

4/2/09

Quant Method: N86HPW.M
Run #: 0331N06
Instrument: Neo
Sequence: N090324
Dilution Factor: 1
Initials: SV

Printed: 04/02/09 11:03:18 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20642B1a
SDG #: 58459
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 4/23/09
Page: 1 of 1
Reviewer: 9
2nd Reviewer: N

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/23/09
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	ICV ≤25%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	TB = 2

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0912B035** W	11	090331WMB	21		31	
2	0913B032	12		22		32	
3	0912B035MS	13		23		33	
4	0912B035MSD	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 20642B1a
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: M

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) > 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 20642B/a
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Reviewer: a
2nd Reviewer: a

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 2064-28/a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	1CA2	3/24/09	CC (1st internal standard)	1.376	1.376	1.358	1.358	3.5	3.5
			ZZ (2nd internal standard)	5.896	5.896	5.856	5.856	3.0	3.0
			(3rd internal standard)						
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20642B1a
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: 11

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	0330N02W	3/30/09	cc (1st internal standard)	1.358	1.180	1.180	13	13
			ZZ (2nd internal standard)	5.856	5.097	5.097	13	13
			(3rd internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20642B1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	23.576	19.95526	84.6	84.6	0
Bromofluorobenzene	25.119	21.11727	84.1	84.1	
1,2-Dichloroethane-d4	22.898	26.29927	115	115	✓
Dibromofluoromethane	24.018	21.79058	90.7	90.7	

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 20642B19
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = I MSC - MSC I * 2/(MSC + MSDC)

MSC = Matrix spike concentration; MSDC = Matrix spike duplicate concentration

MS/MSD sample: 3/4

Compound	Spike Added (µg/L)		Sample Concentration (µg/L)	Spiked Sample Concentration (µg/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene											
Trichloroethene											
Benzene											
Toluene	10.00	10.00	ND	9.18	9.07	91.8	91.8	90.7	90.7	1.2	1.2
Chlorobenzene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20642B1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 090331W

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene										
Trichloroethene										
Benzene										
Toluene	10.00	NA	9.89	NA	98.9	98.9				
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 20642B1a
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
RRF	=	Relative response factor of the calibration standard.
V_o	=	Volume or weight of sample pruged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 1, ND:

Conc. = ( ) ( ) ( ) / ( ) ( ) ( ) ( )

=

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 27, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Volatiles

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58508

Sample Identification

0913D047
0913G007**
0913G008
0913D045
0913D046
0913X016
0913G006

**Indicates sample underwent 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 8260B for Volatiles.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

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.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
3/28/09	Methyl-tert-butyl ether	36	0913D045 0913X016 0913G006 090328WBMB	UJ5 (all non-detects)	A

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

Samples 0913D045, 0913X016, and 0913G006 were identified as trip blanks. No volatile contaminants were found in these blanks.

Samples 0913D047 and 0913G008 were identified as equipment blanks. No volatile contaminants were found in these 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 with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
090328WBLCS	Methyl-tert-butyl ether	64.3 (65-125)	0913D045 0913X016 0913G006 090328WBMB	UJ10 (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 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 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 acceptable for samples on which a 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 the report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Volatiles - Data Qualification Summary - SDG 58508

SDG	Sample	Compound	Flag	A or P	Reason
58508	0913D045 0913X016 0913G006	Methyl-tert-butyl ether	UJ5 (all non-detects)	A	Continuing calibration (%D)
58508	0913D045 0913X016 0913G006	Methyl-tert-butyl ether	UJ10 (all non-detects)	P	Laboratory control samples (%R)

Hunters Point Shipyard, 1Q09 GW Sampling Event
Volatiles - Laboratory Blank Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Volatiles - Field Blank Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913D047
Sample Collection Date: 3/27/2009

Loc ID: IR18MW100B
ARF: 58508
APPL ID: AX93818
QCG: $86HP-090328AC-131600

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	3/28/2009	3/28/2009
EPA 8260B	MTBE	Not detected ~~UJ5.10~~	0.5	0.19	ug/L	3/28/2009	3/28/2009
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	3/28/2009	3/28/2009
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	3/28/2009	3/28/2009
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	82.4	70-120		%	3/28/2009	3/28/2009
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	92.9	75-120		%	3/28/2009	3/28/2009
EPA 8260B	Surrogate: Dibromofluoromethane (S)	94.9	85-115		%	3/28/2009	3/28/2009
EPA 8260B	Surrogate: Toluene-D8 (S)	103	85-120		%	3/28/2009	3/28/2009

SL 04/2/09

Quant Method: C86HPW1.M
Run #: 0328C16
Instrument: Chico
Sequence: C090324
Dilution Factor: 1
Initials: SV

Printed: 4/10/2009 1:46:32 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913G007
Sample Collection Date: 03/27/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: PA18MW09A
ARF: 58508
APPL ID AX93819
QCG: $86HP-090328AC-131600

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/28/09	03/28/09
EPA 8260B	MTBE	Not detected	0.5	0.19	ug/L	03/28/09	03/28/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/28/09	03/28/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/28/09	03/28/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	82.8	70-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	91.7	75-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	92.2	85-115		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Toluene-D8 (S)	101	85-120		%	03/28/09	03/28/09

8/04/2009

Quant Method: C86HPW1.M
Run #: 0328C17
Instrument: Chico
Sequence: C090324
Dilution Factor: 1
Initials: SV

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EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913G008
Sample Collection Date: 03/27/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: PA18MW09A
ARF: 58508
APPL ID AX93820
QCG: $86HP-090328AC-131600

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/28/09	03/28/09
EPA 8260B	MTBE	Not detected ~~[illegible]~~	0.5	0.19	ug/L	03/28/09	03/28/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/28/09	03/28/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/28/09	03/28/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	75.5	70-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	90.2	75-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	89.9	85-115		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Toluene-D8 (S)	103	85-120		%	03/28/09	03/28/09

4/22/09

Quant Method: C86HPW1.M
Run #: 0328C18
Instrument: Chico
Sequence: C090324
Dilution Factor: 1
Initials: SV

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913D045
Sample Collection Date: 3/27/2009

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58508
APPL ID: AX93821
QCG: $86HP-090328BC-131599

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	3/29/2009	3/29/2009
EPA 8260B	MTBE	Not detected U J5, P0	0.5	0.19	ug/L	3/29/2009	3/29/2009
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	3/29/2009	3/29/2009
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	3/29/2009	3/29/2009
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	77.0	70-120		%	3/29/2009	3/29/2009
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	88.6	75-120		%	3/29/2009	3/29/2009
EPA 8260B	Surrogate: Dibromofluoromethane (S)	91.5	85-115		%	3/29/2009	3/29/2009
EPA 8260B	Surrogate: Toluene-D8 (S)	103	85-120		%	3/29/2009	3/29/2009

N 4/8/09

Quant Method: C86HPW1.M
Run #: 0328C26
Instrument: Chico
Sequence: C090324
Dilution Factor: 1
Initials: SV

Printed: 4/10/2009 1:46:32 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913D046
Sample Collection Date: 03/27/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR18MW100B
ARF: 58508
APPL ID AX93822
QCG: $86HP-090328AC-131600

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	03/28/09	03/28/09
EPA 8260B	MTBE	Not detected ~~[illegible]~~	0.5	0.19	ug/L	03/28/09	03/28/09
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	03/28/09	03/28/09
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	03/28/09	03/28/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	78.6	70-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	95.1	75-120		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	90.3	85-115		%	03/28/09	03/28/09
EPA 8260B	Surrogate: Toluene-D8 (S)	107	85-120		%	03/28/09	03/28/09

4/23/09

Quant Method: C86HPW1.M
Run #: 0328C19
Instrument: Chico
Sequence: C090324
Dilution Factor: 1
Initials: SV

Printed: 04/22/09 10:56:54 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

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EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913X016
Sample Collection Date: 3/27/2009

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58508
APPL ID: AX93823
QCG: $86HP-090328BC-131599

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	3/29/2009	3/29/2009
EPA 8260B	MTBE	Not detected UJ5.10	0.5	0.19	ug/L	3/29/2009	3/29/2009
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	3/29/2009	3/29/2009
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	3/29/2009	3/29/2009
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	74.8	70-120		%	3/29/2009	3/29/2009
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	90.2	75-120		%	3/29/2009	3/29/2009
EPA 8260B	Surrogate: Dibromofluoromethane (S)	87.3	85-115		%	3/29/2009	3/29/2009
EPA 8260B	Surrogate: Toluene-D8 (S)	105	85-120		%	3/29/2009	3/29/2009

4/6/09

Quant Method: C86HPW1.M
Run #: 0328C27
Instrument: Chico
Sequence: C090324
Dilution Factor: 1
Initials: SV

Printed: 4/10/2009 1:46:32 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913G006
Sample Collection Date: 3/27/2009

Loc ID: TRIP BLANK
ARF: 58508
APPL ID: AX93824
QCG: $86HP-090328BC-131599

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Ethyl benzene	Not detected	0.5	0.23	ug/L	3/29/2009	3/29/2009
EPA 8260B	MTBE	Not detected KJS, 10	0.5	0.19	ug/L	3/29/2009	3/29/2009
EPA 8260B	Toluene	Not detected	0.5	0.17	ug/L	3/29/2009	3/29/2009
EPA 8260B	Xylenes	Not detected	0.5	0.19	ug/L	3/29/2009	3/29/2009
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	78.3	70-120		%	3/29/2009	3/29/2009
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	87.1	75-120		%	3/29/2009	3/29/2009
EPA 8260B	Surrogate: Dibromofluoromethane (S)	91.7	85-115		%	3/29/2009	3/29/2009
EPA 8260B	Surrogate: Toluene-D8 (S)	100	85-120		%	3/29/2009	3/29/2009

4/10/2009

Quant Method: C86HPW1.M
Run #: 0328C28
Instrument: Chico
Sequence: C090324
Dilution Factor: 1
Initials: SV

Printed: 4/10/2009 1:46:32 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20642C1a
SDG #: 58508
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 4/23/09
Page: 1 of 1
Reviewer: a
2nd Reviewer: n

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/27/09
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	SW	ICV ≤ 25%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	diesel spiked
VIII.	Laboratory control samples	SW	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	EB=1.3. TB=4.6. T

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	1	0913D047	E	11	090328WNXB	21		31	
2	1	0913G007**		12	090328WNIB	22		32	
3	1	0913G008	E	13		23		33	
4	2	0913D045	T	14		24		34	
5	1	0913D046		15		25		35	
6	2	0913X016	T	16		26		36	
7	2	0913G006	T	17		27		37	
8				18		28		38	
9				19		29		39	
10				20		30		40	

LDC #: 20640C1a
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: a
2nd Reviewer: LC

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) > 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	Ø	✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 20642c1a
SDG #: 2ei c0uu

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 26420a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	3/28/09	0328C2/W	LL	36		4.6-7. (ND)	J5/UJ5/A
						090328WBMB	

CONCAL1S

LDC #: 20460c1a
SDG #: 2e1C0W

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a LCS required?
Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		090328WBLCS	CL	64.3 (65-125)	( )	( )	4.6-7. (N5)	J10/UJ10/P
				( )	( )	( )	090328WBMB	
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		

LDC #: 20640c1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	3/24/09	CC (1st internal standard)	4.079	4.079	4.061	4.061	5.3	5.3
			EE (2nd internal standard)	6.621	6.621	6.612	6.612	6.3	6.3
			(3rd internal standard)						
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20642C19
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	0328CC4W	3/28/09	CC (1st internal standard)	4.061	3.674	3.674	9.5	9.5
			ZZ (2nd internal standard)	6.612	6.357	6.357	3.9	3.9
			(3rd internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20640c1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	19.725	19.98814	101	101	0
Bromofluorobenzene	18.976	17.40118	91.7	91.7	
1,2-Dichloroethane-d4	18.973	15.70260	82.8	82.8	
Dibromofluoromethane	17.538	16.17239	92.2	92.2	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 20642C1a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 090328WA LCS

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene										
Trichloroethene										
Benzene										
Toluene	10.00	NA	9.05	NA	90.5	90.5				
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20642019
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?

Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
RRF	=	Relative response factor of the calibration standard.
V_o	=	Volume or weight of sample pruged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 2 , ND

Conc. = ( ) ( ) ( ) / ( ) ( ) ( ) ( )

=

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Hunters Point Shipyard, 1Q09 GW Sampling Event
Data Validation Reports
LDC# 20642

Benzene

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 20, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Benzene

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58422

Sample Identification

0912W044
0912W045**
0912X010
0912H037
0912H038
0912H039**
0912W046
0912W047
0912A005
0912D043
0912H035
0912D042
0912W043
0912A006**
0912X011
0912A004

**Indicates sample underwent 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 8260B using Selected Ion Monitoring (SIM) for Benzene.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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.

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

Average relative response factors (RRF) for benzene was within 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 25.0% .

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

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

V. Blanks

Method blanks were reviewed for each matrix as applicable. No benzene was found in the method blanks.

Samples 0912X010, 0912H035, 0912D042, 0912W043, 0912X011, and 0912A004 were identified as trip blanks. No benzene was found in these 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 a 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 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 acceptable for samples on which a 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 have been summarized at the end of the report if data has been qualified.

XVI. Field Duplicates

Samples 0912W046 and 0912W047 were identified as field duplicates. No benzene were detected in any of the samples.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Benzene - Data Qualification Summary - SDG 58422

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Benzene - Laboratory Blank Data Qualification Summary - SDG 58422

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Benzene - Field Blank Data Qualification Summary - SDG 58422

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W044
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR07MW26A
ARF: 58422
APPL ID: AX93073
QCG: $86HPS-090324BS-131172

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	86.8	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	93.4	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	97.4	85-120		%	03/25/09	03/25/09

4/2/09

Quant Method: S86SIM-1.M
Run #: 0324S25
Instrument: Sweetpea
Sequence: S090320
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 12:30:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W045
Sample Collection Date: 03/20/09

Loc ID: IR07MW24A
ARF: 58422
APPL ID: AX93074
QCG: $86HPS-090324BS-131172

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	84.5	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	100	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	92.4	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	96.6	85-120		%	03/25/09	03/25/09

4/1/09

Quant Method: S86SIM-1.M
Run #: 0324S26
Instrument: Sweetpea
Sequence: S090320
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 12:30:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912X010
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93075
QCG: $86HPS-090324BS-131172

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	84.0	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	98.7	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	92.7	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	94.3	85-120		%	03/25/09	03/25/09

8/20/09

Quant Method: S86SIM-1.M
Run #: 0324S24
Instrument: Sweetpea
Sequence: S090320
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 12:30:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H037
Sample Collection Date: 03/20/09

Loc ID: IR46MW48A
ARF: 58422
APPL ID: AX93076
QCG: $86HPS-090324BS-131172

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	94.6	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	110	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	98.9	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	99.9	85-120		%	03/25/09	03/25/09

8/24/2009

Quant Method: S86SIM-1.M
Run #: 0324S27
Instrument: Sweetpea
Sequence: S090320
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 12:30:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H038
Sample Collection Date: 03/20/09

Loc ID: IR46MW47A
ARF: 58422
APPL ID: AX93077
QCG: $86HPS-090324BS-131172

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	84.2	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	100	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	92.3	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	98.0	85-120		%	03/25/09	03/25/09

8/04/2009

Quant Method: S86SIM-1.M
Run #: 0324S28
Instrument: Sweetpea
Sequence: S090320
Dilution Factor: 1
Initials: GM

Printed: 04/03/09 3:07:27 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H039
Sample Collection Date: 03/20/09

Loc ID: IR46MW50A
ARF: 58422
APPL ID: AX93078
QCG: $86HPS-090324BS-131172

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/25/09	03/25/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	87.6	70-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	98.3	75-120		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	92.6	85-115		%	03/25/09	03/25/09
EPA 8260B	Surrogate: Toluene-D8 (S)	96.3	85-120		%	03/25/09	03/25/09

8/31/09

Quant Method: S86SIM-1.M
Run #: 0324S29
Instrument: Sweetpea
Sequence: S090320
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 12:30:49 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W046
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR24MW05A
ARF: 58422
APPL ID: AX93079
QCG: $86HPS-090326AS-131175

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/26/09	03/26/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	98.2	75-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Toluene-D8 (S)	90.9	85-120		%	03/26/09	03/26/09

8/04/2009

Quant Method: S86SIM-1.M
Run #: 0326S08
Instrument: Sweetpea
Sequence: S090325
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 1:02:28 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W047
Sample Collection Date: 03/20/09

Loc ID: IR24MW05A
ARF: 58422
APPL ID: AX93080
QCG: $86HPS-090326AS-131175

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/26/09	03/26/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	109	70-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	102	75-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	101	85-115		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Toluene-D8 (S)	90.4	85-120		%	03/26/09	03/26/09

8/04/09

Quant Method: S86SIM-1.M
Run #: 0326S09
Instrument: Sweetpea
Sequence: S090325
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 1:06:43 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912A005
Sample Collection Date: 03/20/09

Loc ID: IR46MW49A
ARF: 58422
APPL ID: AX93081
QCG: $86HPS-090326AS-131175

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/26/09	03/26/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	104	75-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	105	85-115		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Toluene-D8 (S)	93.6	85-120		%	03/26/09	03/26/09

8/04/28 09

Quant Method: S86SIM-1.M
Run #: 0326S10
Instrument: Sweetpea
Sequence: S090325
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 1:10:26 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912D043
Sample Collection Date: 03/20/09

Loc ID: IR33MW02
ARF: 58422
APPL ID: AX93082
QCG: $86HPS-090325AS1-131174

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/26/09	03/26/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	87.2	70-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	103	75-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	88.7	85-115		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Toluene-D8 (S)	106	85-120		%	03/26/09	03/26/09

Quant Method: S86SIM-1.M
Run #: 0325S23
Instrument: Sweetpea
Sequence: S090325
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 12:30:50 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H035
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93083
QCG: $86HPS-090325AS1-131174

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/26/09	03/26/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	88.8	70-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	104	75-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	89.2	85-115		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Toluene-D8 (S)	105	85-120		%	03/26/09	03/26/09

8/04/2009

Quant Method: S86SIM-1.M
Run #: 0325S18
Instrument: Sweetpea
Sequence: S090325
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 12:30:50 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912D042
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93084
QCG: $86HPS-090325AS1-131174

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/26/09	03/26/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	89.6	70-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	91.9	85-115		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Toluene-D8 (S)	104	85-120		%	03/26/09	03/26/09

8/04/5/09

Quant Method: S86SIM-1.M
Run #: 0325S19
Instrument: Sweetpea
Sequence: S090325
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 12:30:50 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W043
Sample Collection Date: 03/20/09

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93085
QCG: $86HPS-090325AS1-131174

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/26/09	03/26/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	86.4	70-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	101	75-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	87.4	85-115		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Toluene-D8 (S)	106	85-120		%	03/26/09	03/26/09

Quant Method: S86SIM-1.M
Run #: 0325S20
Instrument: Sweetpea
Sequence: S090325
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 12:30:50 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912A006
Sample Collection Date: 03/20/09

Loc ID: IR46MW51A
ARF: 58422
APPL ID: AX93086
QCG: $86HPS-090325AS1-131174

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/26/09	03/26/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	91.3	70-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	99.5	75-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	91.3	85-115		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Toluene-D8 (S)	102	85-120		%	03/26/09	03/26/09

8/4/09

Quant Method:	S86SIM-1.M
Run #:	0325S24
Instrument:	Sweetpea
Sequence:	S090325
Dilution Factor:	1
Initials:	GM

Printed: 03/31/09 12:30:50 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912X011
Sample Collection Date: 03/20/09

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93087
QCG: $86HPS-090325AS1-131174

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/26/09	03/26/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	89.3	70-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	94.7	75-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	87.1	85-115		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Toluene-D8 (S)	102	85-120		%	03/26/09	03/26/09

Quant Method: S86SIM-1.M
Run #: 0325S21
Instrument: Sweetpea
Sequence: S090325
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 12:30:50 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912A004
Sample Collection Date: 03/20/09

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93088
QCG: $86HPS-090325AS1-131174

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/26/09	03/26/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	86.6	70-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	92.9	75-120		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	86.5	85-115		%	03/26/09	03/26/09
EPA 8260B	Surrogate: Toluene-D8 (S)	103	85-120		%	03/26/09	03/26/09

8/03/09

Quant Method: S86SIM-1.M
Run #: 0325S22
Instrument: Sweetpea
Sequence: S090325
Dilution Factor: 1
Initials: GM

Printed: 03/31/09 12:30:50 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20642A1b
SDG #: 58422
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 4/23/09
Page: 1 of 1
Reviewer: a
2nd Reviewer: M

METHOD: GC/MS Benzene (EPA SW 846 Method 8260B-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/20/09
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	r² no accep spec
IV.	Continuing calibration/ICV	A	CV ≤ 25%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	ND	D = 7+8.
XVII.	Field blanks	ND	TB = 3. 11. 12. 13. 15. 16

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

All H2O's

1 1	0912W044	11 2	0912H035	21	090324W MB	31	
2 1	0912W045**	12 2	0912D042	22	090325W MB	32	
3 1	0912X010	13 2	0912W043	23	090326W MB	33	
4 1	0912H037	14 2	0912A006**	24		34	
5 1	0912H038	15 2	0912X011	25		35	
6 1	0912H039**	16 2	0912A004	26		36	
7 3	0912W046	17		27		37	
8 3	0912W047	18		28		38	
9 3	0912A005	19		29		39	
10 2	0912D043	20		30		40	

LDC #: 2064-A1b
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: Q
2nd Reviewer: K

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			✓	
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓	✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 30642A1b
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 20642A1b
SDG#: see cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer:
2nd Reviewer:

METHOD: EPA SW 846 Method 8260B-SIM

Parameter: Benzene

Order of regression: LINR

DATE	GCMS ID	Column	(Y) AREA RATIO	(X) CONC ug/L	(X2) CONC RATIO
03/20/2009	Sweetpea	CAP	0.0382	0.0040	1.6E-005
			0.0430	0.0080	6.4E-005
			0.1028	0.0200	4.0E-004
			0.1899	0.0400	1.6E-003
			0.9904	0.2000	4.0E-002
			1.8951	0.4000	1.6E-001
			7.4696	1.6000	2.6E+000
			18.7347	4.0000	1.6E+001
			37.0823	8.0000	6.4E+001

Regression Output:

Constant		0.0364
Std Err of Y Est		0.0636
R Squared		1.0000
No. of Observations		9
Degrees of Freedom		7
X Coefficient(s)	4.640E+000	1.076E-001
Std Err of Coef.	8.203E-003	2.480E-002
Correlation Coefficient (r) =		1.0000
Coefficient of Determination (r^2) =		1.0000

Parameter: Benzene

Order of regression: LINR

DATE	GCMS ID	Column	(Y) AREA RATIO	(X) CONC ug/L	(X2) CONC RATIO
03/25/2009	Sweetpea	CAP	0.0308	0.0040	1.6E-005
			0.0355	0.0080	6.4E-005
			0.1065	0.0200	4.0E-004
			0.2086	0.0400	1.6E-003
			2.1495	0.4000	1.6E-001
			8.3298	1.6000	2.6E+000
			20.7550	4.0000	1.6E+001
			44.2235	8.0000	6.4E+001

Regression Output:

Constant		-0.1574
Std Err of Y Est		0.4992
R Squared		0.9991
No. of Observations		8
Degrees of Freedom		6
X Coefficient(s)	5.479E+000	1.076E-001
Std Err of Coef.	6.556E-002	2.480E-002
Correlation Coefficient (r) =		0.9996
Coefficient of Determination (r^2) =		0.9991

LDC #: 20543A1b
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: A

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	032458W	3/24/09	V (1st internal standard)	10.0	9.21171	9.2112	7.9	7.9
			(2nd internal standard)					
			(3rd internal standard)					
2	~~032650W~~	~~3/26/09~~	~~V~~ (1st internal standard)	~~10.0~~	~~9.53228~~		~~4.7~~	
			(2nd internal standard)					
			(3rd internal standard)					
3	032512W	3/25/09	V (1st internal standard)	10.00	10.00341	10.0033	0.03	0.03
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20640A16
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: 9
2nd reviewer: A

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	21.379	20.65737	96.6	96.6	0
Bromofluorobenzene	17.126	17.13464	100	100	
1,2-Dichloroethane-d4	17.485	14.77693	84.5	84.5	
Dibromofluoromethane	16.939	15.65264	92.4	92.4	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 20642A1b
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 090324W LCS

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene										
Trichloroethene										
Benzene	10.00	NA	9.21	NA	92.1	92.1				
Toluene										
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 26644A16
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
RRF	=	Relative response factor of the calibration standard.
V_o	=	Volume or weight of sample pruged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. ND , _____:

Conc. = ( ) ( ) ( ) / ( ) ( ) ( ) ( )

=

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC Report# 20642B1b

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 23, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Benzene

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58459

Sample Identification

0913B035**
0913B032
0913B035MS
0913B035MSD

**Indicates sample underwent Level IV review

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 8260B using Selected Ion Monitoring (SIM) for Benzene.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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.

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

Average relative response factors (RRF) for benzene was within 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 25.0% .

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

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

V. Blanks

Method blanks were reviewed for each matrix as applicable. No benzene was found in the method blanks.

Sample 0913B032 was identified as a trip blank. No benzene was found in this blank.

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 a 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 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 acceptable for samples on which a 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 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.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Benzene - Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Benzene - Laboratory Blank Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Benzene - Field Blank Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913B035
Sample Collection Date: 03/23/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR46MW52A
ARF: 58459
APPL ID: AX93180
QCG: $86HPS-090328BS-131191

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/29/09	03/29/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	89.8	70-120		%	03/29/09	03/29/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	106	75-120		%	03/29/09	03/29/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	99.8	85-115		%	03/29/09	03/29/09
EPA 8260B	Surrogate: Toluene-D8 (S)	93.9	85-120		%	03/29/09	03/29/09

8/4/809

Quant Method: S86SIM-1.M
Run #: 0328S32
Instrument: Sweetpea
Sequence: S090325
Dilution Factor: 1
Initials: DG

Printed: 04/02/09 12:50:48 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913B032
Sample Collection Date: 03/23/09

Loc ID: TRIP BLANK
ARF: 58459
APPL ID: AX93181
QCG: $86HPS-090328BS-131191

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	03/29/09	03/29/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	83.4	70-120		%	03/29/09	03/29/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	103	75-120		%	03/29/09	03/29/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	96.6	85-115		%	03/29/09	03/29/09
EPA 8260B	Surrogate: Toluene-D8 (S)	96.7	85-120		%	03/29/09	03/29/09

8/4/09

Quant Method: S86SIM-1.M
Run #: 0328S28
Instrument: Sweetpea
Sequence: S090325
Dilution Factor: 1
Initials: DG

Printed: 04/02/09 12:50:48 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20642B1b
SDG #: 58459
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 4/23/09
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Benzene (EPA SW 846 Method 8260B-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/23/09
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	r^2 no ccc & spec
IV.	Continuing calibration/ICV	A	|%D| ≤ 25%.
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	TB = 2

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0912B035** W	11	090328WMB	21		31	
2	0913B032	12		22		32	
3	0912B035MS	13		23		33	
4	0912B035MSD	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 20642B2b
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: K

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			✓	
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?			✓	
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 20642B1b
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQL's				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.	✓	✓		
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 20642B16
SDG#: 520C0W

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: K

METHOD: EPA SW 846 Method 8260B-SIM

Parameter: Benzene

Order of regression: LINR

DATE	GCMS ID	Column	(Y) AREA RATIO	(X) CONC ug/L	(X2) CONC RATIO
03/25/2009	Sweetpea	CAP	0.0308	0.0040	1.6E-005
			0.0355	0.0080	6.4E-005
			0.1065	0.0200	4.0E-004
			0.2086	0.0400	1.6E-003
			2.1495	0.4000	1.6E-001
			8.3298	1.6000	2.6E+000
			20.7550	4.0000	1.6E+001
			44.2235	8.0000	6.4E+001

Regression Output:

Constant		-0.1574
Std Err of Y Est		0.4992
R Squared		0.9991
No. of Observations		8
Degrees of Freedom		6
X Coefficient(s)	5.479E+000	1.076E-001
Std Err of Coef.	6.556E-002	2.480E-002
Correlation Coefficient (r) =		0.9996
Coefficient of Determination (r^2) =		0.9991

LDC #: 20672B1b
SDG #: Sec 00 ms

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 12

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	032859	3/29/09	√ (1st internal standard)	10.00	8.4755	8.4755	15	15
			(2nd internal standard)					
			(3rd internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 2064-B16
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: 9
2nd reviewer: N

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	19.453	18.26870	93.9	93.9	0
Bromofluorobenzene	17.126	18.15570	106	106	✓
1,2-Dichloroethane-d4	17.485	15.70049	89.8	89.8	✓
Dibromofluoromethane	16.939	16.90831	99.8	99.8	✓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 20640B1b
SDG #: 5acow

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration, SA = Spike added, SC = Sample concentration

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD sample: ~~09035-9W~~ 3/4

Compound	Spike Added (µg/L)		Sample Concentration (µg/L)	Spiked Sample Concentration (µg/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene											
Trichloroethene											
Benzene	10.00	10.00	ND	9.01	8.57	90.1	90.1	85.7	85.7	5.0	5.0
Toluene											
Chlorobenzene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 2064B16
SDG #: [illegible]

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 090329W LCS

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene										
Trichloroethene										
Benzene	10.00	NA	8.48	NA	84.8	84.8				
Toluene										
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LCSCLC.1SB

LDC #: 20642B1b
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: R

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
RRF	=	Relative response factor of the calibration standard.
V_o	=	Volume or weight of sample pruged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 1, ND:

Conc. = ( ) ( ) ( ) / ( ) ( ) ( ) ( )

=

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 27, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Benzene

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58508

Sample Identification

0913D047
0913G007**
0913G008
0913D045
0913D046
0913X016
0913G006

**Indicates sample underwent 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 8260B using Selected Ion Monitoring (SIM) for Benzene.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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.

Average relative response factors (RRF) for benzene was within 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 25.0% .

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

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

V. Blanks

Method blanks were reviewed for each matrix as applicable. No benzene was found in the method blanks.

Samples 0913D045, 0913X016, and 0913G006 were identified as trip blanks. No benzene was found in these blanks.

Samples 0913D047 and 0913G008 were identified as equipment blanks. No benzene was found in these 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 a 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 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 acceptable for samples on which a 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 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.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Benzene - Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Benzene - Laboratory Blank Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Benzene - Field Blank Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913D047
Sample Collection Date: 03/27/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR18MW100B
ARF: 58508
APPL ID: AX93818
QCG: $86HPS-090402AS-131700

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	04/02/09	04/02/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	104	70-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	98.6	75-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Toluene-D8 (S)	98.3	85-120		%	04/02/09	04/02/09

8-4-09

Quant Method: S86SIM-1.M
Run #: 0402S13
Instrument: Sweetpea
Sequence: S090401
Dilution Factor: 1
Initials: LF

Printed: 04/16/09 4:15:50 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913G007
Sample Collection Date: 03/27/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: PA18MW09A
ARF: 58508
APPL ID AX93819
QCG: $86HPS-090402AS-131700

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	04/02/09	04/02/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	107	70-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	104	75-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	104	85-115		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Toluene-D8 (S)	104	85-120		%	04/02/09	04/02/09

12-4-09

Quant Method: S86SIM-1.M
Run #: 0402S14
Instrument: Sweetpea
Sequence: S090401
Dilution Factor: 1
Initials: LF

Printed: 04/22/09 10:56:53 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

AMENDED PAGE

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913G008
Sample Collection Date: 03/27/09

Loc ID: PA18MW09A
ARF: 58508
APPL ID AX93820
QCG: $86HPS-090402AS-131700

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	04/02/09	04/02/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	98.0	70-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	98.5	75-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	99.4	85-115		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Toluene-D8 (S)	100	85-120		%	04/02/09	04/02/09

4/22/09

Quant Method: S86SIM-1.M
Run #: 0402S15
Instrument: Sweetpea
Sequence: S090401
Dilution Factor: 1
Initials: LF

Printed: 04/22/09 10:56:53 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

AMENDED PAGE

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913D045
Sample Collection Date: 03/27/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58508
APPL ID: AX93821
QCG: $86HPS-090402AS-131700

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	04/02/09	04/02/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	102	75-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	105	85-115		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Toluene-D8 (S)	100	85-120		%	04/02/09	04/02/09

4/28/09

Quant Method:	S86SIM-1.M
Run #:	0402S07
Instrument:	Sweetpea
Sequence:	S090401
Dilution Factor:	1
Initials:	LF

Printed: 04/16/09 4:15:50 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913D046
Sample Collection Date: 03/27/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR18MW100B
ARF: 58508
APPL ID AX93822
QCG: $86HPS-090402AS-131700

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	04/02/09	04/02/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	95.4	70-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	98.5	75-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	96.3	85-115		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Toluene-D8 (S)	103	85-120		%	04/02/09	04/02/09

4/22/09

Quant Method: S86SIM-1.M
Run #: 0402S16
Instrument: Sweetpea
Sequence: S090401
Dilution Factor: 1
Initials: LF

Printed: 04/22/09 10:56:54 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

AMENDED PAGE

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913X016
Sample Collection Date: 03/27/09

Loc ID: TRIP BLANK
ARF: 58508
APPL ID: AX93823
QCG: $86HPS-090402AS-131700

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	04/02/09	04/02/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	108	70-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	100	75-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	105	85-115		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Toluene-D8 (S)	98.1	85-120		%	04/02/09	04/02/09

8/04/2009

Quant Method: S86SIM-1.M
Run #: 0402S08
Instrument: Sweetpea
Sequence: S090401
Dilution Factor: 1
Initials: LF

Printed: 04/16/09 4:15:50 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260B

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913G006
Sample Collection Date: 03/27/09

Loc ID: TRIP BLANK
ARF: 58508
APPL ID: AX93824
QCG: $86HPS-090402AS-131700

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260B	Benzene	Not detected	0.2	0.06	ug/L	04/02/09	04/02/09
EPA 8260B	Surrogate: 1,2-Dichloroethane-d4 (S)	110	70-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: 4-Bromofluorobenzene (S)	100	75-120		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Dibromofluoromethane (S)	107	85-115		%	04/02/09	04/02/09
EPA 8260B	Surrogate: Toluene-D8 (S)	97.8	85-120		%	04/02/09	04/02/09

8/24/09

Quant Method: S86SIM-1.M
Run #: 0402S09
Instrument: Sweetpea
Sequence: S090401
Dilution Factor: 1
Initials: LF

Printed: 04/16/09 4:15:50 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20642C1b
SDG #: 58508
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 4/23/09
Page: 1 of 1
Reviewer: a
2nd Reviewer: A

METHOD: GC/MS Benzene (EPA SW 846 Method 8260B-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/27/09
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	no ccc & spcc
IV.	Continuing calibration/ICV	A	ICV ≤ 25% ↓
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	EB=1.3. TB=4.6-7

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

MHBs

1	0913D047 Z	11	090402WMB	21		31	
2	0913G007**	12		22		32	
3	0913G008 Z	13		23		33	
4	0913D045 T	14		24		34	
5	0913D046	15		25		35	
6	0913X016 T	16		26		36	
7	0913G006 T	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 24842C1b
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: a
2nd Reviewer: L

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓		✓	
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 20646c16
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: a
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 2064-C1b
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 2

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (/ std)	Recalculated RRF (/ std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	10A2	4/1/09	V (1st internal standard)	4.169	4.169	4.454	4.454	13	13
			(2nd internal standard)						
			(3rd internal standard)						
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20640c1b
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound,
C_x = Concentration of compound,
A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	040250/W	4/2/09	✓ (1st internal standard)	4.454	4.202	4.202	5.6	5.6
			(2nd internal standard)					
			(3rd internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20642c1b
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: 9
2nd reviewer: 4

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	17.494	18.25698	104	104	0
Bromofluorobenzene	16.693	17.29103	104	104	✓
1,2-Dichloroethane-d4	16.767	17.89564	107	107	✓
Dibromofluoromethane	17.354	18.06862	104	104	✓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 26406e1b
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: a
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 090402W

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene										
Trichloroethene										
Benzene	10.00	NA	9.44	NA	94.4	94.4				
Toluene										
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: [illegible]
SDG #: [illegible]

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?

Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
RRF	=	Relative response factor of the calibration standard.
V_o	=	Volume or weight of sample pruged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 2, ND:

Conc. = ( ) ( ) ( ) / ( ) ( ) ( ) ( )

=

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Hunters Point Shipyard, 1Q09 GW Sampling Event
Data Validation Reports
LDC# 20642

Polynuclear Aromatic Hydrocarbons

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 20, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58422

Sample Identification

0912W044
0912W045**
0912H037
0912H038
0912H039**
0912W046
0912W047
0912A005
0912D043
0912A006**

**Indicates sample underwent Level IV review

Introduction

This data review covers 10 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per a modification of EPA SW 846 Method 8270C using Selected Ion Monitoring (SIM) for Polynuclear Aromatic Hydrocarbons.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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.

Average relative response factors (RRF) for all target compounds and system monitoring compounds were within 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 25.0% .

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

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

V. Blanks

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

No field blanks were identified in this SDG.

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 a 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 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 acceptable for samples on which a Level IV review was performed. Raw data were not evaluated for the samples reviewed by 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 0912W046 and 0912W047 were identified as field duplicates. No polynuclear aromatic hydrocarbons were detected in any of the samples.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 58422

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG 58422

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 58422

No Sample Data Qualified in this SDG

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W044
Sample Collection Date: 03/20/09

Loc ID: IR07MW26A
ARF: 58422
APPL ID: AX93073
QCG: $SIMDO-090324A-131161

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	03/24/09	03/28/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	03/24/09	03/28/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	03/24/09	03/28/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	52.1	50-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	70.1	40-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	87.6	50-135		%	03/24/09	03/28/09

4/3/09

Quant Method: SIMDODS.M
Run #: 0328L007
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W045
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR07MW24A
ARF: 58422
APPL ID: AX93074
QCG: $SIMDO-090324A-131161

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	03/24/09	03/28/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	03/24/09	03/28/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	03/24/09	03/28/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	66.1	50-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	64.9	40-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	82.5	50-135		%	03/24/09	03/28/09

4/15/09

Quant Method: SIMDODS.M
Run #: 0328L008
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H037
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR46MW48A
ARF: 58422
APPL ID: AX93076
QCG: $SIMDO-090324A-131161

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	03/24/09	03/28/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	03/24/09	03/28/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	03/24/09	03/28/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	60.7	50-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	70.6	40-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	85.7	50-135		%	03/24/09	03/28/09

4/2/09

Quant Method: SIMDODS.M
Run #: 0328L009
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H038
Sample Collection Date: 03/20/09

Loc ID: IR46MW47A
ARF: 58422
APPL ID: AX93077
QCG: $SIMDO-090324A-131161

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	03/24/09	03/28/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	03/24/09	03/28/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	03/24/09	03/28/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	57.6	50-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	80.0	40-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	83.7	50-135		%	03/24/09	03/28/09

Eij 2/09

Quant Method: SIMDODS.M
Run #: 0328L010
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H039
Sample Collection Date: 03/20/09

Loc ID: IR46MW50A
ARF: 58422
APPL ID: AX93078
QCG: $SIMDO-090324A-131161

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	03/24/09	03/28/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	03/24/09	03/28/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	03/24/09	03/28/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	60.8	50-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	81.0	40-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	90.3	50-135		%	03/24/09	03/28/09

8/04/2009

Quant Method: SIMDODS.M
Run #: 0328L011
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W046
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR24MW05A
ARF: 58422
APPL ID: AX93079
QCG: $SIMDO-090324A-131161

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	03/24/09	03/28/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	03/24/09	03/28/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	03/24/09	03/28/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	64.5	50-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	81.6	40-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	99.8	50-135		%	03/24/09	03/28/09

3/31/09

Quant Method: SIMDODS.M
Run #: 0328L012
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W047
Sample Collection Date: 03/20/09

Loc ID: IR24MW05A
ARF: 58422
APPL ID: AX93080
QCG: $SIMDO-090324A-131161

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	03/24/09	03/28/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	03/24/09	03/28/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	03/24/09	03/28/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	67.4	50-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	90.0	40-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	103	50-135		%	03/24/09	03/28/09

8/14/2009

Quant Method: SIMDODS.M
Run #: 0328L013
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

Printed: 03/31/09 2:40:24 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912A005
Sample Collection Date: 03/20/09

Loc ID: IR46MW49A
ARF: 58422
APPL ID: AX93081
QCG: $SIMDO-090324A-131161

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthene	0.18 J	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	03/24/09	03/28/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	03/24/09	03/28/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Fluorene	3.2	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	03/24/09	03/28/09
8270C-LL	Phenanthrene	2.3	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	65.0	50-110		%	03/24/09	03/28/09
8250C-LL	Surrogate: Nitrobenzene-D5 (S)	82.2	40-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	93.5	50-135		%	03/24/09	03/28/09

8/24/2009

J = Estimated value.

Quant Method: SIMDODS.M
Run #: 0328L014
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912D043
Sample Collection Date: 03/20/09

Loc ID: IR33MW02
ARF: 58422
APPL ID: AX93082
QCG: $SIMDO-090324A-131161

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	03/24/09	03/28/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	03/24/09	03/28/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	03/24/09	03/28/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	68.3	50-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	89.1	40-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	93.7	50-135		%	03/24/09	03/28/09

8/04/2009

Quant Method: SIMDODS.M
Run #: 0328L015
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

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APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912A006
Sample Collection Date: 03/20/09

Loc ID: IR46MW51A
ARF: 58422
APPL ID: AX93086
QCG: $SIMDO-090324A-131161

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	03/24/09	03/28/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	03/24/09	03/28/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	03/24/09	03/28/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	03/24/09	03/28/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	03/24/09	03/28/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	03/24/09	03/28/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	70.2	50-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	97.1	40-110		%	03/24/09	03/28/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	90.0	50-135		%	03/24/09	03/28/09

Sl 04/2/09

Quant Method: SIMDODS.M
Run #: 0328L016
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

Printed: 03/31/09 2:40:24 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20642A2b

SDG #: 58422

Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 4/23/09

Page: 1 of 1

Reviewer: 9

2nd Reviewer: a

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270C-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/20/09
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	ICV ≤ 25%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client spiked
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	ND	D = 6 + 7
XVII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

MH2O

1	0912W044	11	090324WMB	21		31	
2	0912W045**	12		22		32	
3	0912H037	13		23		33	
4	0912H038	14		24		34	
5	0912H039**	15		25		35	
6	0912W046	16		26		36	
7	0912W047	17		27		37	
8	0912A005	18		28		38	
9	0912D043	19		29		39	
10	0912A006**	20		30		40	

LDC #: 20642B-b
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?	✓			
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
Was an LCS analyzed for this SDG?	✓			

LDC #: 20642A6
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
System performance was found to be acceptable.	✓			
Overall assessment of data was found to be acceptable.	✓			
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 20642A6b
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs,

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (/ std)	Recalculated RRF (/ std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	2/16/09	Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)	1.260	1.260	1.251	1.251	12	12
			Fluorene (3rd internal standard)	1.556	1.556	1.576	1.576	9.2	9.2
			~~Pentachlorophenol~~ (4th internal standard) uu	1.371	1.371	1.389	1.389	12	12
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) zz	1.417	1.417	1.368	1.368	11	11
			Benzo(a)pyrene (6th internal standard)	0.8804	0.8804	0.8503	0.8503	14	14
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 3262A6
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	0328L002	3/28/09	Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)	1.251	1.192	1.192	4.7	4.7
			Fluorene (3rd internal standard)	1.576	1.637	1.637	3.8	3.9
			~~Pentachlorophenol~~ (4th internal standard) CU 22	1.389	1.324	1.324	4.7	4.7
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.368	1.447	1.447	5.8	5.8
			Benzo(a)pyrene (6th internal standard)	0.8503	0.7580	0.7580	11	11
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.2S

LDC #: 20470B6
SDG #: SEICOM

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	1.905	1.23735	64.9	64.9	0
2-Fluorobiphenyl	↓	1.25870	66.1	66.1	↓
Terphenyl-d14		1.57182	82.5	82.5	
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 20402A-b
SDG #: 5ac0m

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA

Where: SSC = Spike concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC)

LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 090324WLCS

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene	4.00	NA	3.20	NA	80.0	80.0				
Pentachlorophenol										
Pyrene	4.00	NA	3.76	NA	94.0	94.0				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20404A26
SDG #: Secondary

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: Q
2nd reviewer: A

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 2.5.10. ND:

Conc. = ( )( )( )( )( )
( )( )( )( )( )

=

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

RECALC.2S

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 23, 2009

LDC Report Date: April 29, 2009

Matrix: Water

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58459

Sample Identification

0913B035
0913B035MS
0913B035MSD

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per a modification of EPA SW 846 Method 8270C using Selected Ion Monitoring (SIM) for Polynuclear Aromatic Hydrocarbons.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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.

Average relative response factors (RRF) for all target compounds and system monitoring compounds were within 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 25.0% .

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

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

V. Blanks

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

No field blanks were identified in this SDG.

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
0913B035MS/MSD (0913B035)	Benzo(a)anthracene Chrysene	130 (55-110) 142 (55-110)	118 (55-110) 122 (55-110)	- -	NA	-

Although the above listed %Rs flagged "NA" demonstrate a high bias, the affected compounds in the associated samples were non-detected and did not warrant the qualification of the data.

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.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

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.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913B035
Sample Collection Date: 03/23/09

Loc ID: IR46MW52A
ARF: 58459
APPL ID: AX93180
QCG: $SIMDO-090327A-131162

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	03/27/09	03/28/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	03/27/09	03/28/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	03/27/09	03/28/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	03/27/09	03/28/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	03/27/09	03/28/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	03/27/09	03/28/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	03/27/09	03/28/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	03/27/09	03/28/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	03/27/09	03/28/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	03/27/09	03/28/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	03/27/09	03/28/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	03/27/09	03/28/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	03/27/09	03/28/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	03/27/09	03/28/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	03/27/09	03/28/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	03/27/09	03/28/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	03/27/09	03/28/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	87.0	50-110		%	03/27/09	03/28/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	82.6	40-110		%	03/27/09	03/28/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	115	50-135		%	03/27/09	03/28/09

8/04/2009

Quant Method: SIMDODS.M
Run #: 0328L019
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

Printed: 03/31/09 2:48:20 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20642B2b
SDG #: 58459
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 4/23/09
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270C-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/23/09
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	RV ≤ 25%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

1	0912B035 W	11	090327WMB	21		31	
2	0912B035MS	12		22		32	
3	0912B035MSD	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 20642B2b
SDG #: 6a CONT

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: K

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) > 0.05?	✓			
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
Was an LCS analyzed for this SDG?	✓			

LDC #: 20642B26
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: N

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
System performance was found to be acceptable.	✓			
Overall assessment of data was found to be acceptable.	✓			
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 20642B26
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		2/3	CCC	130 (55-110)	118 (55-110)	( )	1 (ND)	J8 ~~UJ~~/A
			DDD	142 (✓)	122 (✓)	( )		✓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 00642B26
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 11

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs,

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (/ std)	Recalculated RRF (/ std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	2/16/09	Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)	1.260	1.260	1.251	1.251	12	12
			Fluorene (3rd internal standard)	1.556	1.556	1.576	1.576	9.2	9.2
			~~Pentachlorophenol~~ (4th internal standard) 44	1.371	1.371	1.389	1.389	12	12
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) 22	1.417	1.417	1.368	1.368	11	11
			Benzo(a)pyrene (6th internal standard)	0.8804	0.8804	0.8503	0.8503	14	14
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 26[illegible]
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	03281002	3/28/09	Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)	1.251	1.192	1.192	4.7	4.7
			Fluorene (3rd internal standard)	1.576	1.637	1.637	3.8	3.9
			~~Pentachlorophenol~~ (4th internal standard) NA	1.389	1.324	1.324	4.7	4.7
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.368	1.447	1.447	5.8	5.8
			Benzo(a)pyrene (6th internal standard)	0.8503	0.7580	0.7580	11	11
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.2S

LDC #: 20602B06
SDG #: 6ercover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: K

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	2.000	1.65241	82.6	82.6	0
2-Fluorobiphenyl		1.74007	87.0	87.0	
Terphenyl-d14	↓	2.29507	115	115	↓
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 20642-b
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: V
2nd Reviewer: U

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 2/3

Compound	Spike Added (µg/L)		Sample Concentration (µg/L)	Spiked Sample Concentration (µg/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol											
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene	4.00	4.00	ND	3.37	2.99	84.3	84.3	74.8	74.8	11.9	11.9
Pentachlorophenol											
Pyrene	4.00	4.00	ND	3.99	3.62	99.8	99.8	90.5	90.5	9.7	9.7

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

MSDCLC.2S

LDC #: 20602B06
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: V
2nd Reviewer: A

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA

Where: SSC = Spike concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC)

LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 090327W

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene	4.00	NA	3.21	NA	80.3	80.3				
Pentachlorophenol										
Pyrene	4.00	NA	3.68	NA	92.0	92.0				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20647-B-6
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. ND, _____:

Conc. = ( )( )( )( )( ) / ( )( )( )( )( )

=

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

RECALC.2S

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 27, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58508

Sample Identification

0913D047
0913G007**
0913G008
0913D046

**Indicates sample underwent Level IV review

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per a modification of EPA SW 846 Method 8270C using Selected Ion Monitoring (SIM) for Polynuclear Aromatic Hydrocarbons.

This review follows the Draft Final Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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.

Average relative response factors (RRF) for all target compounds and system monitoring compounds were within 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 25.0% .

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

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

V. Blanks

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

Samples 0913D047 and 0913G008 were identified as an equipment blanks. No polynuclear aromatic hydrocarbon contaminants were found in these 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 a 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 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 acceptable for samples on which a Level IV review was performed. Raw data were not evaluated for the samples reviewed by 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.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Polynuclear Aromatic Hydrocarbons - Field Blank Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913D047
Sample Collection Date: 03/27/09

Loc ID: IR18MW100B
ARF: 58508
APPL ID: AX93818
QCG: $SIMDO-090403A-131613

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	04/03/09	04/08/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	04/03/09	04/08/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	04/03/09	04/08/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	58.2	50-110		%	04/03/09	04/08/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	83.5	40-110		%	04/03/09	04/08/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	85.5	50-135		%	04/03/09	04/08/09

8/04/09

Quant Method: SIMDODS.M
Run #: 0408L005
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

Printed: 04/13/09 8:04:30 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913G007
Sample Collection Date: 03/27/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: PA18MW09A
ARF: 58508
APPL ID AX93819
QCG: $SIMDO-090403A-131613

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	04/03/09	04/08/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	04/03/09	04/08/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	04/03/09	04/08/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	65.2	50-110		%	04/03/09	04/08/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	84.0	40-110		%	04/03/09	04/08/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	80.1	50-135		%	04/03/09	04/08/09

Eo4-8-09

Quant Method: SIMDODS.M
Run #: 0408L006
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

Printed: 04/22/09 10:56:53 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

AMENDED PAGE

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913G008
Sample Collection Date: 03/27/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: PA18MW09A
ARF: 58508
APPL ID AX93820
QCG: $SIMDO-090403A-131613

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	04/03/09	04/08/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	04/03/09	04/08/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	04/03/09	04/08/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	55.8	50-110		%	04/03/09	04/08/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	56.8	40-110		%	04/03/09	04/08/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	76.3	50-135		%	04/03/09	04/08/09

8/04/08/09

Quant Method: SIMDODS.M
Run #: 0408L007
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

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Printed: 04/22/09 10:56:53 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8270C LL WATER DODv3

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913D046
Sample Collection Date: 03/27/09

Loc ID: IR18MW100B
ARF: 58508
APPL ID AX93822
QCG: $SIMDO-090403A-131613

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8270C-LL	2-Methylnaphthalene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Acenaphthene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Acenaphthylene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Anthracene	Not detected	0.2	0.11	ug/L	04/03/09	04/08/09
8270C-LL	Benz (a) anthracene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (a) pyrene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (b) fluoranthene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (g,h,i) perylene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Benzo (k) fluoranthene	Not detected	0.2	0.09	ug/L	04/03/09	04/08/09
8270C-LL	Chrysene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Dibenz (a,h) anthracene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Fluoranthene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Fluorene	Not detected	0.2	0.07	ug/L	04/03/09	04/08/09
8270C-LL	Indeno (1,2,3-cd) pyrene	Not detected	0.2	0.06	ug/L	04/03/09	04/08/09
8270C-LL	Naphthalene	Not detected	0.2	0.05	ug/L	04/03/09	04/08/09
8270C-LL	Phenanthrene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Pyrene	Not detected	0.2	0.08	ug/L	04/03/09	04/08/09
8270C-LL	Surrogate: 2-Fluorbiphenyl (S)	66.3	50-110		%	04/03/09	04/08/09
8270C-LL	Surrogate: Nitrobenzene-D5 (S)	79.5	40-110		%	04/03/09	04/08/09
8270C-LL	Surrogate: Terphenyl-d14 (S)	75.8	50-135		%	04/03/09	04/08/09

Quant Method: SIMDODS.M
Run #: 0408L008
Instrument: Linus
Sequence: L090216
Dilution Factor: 1
Initials: LF

Printed: 04/22/09 10:56:54 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

AMENDED PAGE

LDC #: 20642C2b
SDG #: 58508
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 4/23/09
Page: 1 of 1
Reviewer: Q
2nd Reviewer: M

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270C-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/27/09
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	ICV ≤ 25%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	EB = 1, 3

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0913D047 W	11	090403WMB	21		31	
2	0913G007**	12		22		32	
3	0913G008	13		23		33	
4	0913D046	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 20642C2b
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: N

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) > 0.05?	✓			
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
Was an LCS analyzed for this SDG?	✓			

LDC #: 20642C26
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
System performance was found to be acceptable.	✓			
Overall assessment of data was found to be acceptable.	✓			
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 08642c2b
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs,

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (/ std)	Recalculated RRF (/ std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	1CA2	2/16/09	Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)	1.260	1.260	1.251	1.251	12	12
			Fluorene (3rd internal standard)	1.556	1.556	1.576	1.576	9.2	9.2
			~~Pentachlorophenol~~ (4th internal standard) UU	1.371	1.371	1.389	1.389	12	12
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) ZZ	1.417	1.417	1.368	1.368	11	11
			Benzo(a)pyrene (6th internal standard)	0.8804	0.8804	0.8503	0.8503	14	14
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20642C2b
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	04081002	4/8/09	Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)	1.251	1.023	1.023	18	18
			Fluorene (3rd internal standard)	1.576	1.380	1.380	12	12
			~~Pentachlorophenol~~ (4th internal standard) 44	1.389	1.124	1.124	19	19
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) 22	1.368	1.092	1.092	20	20
			Benzo(a)pyrene (6th internal standard)	0.8503	0.7270	0.7270	15	15
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 2064-2 C2b
SDG #: Sec cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	1.923	1.61458	84.0	84.0	0
2-Fluorobiphenyl	↓	1.25266	65.2	65.2	
Terphenyl-d14		1.54061	80.1	80.1	↓
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 20642c-b
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9
2nd Reviewer: 16

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA

Where: SSC = Spike concentration
SA = Spike added

RPD = | LCSC - LCSDC | * 2/(LCSC + LCSDC)

LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 090403W

Compound	Spike Added (µg/L)		Spike Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene	4.00	NA	2.59	NA	64.8	64.8				
Pentachlorophenol										
Pyrene	4.00	NA	2.78	NA	69.5	69.5				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20642C2b
SDG #: Second

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 2 . ND :

Conc. = ( )( )( )( )( )
( )( )( )( )( )

=

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

RECALC.2S

Hunters Point Shipyard, 1Q09 GW Sampling Event
Data Validation Reports
LDC# 20642

TPH as Gasoline

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 20, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58422

Sample Identification

0912W044
0912W045**
0912X010
0912H037
0912H038
0912H039**
0912W046
0912W047
0912A005
0912D043
0912H035
0912D042
0912W043
0912A006**
0912X011
0912A004

**Indicates sample underwent 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 8015 for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

Samples 0912X010, 0912H035, 0912D042, 0912W043, 0912X011, and 0912A004 were identified as a trip blanks. No total petroleum hydrocarbons as gasoline contaminants were found in these 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 a Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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 0912W046 and 0912W047 were identified as field duplicates. No total petroleum hydrocarbons as gasoline were detected in any of the samples.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 58422

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 58422

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG 58422

No Sample Data Qualified in this SDG

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W044
Sample Collection Date: 03/20/09

Loc ID: IR07MW26A
ARF: 58422
APPL ID: AX93073
QCG: $GAHP-090328A-131170

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/28/09	03/28/09
8015	Surrogate: BFB-FID (S)	101	75-125		%	03/28/09	03/28/09

4/2/09

Quant Method:	HBTXGM.M
Run #:	0327H43
Instrument:	Harpo
Sequence:	090305
Dilution Factor:	1
Initials:	LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W045
Sample Collection Date: 03/20/09

Loc ID: IR07MW24A
ARF: 58422
APPL ID: AX93074
QCG: $GAHP-090328A-131170

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/28/09	03/28/09
8015	Surrogate: BFB-FID (S)	97.8	75-125		%	03/28/09	03/28/09

Quant Method: HBTXGM.M
Run #: 0327H44
Instrument: Harpo
Sequence: 090305
Dilution Factor: 1
Initials: LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912X010
Sample Collection Date: 03/20/09

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93075
QCG: $GAHP-090328A-131170

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/28/09	03/28/09
8015	Surrogate: BFB-FID (S)	86.1	75-125		%	03/28/09	03/28/09

8/14/2009

Quant Method:	HBTXGM.M
Run #:	0327H31
Instrument:	Harpo
Sequence:	090305
Dilution Factor:	1
Initials:	LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H037
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR46MW48A
ARF: 58422
APPL ID: AX93076
QCG: $GAHP-090328B-131169

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/29/09	03/29/09
8015	Surrogate: BFB-FID (S)	87.2	75-125		%	03/29/09	03/29/09

SG 4/3/09

Quant Method:	HBTXGM.M
Run #:	0327H55
Instrument:	Harpo
Sequence:	090305
Dilution Factor:	1
Initials:	LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H038
Sample Collection Date: 03/20/09

Loc ID: IR46MW47A
ARF: 58422
APPL ID: AX93077
QCG: $GAHP-090328B-131169

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/29/09	03/29/09
8015	Surrogate: BFB-FID (S)	92.1	75-125		%	03/29/09	03/29/09

8/04/2009

Quant Method:	HBTXGM.M
Run #:	0327H56
Instrument:	Harpo
Sequence:	090305
Dilution Factor:	1
Initials:	LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H039
Sample Collection Date: 03/20/09

Loc ID: IR46MW50A
ARF: 58422
APPL ID: AX93078
QCG: $GAHP-090328B-131169

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/29/09	03/29/09
8015	Surrogate: BFB-FID (S)	96.1	75-125		%	03/29/09	03/29/09

SC 04/2/09

Quant Method:	HBTXGM.M
Run #:	0327H57
Instrument:	Harpo
Sequence:	090305
Dilution Factor:	1
Initials:	LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

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Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W046
Sample Collection Date: 03/20/09

Loc ID: IR24MW05A
ARF: 58422
APPL ID: AX93079
QCG: $GAHP-090328B-131169

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/29/09	03/29/09
8015	Surrogate: BFB-FID (S)	86.0	75-125		%	03/29/09	03/29/09

8/04/2009

Quant Method:	HBTXGM.M
Run #:	0327H58
Instrument:	Harpo
Sequence:	090305
Dilution Factor:	1
Initials:	LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W047
Sample Collection Date: 03/20/09

Loc ID: IR24MW05A
ARF: 58422
APPL ID: AX93080
QCG: $GAHP-090328B-131169

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/29/09	03/29/09
8015	Surrogate: BFB-FID (S)	83.8	75-125		%	03/29/09	03/29/09

Quant Method: HBTXGM.M
Run #: 0327H60
Instrument: Harpo
Sequence: 090305
Dilution Factor: 1
Initials: LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

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1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912A005
Sample Collection Date: 03/20/09

Loc ID: IR46MW49A
ARF: 58422
APPL ID: AX93081
QCG: $GAHP-090328B-131169

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/29/09	03/29/09
8015	Surrogate: BFB-FID (S)	87.8	75-125		%	03/29/09	03/29/09

8/24/2009

Quant Method:	HBTXGM.M
Run #:	0327H61
Instrument:	Harpo
Sequence:	090305
Dilution Factor:	1
Initials:	LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
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Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912D043
Sample Collection Date: 03/20/09

Loc ID: IR33MW02
ARF: 58422
APPL ID: AX93082
QCG: $GAHP-090328B-131169

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/29/09	03/29/09
8015	Surrogate: BFB-FID (S)	81.8	75-125		%	03/29/09	03/29/09

8/04/2009

Quant Method:	HBTXGM.M
Run #:	0327H64
Instrument:	Harpo
Sequence:	090305
Dilution Factor:	1
Initials:	LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H035
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93083
QCG: $GAHP-090328A-131170

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/28/09	03/28/09
8015	Surrogate: BFB-FID (S)	92.2	75-125		%	03/28/09	03/28/09

8/04/2009

Quant Method: HBTXGM.M
Run #: 0327H32
Instrument: Harpo
Sequence: 090305
Dilution Factor: 1
Initials: LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912D042
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93084
QCG: $GAHP-090328A-131170

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/28/09	03/28/09
8015	Surrogate: BFB-FID (S)	97.2	75-125		%	03/28/09	03/28/09

8/04/09

Quant Method:	HBTXGM.M
Run #:	0327H33
Instrument:	Harpo
Sequence:	090305
Dilution Factor:	1
Initials:	LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

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Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W043
Sample Collection Date: 03/20/09

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93085
QCG: $GAHP-090328B-131169

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/29/09	03/29/09
8015	Surrogate: BFB-FID (S)	93.3	75-125		%	03/29/09	03/29/09

8/3/2/09

Quant Method:	HBTXGM.M
Run #:	0327H52
Instrument:	Harpo
Sequence:	090305
Dilution Factor:	1
Initials:	LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912A006
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR46MW51A
ARF: 58422
APPL ID: AX93086
QCG: $GAHP-090328B-131169

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/29/09	03/29/09
8015	Surrogate: BFB-FID (S)	107	75-125		%	03/29/09	03/29/09

8L04-2709

Quant Method: HBTXGM.M
Run #: 0327H59
Instrument: Harpo
Sequence: 090305
Dilution Factor: 1
Initials: LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
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Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912X011
Sample Collection Date: 03/20/09

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93087
QCG: $GAHP-090328B-131169

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/29/09	03/29/09
8015	Surrogate: BFB-FID (S)	88.7	75-125		%	03/29/09	03/29/09

8/04/2009

Quant Method: HBTXGM.M
Run #: 0327H53
Instrument: Harpo
Sequence: 090305
Dilution Factor: 1
Initials: LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912A004
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58422
APPL ID: AX93088
QCG: $GAHP-090328B-131169

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/29/09	03/29/09
8015	Surrogate: BFB-FID (S)	84.4	75-125		%	03/29/09	03/29/09

8/4/2009

Quant Method: HBTXGM.M
Run #: 0327H54
Instrument: Harpo
Sequence: 090305
Dilution Factor: 1
Initials: LF

Printed: 03/31/09 2:37:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20642A7
SDG #: 58422
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 4/23/09
Page: 1 of 1
Reviewer: a
2nd Reviewer: M

METHOD: GC TPH as Gasoline (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/20/09
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15%
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	D = 7+8.
X.	Field blanks	ND	TB = 11.12.13.15.16, 3

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

M +2D2

1 1	0912W044	11 1	0912H035 T	21 1	090328WMB	31	
2 1	0912W045**	12 1	0912D042 T	22 2	090328WMB	32	
3 1	0912X010	13	0912W043 T	23		33	
4	0912H037	14	0912A006**	24		34	
5	0912H038	15	0912X011 T	25		35	
6	0912H039**	16	0912A004 T	26		36	
7 1	0912W046	17		27		37	
8 1	0912W047	18		28		38	
9	0912A005	19		29		39	
10	0912D043	20		30		40	

Notes:

LDC #: 20642A7
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer:

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 20642AT
SDG #: 58422

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 20642A7
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: 4

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (20 std)	Recalculated CF (20 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	19A2	3/5/09	ERO	24724	24724	18864	18864	14	14
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20642A7
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC _____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	0327H35	3/28/09	~~DR~~ GRO	18864	16151	16151	14	14
2	0327H38	3/28/09	GRO	18864	17304	17304	8.3	8.3
3	0327H49	3/28/09	GRO	18864	17688	17688	6.2	6.2
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 20642A7
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: ✓ **GC** __ **HPLC**

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
BFB	DB-624	35.000	34.222	97.8	97.8	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 8064-A7
SDG #: See cover

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC __HPLC

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory control sample percent recovery
SC = Concentration
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 090328WA LCS

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	300	NA	261	NA	87.0	87.0				
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 2064AT
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: / **GC** __ **HPLC**

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. ND Compound Name _____

Concentration = _____

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

SAMPCALew.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 23, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58459

Sample Identification

0913B035
0913B032
0913B035MS
0913B035MSD

**Indicates sample underwent Level IV review

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 8015 for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

Sample 0913B032 was identified as a trip blank. No total petroleum hydrocarbons as gasoline contaminants were found in this blank.

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

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913B035
Sample Collection Date: 03/23/09

Loc ID: IR46MW52A
ARF: 58459
APPL ID: AX93180
QCG: $GAHP-090328B-131169

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/29/09	03/29/09
8015	Surrogate: BFB-FID (S)	79.6	75-125		%	03/29/09	03/29/09

8/04/2009

Quant Method:	HBTXGM.M
Run #:	0327H65
Instrument:	Harpo
Sequence:	090305
Dilution Factor:	1
Initials:	LF

Printed: 03/31/09 2:47:22 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913B032
Sample Collection Date: 03/23/09

Loc ID: TRIP BLANK
ARF: 58459
APPL ID: AX93181
QCG: $GAHP-090328B-131169

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	03/29/09	03/29/09
8015	Surrogate: BFB-FID (S)	82.3	75-125		%	03/29/09	03/29/09

Quant Method: HBTXGM.M
Run #: 0327H63
Instrument: Harpo
Sequence: 090305
Dilution Factor: 1
Initials: LF

Printed: 03/31/09 2:47:22 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20642B7
SDG #: 58459
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 4/23/09
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC TPH as Gasoline (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/23/09
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15%
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	TB = 2

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0913B035** W	11	090328WM13	21		31	
2	0913B032	12		22		32	
3	0913B035MS	13		23		33	
4	0913B035MSD	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 20642B7
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: 4

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 20642BT
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 20640BT
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (20 std)	Recalculated CF (20 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	1842	3/5/09	4RO	24724	24724	18864	18864	14	14
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INICLC.1SB

LDC #: 20642B7
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer:
2nd Reviewer: K

METHOD: GC ✓ HPLC_____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	0327449	3/28/09	GRO	18864	17688	17688	6.2	6.2
2	0327462	3/29/09	GRO	18864	17920	17920	5.0	5.0
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 2664-2B7
SDG #: see cover

METHOD: ✓ GC __ HPLC

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: 4

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
BFB	DB-624	35.000	27.871	79.6	79.6	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 20642B7
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: 9
2nd Reviewer: K

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked sample concentration SC = Sample concentration
SA = Spike added
RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike MSD = Matrix spike duplicate

MS/MSD samples: 9/4

Compound	Spike Added (µg/L)		Sample Conc. (µg/L)	Spike Sample Concentration (µg/L)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	300	300	ND	266	259	88.7	88.7	86.3	86.3	2.7	2.7
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20642BT
SDG #: See cover

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC __HPLC

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory control sample percent recovery
SC = Concentration
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 090329WLCS

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	300	NA	258	NA	86.0	86.0				
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 2064-2B7
SDG #: 30 COWS

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: ✓ GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound in the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. ND Compound Name _____

Concentration = _____

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

SAMPCALew.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 27, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58508

Sample Identification

0913D047
0913G007**
0913G008
0913D045
0913D046
0913X016
0913G006

**Indicates sample underwent 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 8015 for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

Samples 0913D045, 0913X016, and 0913G006 were identified as a trip blanks. No total petroleum hydrocarbons as gasoline contaminants were found in these blanks.

Samples 0913D047 and 0913G008 were identified as equipment blanks. No total petroleum hydrocarbons as gasoline contaminants were found in these 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) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

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

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913D047
Sample Collection Date: 03/27/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR18MW100B
ARF: 58508
APPL ID: AX93818
QCG: $GAHP-090403A-131481

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	04/03/09	04/03/09
8015	Surrogate: BFB-FID (S)	88.3	75-125		%	04/03/09	04/03/09

8/04/2009

Quant Method: HBTXGM.M
Run #: 0402H43
Instrument: Harpo
Sequence: 090305
Dilution Factor: 1
Initials: LF

Printed: 04/13/09 1:13:15 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913G007
Sample Collection Date: 03/27/09

Loc ID: PA18MW09A
ARF: 58508
APPL ID AX93819
QCG: $GAHP-090403A-131481

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	04/03/09	04/03/09
8015	Surrogate: BFB-FID (S)	90.5	75-125		%	04/03/09	04/03/09

8/04/09

Quant Method: HBTXGM.M
Run #: 0402H44
Instrument: Harpo
Sequence: 090305
Dilution Factor: 1
Initials: LF

Printed: 04/22/09 10:56:53 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

AMENDED PAGE

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913G008
Sample Collection Date: 03/27/09

Loc ID: PA18MW09A
ARF: 58508
APPL ID AX93820
QCG: $GAHP-090403B-131482

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	04/03/09	04/03/09
8015	Surrogate: BFB-FID (S)	87.0	75-125		%	04/03/09	04/03/09

8/04/2009

Quant Method: HBTXGM.M
Run #: 0402H50
Instrument: Harpo
Sequence: 090305
Dilution Factor: 1
Initials: LF

Printed: 04/22/09 10:56:53 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

AMENDED PAGE

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913D045
Sample Collection Date: 03/27/09

Loc ID: TRIP BLANK
ARF: 58508
APPL ID: AX93821
QCG: $GAHP-090403A-131481

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	04/03/09	04/03/09
8015	Surrogate: BFB-FID (S)	77.3	75-125		%	04/03/09	04/03/09

8/04/2009

Quant Method: HBTXGM.M
Run #: 0402H26
Instrument: Harpo
Sequence: 090305
Dilution Factor: 1
Initials: LF

Printed: 04/13/09 1:13:15 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913D046
Sample Collection Date: 03/27/09

Loc ID: IR18MW100B
ARF: 58508
APPL ID AX93822
QCG: $GAHP-090403B-131482

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	04/03/09	04/03/09
8015	Surrogate: BFB-FID (S)	88.3	75-125		%	04/03/09	04/03/09

8/24/09

Quant Method: HBTXGM.M
Run #: 0402H51
Instrument: Harpo
Sequence: 090305
Dilution Factor: 1
Initials: LF

Printed: 04/22/09 10:56:54 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

AMENDED PAGE

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913X016
Sample Collection Date: 03/27/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: TRIP BLANK
ARF: 58508
APPL ID: AX93823
QCG: $GAHP-090403B-131482

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	04/03/09	04/03/09
8015	Surrogate: BFB-FID (S)	88.6	75-125		%	04/03/09	04/03/09

8/4/2009

Quant Method: HBTXGM.M
Run #: 0402H48
Instrument: Harpo
Sequence: 090305
Dilution Factor: 1
Initials: LF

Printed: 04/13/09 1:13:15 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

Gas-Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913G006
Sample Collection Date: 03/27/09

Loc ID: TRIP BLANK
ARF: 58508
APPL ID: AX93824
QCG: $GAHP-090403B-131482

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
8015	Gasoline	Not detected	20.0	8.60	ug/L	04/03/09	04/03/09
8015	Surrogate: BFB-FID (S)	83.2	75-125		%	04/03/09	04/03/09

8/04/09

Quant Method:	HBTXGM.M
Run #:	0402H49
Instrument:	Harpo
Sequence:	090305
Dilution Factor:	1
Initials:	LF

Printed: 04/13/09 1:13:15 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20642C7
SDG #: 58508
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 4/23/09
Page: 1 of 1
Reviewer: 9
2nd Reviewer: R

METHOD: GC TPH as Gasoline (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/27/09
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15%
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS/D
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	EB=1.3. TB=4.6.T.

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

MH2Os

1 1	0913D047	11	090403WMHB	21		31	
2 1	0913G007**	12	090403WBMB	22		32	
3	0913G008	13		23		33	
4 1	0913D045	14		24		34	
5	0913D046	15		25		35	
6	0913X016	16		26		36	
7	0913G006	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 20642C7
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: K

Method: ✓ GC ____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 20642C7
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 2064-CT
SDG #: Sec Conv

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (20 std)	Recalculated CF (20 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	ICA2	2/5/09	GRO	24724	24724	18864	18864	14	14
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INICLC.1SB

LDC #: 20642C7
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	04024418	4/3/09	GRO	18864	19822	19822	5.1	5.1
2	04024434	4/3/09	GRO	18864	17776	17776	5.8	5.8
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 20642C7
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: K

METHOD: ✓ **GC** ___ **HPLC**

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
BFB	DB-624	35.000	31.671	90.5	90.5	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 20642C7
SDG #: See cover

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: R

METHOD: ✓ GC __ HPLC

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration; SA = Spike added; LCS = Laboratory control sample percent recovery; SC = Concentration; LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 090403W

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	300	300 ~~NA~~	265	264 ~~NA~~	88.3	88.3	88.0	88.0	0.38	0.38
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20647C7
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. [illegible] Compound Name ND

Concentration =

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments:

SAMPCALew.wpd

Hunters Point Shipyard, 1Q09 GW Sampling Event
Data Validation Reports
LDC# 20642

TPH as Extractables

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 20, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58422

Sample Identification

0912W044
0912W045**
0912H037
0912H038
0912H039**
0912W046
0912W047
0912A005
0912D043
0912A006**

**Indicates sample underwent Level IV review

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 8015 for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

The percent relative standard deviations (%RSD) of calibration factors for selected compounds were less than or equal to 20.0% .

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 .

b. Calibration Verification

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

Date	Compound	%D	Affected Compound	Associated Samples	Flag	A or P
4/2/09	TPH as motor oil	17	TPH as motor oil	0912W044 0912W047 090325WMB	UJ5 (all non-detects)	A

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 total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

No field blanks were identified in this SDG.

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 with the following exceptions:

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
0912W047	ortho-Terphenyl	55.2 (60-140)	TPH as extractables	J13 (all detects) UJ13 (all non-detects)	P

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

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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 0912W046 and 0912W047 were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	0912W046	0912W047	
Diesel range organics	53	45	16

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 58422

SDG	Sample	Compound	Flag	A or P	Reason
58422	0912W044 0912W047	TPH as motor oil	UJ5 (all non-detects)	A	Continuing calibration (%D)
58422	0912W047	TPH as extractables	J13 (all detects) UJ13 (all non-detects)	P	Surrogate recovery (%R)

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 58422

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG 58422

No Sample Data Qualified in this SDG

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W044
Sample Collection Date: 03/20/09

Loc ID: IR07MW26A
ARF: 58422
APPL ID: AX93073
QCG: $DIHP-090325A-131158

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	03/25/09	04/02/09
EPA 8015B-	Motor Oil	Not detected UJ5	40.0	5.54	ug/L	03/25/09	04/02/09
EPA 8015B-	Surrogate: Octacosane (S)	82.0	60-140		%	03/25/09	04/02/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	70.0	60-140		%	03/25/09	04/02/09

8/24/2009

Quant Method: HTSC0323.M
Run #: 331111
Instrument: Apollo
Sequence: 090331
Dilution Factor: 1
Initials: EJ

Printed: 04/03/09 11:36:51 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W045
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR07MW24A
ARF: 58422
APPL ID: AX93074
QCG: $DIHP-090325A-131158

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	03/25/09	03/27/09
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	03/25/09	03/27/09
EPA 8015B-	Surrogate: Octacosane (S)	89.2	60-140		%	03/25/09	03/27/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	79.8	60-140		%	03/25/09	03/27/09

8/14/2009

Quant Method:	HTSC0323.M
Run #:	327024
Instrument:	Apollo
Sequence:	090327
Dilution Factor:	1
Initials:	EJ

Printed: 04/03/09 11:31:40 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H037
Sample Collection Date: 03/20/09

Loc ID: IR46MW48A
ARF: 58422
APPL ID: AX93076
QCG: $DIHP-090325A-131158

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	03/25/09	03/27/09
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	03/25/09	03/27/09
EPA 8015B-	Surrogate: Octacosane (S)	86.0	60-140		%	03/25/09	03/27/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	75.1	60-140		%	03/25/09	03/27/09

TW 4/2/09

Quant Method:	HTSC0323.M
Run #:	327025
Instrument:	Apollo
Sequence:	090327
Dilution Factor:	1
Initials:	EJ

Printed: 04/03/09 11:31:40 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H038
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR46MW47A
ARF: 58422
APPL ID: AX93077
QCG: $DIHP-090325A-131158

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	03/25/09	03/27/09
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	03/25/09	03/27/09
EPA 8015B-	Surrogate: Octacosane (S)	102	60-140		%	03/25/09	03/27/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	85.8	60-140		%	03/25/09	03/27/09

8/4/2009

Quant Method: HTSC0323.M
Run #: 327026
Instrument: Apollo
Sequence: 090327
Dilution Factor: 1
Initials: EJ

Printed: 04/03/09 11:31:40 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912H039
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR46MW50A
ARF: 58422
APPL ID: AX93078
QCG: $DIHP-090325A-131158

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	03/25/09	03/27/09
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	03/25/09	03/27/09
EPA 8015B-	Surrogate: Octacosane (S)	84.8	60-140		%	03/25/09	03/27/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	75.5	60-140		%	03/25/09	03/27/09

8/14/09

Quant Method:	HTSC0323.M
Run #:	327027
Instrument:	Apollo
Sequence:	090327
Dilution Factor:	1
Initials:	EJ

Printed: 04/03/09 11:31:40 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W046
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR24MW05A
ARF: 58422
APPL ID: AX93079
QCG: $DIHP-090325A-131158

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	53 ++	40.0	13.07	ug/L	03/25/09	03/27/09
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	03/25/09	03/27/09
EPA 8015B-	Surrogate: Octacosane (S)	83.2	60-140		%	03/25/09	03/27/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	73.1	60-140		%	03/25/09	03/27/09

++(T6) The analyst has noted that the chromatogram of this sample is mainly a match to hydrocarbons within the range of diesel fuel.

4/2/09

Quant Method:	HTSC0323.M
Run #:	327028
Instrument:	Apollo
Sequence:	090327
Dilution Factor:	1
Initials:	EJ

Printed: 04/03/09 11:31:40 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912W047
Sample Collection Date: 03/20/09

Loc ID: IR24MW05A
ARF: 58422
APPL ID: AX93080
QCG: $DIHP-090325A-131158

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	45 ++ J13	40.0	13.07	ug/L	03/25/09	03/27/09
EPA 8015B-	Motor Oil	Not detected U-J5	40.0 L3	5.54	ug/L	03/25/09	03/27/09
EPA 8015B-	Surrogate: Octacosane (S)	64.0	60-140		%	03/25/09	03/27/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	55.2 #	60-140		%	03/25/09	03/27/09

Nik 2709

= Recovery (or RPD) is outside QC limits.
++(T6) The analyst has noted that the chromatogram of this sample is mainly a match to hydrocarbons within the range of diesel fuel.

Quant Method:	HTSC0323.M
Run #:	327029
Instrument:	Apollo
Sequence:	090327
Dilution Factor:	1
Initials:	EJ

Printed: 04/03/09 3:29:40 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912A005
Sample Collection Date: 03/20/09

Loc ID: IR46MW49A
ARF: 58422
APPL ID: AX93081
QCG: $DIHP-090325A-131158

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	420 ++	40.0	13.07	ug/L	03/25/09	03/27/09
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	03/25/09	03/27/09
EPA 8015B-	Surrogate: Octacosane (S)	79.3	60-140		%	03/25/09	03/27/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	73.7	60-140		%	03/25/09	03/27/09

4/14/2009

++(T6) The analyst has noted that the chromatogram of this sample is mainly a match to hydrocarbons within the range of diesel fuel.

Quant Method: HTSC0323.M
Run #: 327030
Instrument: Apollo
Sequence: 090327
Dilution Factor: 1
Initials: EJ

Printed: 04/03/09 2:12:02 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912D043
Sample Collection Date: 03/20/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR33MW02
ARF: 58422
APPL ID: AX93082
QCG: $DIHP-090325A-131158

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	03/25/09	03/27/09
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	03/25/09	03/27/09
EPA 8015B-	Surrogate: Octacosane (S)	71.8	60-140		%	03/25/09	03/27/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	63.6	60-140		%	03/25/09	03/27/09

12/4/27/09

Quant Method: HTSC0323.M
Run #: 327031
Instrument: Apollo
Sequence: 090327
Dilution Factor: 1
Initials: EJ

Printed: 04/03/09 11:31:40 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0912A006
Sample Collection Date: 03/20/09

Loc ID: IR46MW51A
ARF: 58422
APPL ID: AX93086
QCG: $DIHP-090325A-131158

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	210 ++	40.0	13.07	ug/L	03/25/09	03/27/09
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	03/25/09	03/27/09
EPA 8015B-	Surrogate: Octacosane (S)	83.7	60-140		%	03/25/09	03/27/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	74.8	60-140		%	03/25/09	03/27/09

M 04/27/09

++(T3M) The analyst has noted that the chromatogram of this sample is mainly higher boiling hydrocarbons.

Quant Method:	HTSC0323.M
Run #:	327032
Instrument:	Apollo
Sequence:	090327
Dilution Factor:	1
Initials:	EJ

Printed: 04/03/09 2:11:46 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20642A8
SDG #: 58422
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 4/23/09
Page: 1 of 1
Reviewer: a
2nd Reviewer: K

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/20/09
IIa.	Initial calibration	A	%SD. Y 2
IIb.	Calibration verification/ICV	SW	%V ≤ 15/20
III.	Blanks	A	
IVa.	Surrogate recovery	SW	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D = 6 + 7
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation
MH 4/23/09

1	0912W044	11	090325WM13	21		31	
2	0912W045**	12		22		32	
3	0912H037	13		23		33	
4	0912H038	14		24		34	
5	0912H039**	15		25		35	
6	0912W046	16		26		36	
7	0912W047	17		27		37	
8	0912A005	18		28		38	
9	0912D043	19		29		39	
10	0912A006**	20		30		40	

Notes:

LDC #: 26648
SDG #: See Cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: N

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	Ø	✓		
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?		✓		
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?		✓		
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 20640A8
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 4
2nd Reviewer: R

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 26648
SDG #: Sauconer

METHOD: ✓ GC __ HPLC

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
What type of continuing calibration calculation was performed? __%D or __RPD

Y N N/A Were continuing calibration standards analyzed at the required frequencies?

Y N N/A Did the continuing calibration standards meet the %D / RPD validation criteria of ≤15.0%?

Level IV Only

Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Detector/ Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (limit)	Associated Samples	Qualifications
	4/2/09	331104	DB-5	Motor oil	17	( )	1, 7, Blk (ND)	J/UJ/A (S)
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
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						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		

LDC #: 20612A8
SDG #: See cover

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: T
2nd Reviewer: K

METHOD: ✓ GC __ HPLC

Are surrogates required by the method? Yes ✓ or No____.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were surrogates spiked into all samples and blanks?

Y (N) N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)		Qualifications
	7	DB-5	H	55.2	(60-140)	J13/UJ13/P (det+ND)
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene		
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Tripentyltin		
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin		
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate		
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

LDC #: 20642A8
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd reviewer: K

METHOD: ✓ GC ___ HPLC

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/L)		%RPD Limit_____	Qualification Parent only / All Samples
	6	7		
DRO	53	45	16	

Compound	Concentration ( )		%RPD Limit _____	Qualification Parent only / All Samples

LDC #: 20642A3
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC ✓ HPLC _____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (50 std)	Recalculated CF (50 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	1CA2	3/23/09	DRO	186053	186053	213970	213970	7.1	7.1
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INICLC.1SB

LDC #: 20642A8
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	327018	3/27/09	ORO	213970	206717	206717	3.4	3.4
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 20640A8
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: T
2nd reviewer: R

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
octacosane	DB-5	33.333	29.748	89.2	89.2	0
TPH	↓	↓	26.586	79.8	79.8	0

Sample ID: ___

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: ___

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 20648A8
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: ✓ GC __ HPLC

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory control sample percent recovery
SC = Concentration
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 090305WLCS

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)	667	NA	423	NA	63.4	63.4				
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 2064-A8
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer:
2nd Reviewer:

METHOD: ✓ GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 10 Compound Name DEO

Concentration = (67624619)(2000) / (213970)(1500)(2)

= 210.7 µg/L

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments:

SAMPCALew.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 23, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: Level IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58459

Sample Identification

0913B035
0913B035MS
0913B035MSD

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 8015 for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

The percent relative standard deviations (%RSD) of calibration factors for selected compounds were less than or equal to 20.0% .

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 .

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

No field blanks were identified in this SDG.

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.

VI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

VII. System Performance

The system performance was acceptable.

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.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG 58459

No Sample Data Qualified in this SDG

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913B035
Sample Collection Date: 03/23/09

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Loc ID: IR46MW52A
ARF: 58459
APPL ID: AX93180
QCG: $DIHP-090326B-131231

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	110 ++	40.0	13.07	ug/L	03/26/09	03/31/09
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	03/26/09	03/31/09
EPA 8015B-	Surrogate: Octacosane (S)	69.2	60-140		%	03/26/09	03/31/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	66.4	60-140		%	03/26/09	03/31/09

SC 04/08/09

++(T6) The analyst has noted that the chromatogram of this sample is mainly a match to hydrocarbons within the range of diesel fuel.

Quant Method:	HTSC0323.M
Run #:	331011
Instrument:	Apollo
Sequence:	090331
Dilution Factor:	1
Initials:	EJ

Printed: 04/01/09 2:30:02 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

LDC #: 20642B8
SDG #: 58459
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 4/03/09
Page: 1 of 1
Reviewer: 9
2nd Reviewer: M

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/23/09
IIa.	Initial calibration	A	~~RSD~~ . r^2
IIb.	Calibration verification/ICV	A	ICV ≤ 15%
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	
VI.	Compound Quantitation and CRQLs	A	
VII.	System Performance	A	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

1	0912B035	11	090326WMB	21		31	
2	0912B035MS	12		22		32	
3	0912B035MSD	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 20640B8
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: N

Method: ✓ GC ____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 20640B8
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 2064-B8
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (50 std)	Recalculated CF (50 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	1CA	3/23/09	DEO	186053	186053	213970	213970	7.1	7.1
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INICLC.1SB

LDC #: 2064-B8
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 11

METHOD: GC ✓ HPLC_____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	331007	3/31/09	DRO	213970	240443	240443	12	12.
2	331015	3/31/09	DRO	213970	192570	192570	10	10
3	331025	3/31/09	DRO	213970	194733	194733	9.0	9.0
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC.1S

LDC #: 20642B8
SDG #: Recovery

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Octacosane	DB-5	33.333	23.076	69.2	69.2	0
TPH	↓	↓	22.125	66.4	66.4	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 20642B8
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer: A

METHOD: ✓ GC ___ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked sample concentration SC = Sample concentration
SA = Spike added
RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike MSD = Matrix spike duplicate

MS/MSD samples: 2/3

Compound	Spike Added (µg/L)		Sample Conc. (µg/L)	Spike Sample Concentration (µg/L)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	--	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)	667	667	110	559	550	67.3	67.3	66.0	66.0	1.6	1.6
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20640B8
SDG #: See cover

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: 9
2nd Reviewer: K

METHOD: ✓ GC __HPLC

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration
SA = Spike added
LCS = Laboratory control sample percent recovery
SC = Concentration
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 090326W

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)	267	NA	407	NA	61.0	61.0				
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20642B8
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 9

METHOD: 1 GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 1 Compound Name DRO

Concentration = (3676940 1)(2000)(1) / (23970)(1500)(2)
= 114.6 µg/L

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments:

SAMPCALew.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Hunters Point Shipyard, 1Q09 GW Sampling Event

Collection Date: March 27, 2009

LDC Report Date: April 27, 2009

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: Level III & IV

Laboratory: APPL, Inc.

Sample Delivery Group (SDG): 58508

Sample Identification

0913D047
0913G007**
0913G008
0913D046

**Indicates sample underwent Level IV review

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 8015 for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Draft Sampling and Analysis Plan for the Basewide Groundwater Monitoring Program at Hunters Point Shipyard, San Francisco, CA (June 17, 2008) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008) 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 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 Level IV review. A 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.

Qualification Codes

1 Holding Times
2 Sample Preservation (Cooler Temp)
3 Sample Custody
4 Missing Deliverables
5 Calibration
6 Field Blanks
7 Laboratory Blanks
8 Matrix Spike (%)
9 Matrix Spike Duplicate (RPD or Duplicate Sample Analysis)
10 Laboratory Control Sample
11 ICP Interference Check
12 RPD Between Two Columns
13 Surrogates
14 Field Duplicates
15 Furnace QC
16 ICP Serial Dilution
17 Chemical Recoveries
18 Trip Blanks
19 Internal Standards
20 Linear Range Exceeded
21 Potential False Positives
22 Do not use, other result more technically sound
23 Other

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 the method.

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

b. Calibration Verification

Calibration verification was performed at 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 total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Samples 0913D047 and 0913G008 were identified as an equipment blanks. No total petroleum hydrocarbons as extractable contaminants were found in these 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 a Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VI. Compound Quantitation and CRQLs

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

VII. System Performance

The system performance was acceptable for samples on which a 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.

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

Hunters Point Shipyard, 1Q09 GW Sampling Event
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG 58508

No Sample Data Qualified in this SDG

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913D047
Sample Collection Date: 03/27/09

Loc ID: IR18MW100B
ARF: 58508
APPL ID: AX93818
QCG: $DIHP-090402A1-131640

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	04/02/09	04/13/09
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	04/02/09	04/13/09
EPA 8015B-	Surrogate: Octacosane (S)	81.7	60-140		%	04/02/09	04/13/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	76.6	60-140		%	04/02/09	04/13/09

4/13/09

Quant Method: HTSC0323.M
Run #: 410052
Instrument: Apollo
Sequence: 090410
Dilution Factor: 1
Initials: EJ

Printed: 04/13/09 3:47:12 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913G007
Sample Collection Date: 03/27/09

Loc ID: PA18MW09A
ARF: 58508
APPL ID AX93819
QCG: $DIHP-090402A1-131640

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	04/02/09	04/13/09
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	04/02/09	04/13/09
EPA 8015B-	Surrogate: Octacosane (S)	87.1	60-140		%	04/02/09	04/13/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	82.2	60-140		%	04/02/09	04/13/09

Ej 4-28-09

Quant Method: HTSC0323.M
Run #: 410053
Instrument: Apollo
Sequence: 090410
Dilution Factor: 1
Initials: EJ

Printed: 04/22/09 10:56:53 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

AMENDED PAGE

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913G008
Sample Collection Date: 03/27/09

Loc ID: PA18MW09A
ARF: 58508
APPL ID AX93820
QCG: $DIHP-090402A1-131640

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	04/02/09	04/13/09
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	04/02/09	04/13/09
EPA 8015B-	Surrogate: Octacosane (S)	72.2	60-140		%	04/02/09	04/13/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	61.7	60-140		%	04/02/09	04/13/09

8/04/2009

Quant Method: HTSC0323.M
Run #: 410054
Instrument: Apollo
Sequence: 090410
Dilution Factor: 1
Initials: EJ

Printed: 04/22/09 10:56:53 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

AMENDED PAGE

EPA 8015B TPH Diesel Water

Kleinfelder
1970 Broadway, Suite 710
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Patricia Walters
Project: 101720 Hunters Point Shipyard
Sample ID: 0913D046
Sample Collection Date: 03/27/09

Loc ID: IR18MW100B
ARF: 58508
APPL ID AX93822
QCG: $DIHP-090402A1-131640

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8015B-	Diesel Fuel	Not detected	40.0	13.07	ug/L	04/02/09	04/13/09
EPA 8015B-	Motor Oil	Not detected	40.0	5.54	ug/L	04/02/09	04/13/09
EPA 8015B-	Surrogate: Octacosane (S)	81.5	60-140		%	04/02/09	04/13/09
EPA 8015B-	Surrogate: Ortho-Terphenyl (S)	73.6	60-140		%	04/02/09	04/13/09

EJ 4/22/09

Quant Method: HTSC0323.M
Run #: 410055
Instrument: Apollo
Sequence: 090410
Dilution Factor: 1
Initials: EJ

Printed: 04/22/09 10:56:54 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

AMENDED PAGE

LDC #: 20642C8
SDG #: 58508
Laboratory: APPL, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III/IV

Date: 4/23/09
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/27/09
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV = 15%
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	A	Not reviewed for Level III validation.
VI.	Compound Quantitation and CRQLs	A	Not reviewed for Level III validation.
VII.	System Performance	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	EB = 1.3

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation

1	0913D047 W	11	090402WMB	21		31	
2	0913G007**	12		22		32	
3	0913G008	13		23		33	
4	0913D046	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 20642C8
SDG #: See Cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: M

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 20642C8
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: a

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 20642C8
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (50 std)	Recalculated CF (50 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	1CA2	3/23/09	DRO	186053	186053	213970	213970	7.1	7.1
2									
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INICLC.1SB

LDC #: 20642C8
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: M

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	410047	7/13/09	DRO	213970	221736	221736	3.6	3.6
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 28642C8
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 4
2nd reviewer: 4

METHOD: ✓ **GC** __ **HPLC**

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Octacosane	DB-5	33.333	29.044	87.1	87.1	0
TPH	↓	↓	27.399	82.2	82.2	0

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 20642C8
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: 9
2nd Reviewer: d

METHOD: ✓ GC __ HPLC

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

RPD = I SSCLCS - SSCLCSD I * 2/(SSCLCS + SSCLCSD)

Where: SSC = Spiked sample concentration; SA = Spike added; LCS = Laboratory control sample percent recovery; SC = Concentration; LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 090402W

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)	667	NA	516	NA	77.4	77.4				
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 20642c8
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. ND Compound Name _____

Concentration = _____

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

SAMPCALew.wpd