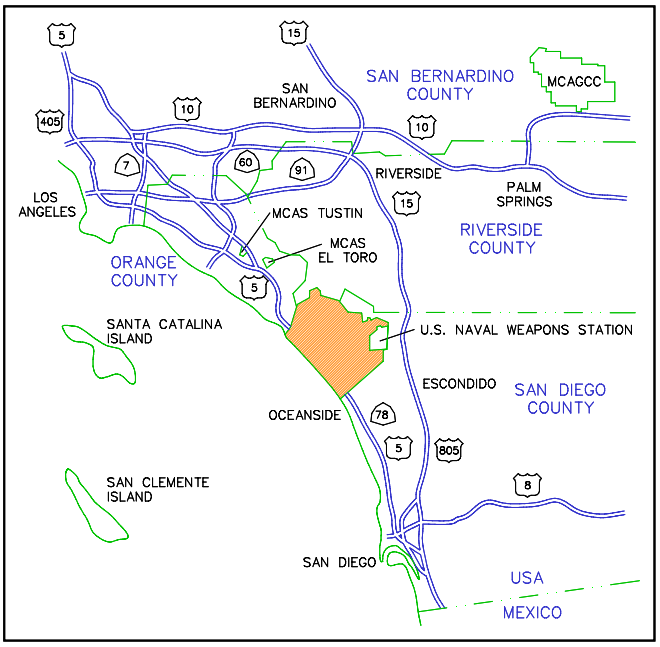
Quarterly Groundwater Monitoring Report for UST Site 1491
Marine Corps Base Camp Pendleton



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TASK ORDER: 0102
by

Battelle

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April 2006

QUARTERLY
GROUNDWATER MONITORING REPORT
FOR UST SITE 1491
MARINE CORPS BASE CAMP PENDLETON

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Quarterly
Groundwater Monitoring Report
for UST Site 1491
Marine Corps Base Camp Pendleton

Approved: _____ 14 April 06

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ABBREVIATIONS AND ACRONYMS

amsl	above mean sea level
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
btoc	below top of casing
DEH	(San Diego County) Department of Environmental Health
DHS	(California) Department of Health Services
DIPE	di-isopropyl ether
DO	dissolved oxygen
EB	equipment blank
ETBE	ethyl-*tert*-butyl ether
FB	field blank
ID	identification
MCB	Marine Corps Base
MCL	maximum contaminant level
MNA	monitored natural attenuation
mS/cm	millisiemens per centimeter
MTBE	methyl-*tert*-butyl ether
mV	millivolt
MW	monitoring well
NA	not analyzed
NFESC	Naval Facilities Engineering Service Center
NPWC	Navy Public Works Center
NS	not sampled
NTU	nephelometric turbidity units
ORC®	oxygen release compound
ORP	oxidation-reduction potential
PAH	polycyclic aromatic hydrocarbon
QA	quality assurance
QA/QC	quality assurance/quality control
QC	quality control
RWQCB	Regional Water Quality Control Board, San Diego Region
SAM	Site Assessment and Mitigation
SB	soil boring
TAME	*tert*-amyl-methyl ether
TB	trip blank

TBA	*tert*-butyl alcohol
TCE	trichloroethene
TDS	total dissolved solids
TMB	trimethylbenzene
TOC	total organic carbon
TPH-D	total petroleum hydrocarbons extractable as diesel
TPH-E	total petroleum hydrocarbons extractable
TPH-JF	total petroleum hydrocarbons extractable as jet fuel
TPH-MO	total petroleum hydrocarbons extractable as motor oil
U.S. EPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

Section 1.0: INTRODUCTION AND SITE DESCRIPTION

This report contains groundwater monitoring data collected from Site 1491, Marine Corps Base (MCB) Camp Pendleton, during the most recent groundwater sampling event (January 2006) and includes historical data from all previous groundwater monitoring events. This task was initiated under Task Order No. 0102 for the Naval Facilities Engineering Service Center (NFESC) Contract No. N47408-01-D-8207.

Site 1491 is positioned in the foothills of the Peninsular Ranges. The site, which consists of the region surrounding Building 1491 and the former underground storage tanks (USTs), is located within MCB Camp Pendleton along 16th Street, approximately 150 ft northeast of the F Street and 16th Street intersection. Figures 1 and 2 show the location of Site 1491 within MCB Camp Pendleton, and the location of Site 1491 within the 14 Area, respectively. The site itself is relatively flat, and has a driveway and parking area sloping to the south. The former UST area is adjacent to the utility room of the building in the parking area (Figure 3), and is completely covered with asphalt pavement. The site is located on a small hill with approximately 40 ft of vertical relief on the eastern side of the site. Surface drainage at the site and vicinity is towards a small, unnamed ephemeral stream, located approximately 400 ft west of the site. The stream discharges into the southerly draining Pilgrim Creek, which is a tributary to the San Luis Rey River. According to the *Water Quality Control Plan for the San Diego Basin* (RWQCB, 1998), Site 1491 is located within the Mission Hydrologic Subarea of the Lower San Luis Hydrologic Area in the San Luis Rey Hydrologic Unit. Groundwater in this area has supply uses beneficial to municipal and domestic supply, agricultural supply, industrial process supply, and industrial service supply. However, no groundwater supply wells are located within approximately 1.8 miles (9,580 ft) of the site.

Based on available geologic and hydrogeologic literature, as well as observations made during site assessment activities (Battelle, 1999a), the geology at Site 1491 primarily consists of fine-grained silty sands and poorly consolidated sandstone overlying weathered granodiorite. The sandy lithologies are of the Middle-Eocene Santiago Formation of the La Jolla Group. The weathered granodioritic bedrock was encountered across the site beginning at 23 to 25 ft below ground surface (bgs). The bedrock is part of the Cretaceous igneous intrusion that underlies this part of the base.

Prior to UST removal on July 12, 1996, Site 1491 contained two (2) 1,000-gallon, reinforced concrete tanks. Each tank had approximately 30 ft of single-wall steel 1-inch-diameter supply-and-return piping used for storage and transfer of diesel fuel. The tanks were 7 ft in height (extending 12 inches above ground) and 6 ft in diameter. In addition, the USTs had remote fill pipes. Both sets of supply-and-return pipelines extended underground approximately 18 ft to the utility room. Excavation dimensions were 13 by 25 ft and approximately 7.5 ft in depth. Following excavation, the area was backfilled with the excavated soils and with clean fill to replace the void created by removing tanks and pipelines. The information presented above was obtained from the Navy Public Works Center UST removal report (NPWC, 1997).

Following the preliminary site investigation activities conducted by the NPWC, Battelle conducted an extensive site assessment in 1998 to determine the lateral and vertical extent of petroleum hydrocarbons in the soil and groundwater. Based on soil sample analytical results collected during each of these events, it appears that petroleum hydrocarbon-impacted soil at Site 1491 is limited to the former tank cavity, as well as the region directly to the east and south. The maximum total petroleum hydrocarbon (TPH) quantified as diesel (D) concentration that has been detected is 15,000 mg/kg, and is located in the center of the former UST excavation at depths of 11 and 19 ft bgs. For a complete description of the site investigation conducted at Site 1491, as well as soil and groundwater analytical

results from the investigation, refer to the *Final Site Assessment Report for Former Underground Storage Tank Site 1491* (Battelle, 1999a).

From March through July 2002, additional site assessment activities were conducted by Battelle at former UST Site 1491 to further delineate the lateral and vertical extent of hydrocarbon constituents in the soil, install additional groundwater monitoring wells at the site, further assess the subsurface groundwater plume, and ensure that contaminant migration was not occurring. For a complete description of the 2002 site assessment activities, refer to the following report: *Addendum to the Site Assessment Report for Former UST Site 1491, Marine Corps Base Camp Pendleton, Oceanside, California* (Battelle, 2002).

Based on discussions with the RWQCB, it was determined that excavation of contaminated soils, to the extent practicable, should be conducted at former UST Site 1491. As a result, in September 2005, Battelle submitted the *Final Interim Remedial Action Plan for Site 1491, Marine Corps Base Camp Pendleton* (Battelle, 2005) which outlined proposed soil excavation activities for former UST Site 1491. Following RWQCB approval, soil excavation activities were conducted at Site 1491 during January 2006 and approximately 690 yd^3 of soil was removed from the site. As part of this effort, three existing groundwater monitoring wells in the vicinity of the tank cavity were destroyed prior to the excavation, and two groundwater monitoring wells were reinstalled in the vicinity of the tank cavity following the remedial action. Please refer to the *Summary Report for Remedial Action Activities at Site 1491 Marine Corps Base Camp Pendleton* (Battelle, 2006) for a detailed description of soil excavation and groundwater monitoring well destruction and installation activities performed at former UST Site 1491. Figure 3 shows the extent of the soil excavation at Site 1491.

Section 2.0: WATER-LEVEL MEASUREMENTS AND GROUNDWATER SAMPLING

Six existing groundwater monitoring wells (1491-MW05 through 1491-MW10), as well as two newly installed groundwater monitoring wells at former UST Site 1491 (1413-MW11 and 1491-MW12), were sampled during the January 2006 sampling event. Groundwater monitoring wells 1491-MW01, 1491-MW02, and 1491-MW03 were destroyed during interim remedial activities (i.e., excavation) conducted at Site 1491, and are no longer a part of the groundwater monitoring network at the site. Furthermore, due to the presence of a small layer of free product, no samples were collected from 1491-MW04.

Groundwater samples were collected using the low-flow sampling technique during the January 2006 sampling event. A portable micropurge pump was used to purge and sample each well. Following a complete round of groundwater level measurements at the site, the pump inlet tubing was carefully lowered to the middle of the screened interval of each well a minimum of two hours prior to the initiation of purging (this process minimizes turbidity within the well). Following the initiation of purging, the water level in each well was measured during drawdown to help determine the most appropriate flowrate for the well.

Prior to the acquisition of groundwater samples, the depth to groundwater was measured and recorded in each of the wells. Analyses for the groundwater samples included on-site water quality parameter readings, as well as analyses for various organic and inorganic compounds by a stationary laboratory. The following subsections describe procedures followed in the field, as well as the various analyses performed on groundwater samples collected from Site 1491.

2.1 Field Data Collection

2.1.1 Water-Level Measurements. Water-level measurements were collected in accordance with the procedures provided in the *Final Project Plan/Sampling and Analysis Plan for Remediation of Various Former UST Sites in Areas 13, 14, 15, and 21 at MCB Camp Pendleton* (Battelle, 1999b). All data were recorded in a field logbook dedicated to Site 1491. Hard copies of the logbook sheets containing the field data from the January 2006 sampling event are included in Appendix A of this report. An oil-water interface probe was used to monitor the depth to groundwater and to check for the presence of free product.

Water-level data collected from groundwater monitoring wells 1491-MW05, 1491-MW07, 1491-MW08, 1491-MW09, and 1491-MW10 were used to determine groundwater flow direction and the hydraulic gradient at Site 1491. Groundwater monitoring well 1491-MW04 was not used in the calculation because approximately 0.05 ft of measurable free product was detected in this well during January 2006. In addition, 1491-MW11 and 1491-MW12 were not used because they were installed in the excavation backfill material, which does not represent the natural site hydraulic conditions. Based on the water levels collected during January 2006, three-point calculations indicated a groundwater flow direction of approximately N46°E with an average hydraulic gradient of 0.007 ft/ft. A site map showing groundwater elevations measured during January 2006 is presented in Figure 4. Water-level and free product measurements were taken each quarter from the top of casing, and the results are presented in Table 1.

2.1.2 Water Quality Parameters. Water quality parameters, including temperature, pH, conductivity, dissolved oxygen (DO), turbidity, salinity, and oxidation-reduction potential (ORP), were collected throughout the purging process.

The groundwater monitoring well network sampled at Site 1491 during January 2006 was first micropurged, which involves pumping at much lower rates than traditional purging methods. The objective of micropurging is to minimize the stress to the groundwater system by decreasing drawdown caused by pumping. Pumping at low flowrates effectively isolates the screened interval from the overlying (stagnant) casing water, thereby sampling water from the screened interval only. Typically, flowrates on the order of 0.1 to 0.5 L/min are used during micropurging. Water is purged from the well until the field measurements of pH, temperature, DO, ORP, specific conductivity, and turbidity stabilize. Groundwater samples are collected immediately following parameter stabilization.

Table 2 provides the final field parameter readings collected immediately prior to sample collection during all groundwater sampling events. Copies of the original field data collection log sheets for the January 2006 sampling event are provided in Appendix A.

2.2 Analytical Results

Groundwater samples were collected at former UST Site 1491 during January 2006 in accordance with the *Site Assessment and Mitigation (SAM) Manual* (DEH, 2004). Table 3 provides a summary of groundwater sampling methods, analytes, requirements, and analytical methods for the current groundwater monitoring event. All samples were shipped via an overnight courier under chain-of-custody documentation to Alpha Analytical, Inc., of Sparks, NV, for organic analyses. Alpha Analytical, Inc., is a California Department of Health Services (DHS)-certified laboratory.

The samples were analyzed for the various parameters listed below:

- Total petroleum hydrocarbons extractable (TPH-E) as diesel (-D), and motor oil (-MO)
- Volatile organic compounds (VOCs)
- Benzene, toluene, ethylbenzene, and xylenes (BTEX)/methyl-*tert*-butyl ether (MTBE)
- Polycyclic aromatic hydrocarbons (PAHs)
- Monitored natural attenuation (MNA) parameters:
  - Total organic carbon (TOC)
  - Methane
  - Nitrate/nitrite/sulfate
  - Manganese/lead/iron
  - Alkalinity/total dissolved solids (TDS).

Groundwater samples collected at Site 1491 during the January 2006 sampling event indicated that TPH-D was present in the following wells: 1491-MW05 (1.0 mg/L), 1491-MW09 (0.088 mg/L), 1491-MW11 (3.5 mg/L), and 1491-MW12 (2.5 mg/L). The TPH-D detections in 1491-MW05, 1491-MW11, and 1491-MW12 exceed the Water Quality Criterion (i.e., taste and odor threshold) for TPH-D of 0.10 mg/L outlined in the amended *Water Quality Control Plan for the San Diego Basin* (RWQCB, 1998). Benzene was detected in well 1491-MW12 at a concentration of 1.5 μg/L, which exceeds its maximum contaminant level (MCL) of 1.0 μg/L. With the exception of trichloroethene (TCE), which is not suspected to be associated with the former UST release, no other VOCs and no PAHs were detected in the groundwater at former UST Site 1491 during January 2006.

TCE was detected in wells 1491-MW06 and 1491-MW10 at concentrations of 31 and 2.3 μg/L, respectively. These two wells serve as sentry wells for the UST groundwater monitoring well network, and no TPH constituents have been detected in these wells. Therefore, it appears that a separate source may be creating a chlorinated solvent plume in the southeastern region of this site. The TCE detection in well 1491-MW06 exceeds its MCL (5 μg/L).

Groundwater analytical results from the January 2006 sampling event, as well as historical groundwater sampling data from former UST Site 1491, are presented in Table 2. Copies of the laboratory analytical reports for the most recent quarterly sampling event are provided in Appendix B. Figure 5 shows all hydrocarbon contaminant concentrations measured in the groundwater during the four most recent quarterly sampling events for 1491-MW04 through 1491-MW12. Figure 6 presents historical TPH, BTEX, naphthalene, and trimethylbenzene (TMB) concentrations for 1491-MW01 through 1491-MW12. Note that contaminants measured at nondetectable levels during a particular sampling event were included on the historical plots as zero, although detection limits varied from sampling event to sampling event. Figure 6 illustrates fluctuating low-level concentrations of TPH-D in 1491-MW05, as well as low levels of TPH-D during January 2006 in 1491-MW09, 1491-MW11 and 1491-MW12.

2.3 Evaluation of Biological Indicator Parameters

Specific chemical indicators of biodegradation were measured during the January 2006 sampling event in order to monitor biological processes that contribute to natural attenuation of hydrocarbon-based fuels. These parameters include electron acceptors (DO, nitrate, and sulfate), metabolic byproducts (methane, ferrous iron, and manganese), and general indicators of biological activity (alkalinity and ORP). When these parameters are involved in biological reactions that result in degradation of contaminants, predictable changes in the concentrations of these parameters result. Electron acceptors are consumed during biodegradation, resulting in lower concentrations of these compounds in the contaminated area. Metabolic byproducts are produced, resulting in increased concentrations of these compounds in the contaminated area. Results from these analyses for each of the sampling events conducted at Site 1491 are presented in Table 2.

The following paragraphs describe reported concentrations from the most recent sampling event in wells 1491-MW05 through 1491-MW12.

Dissolved oxygen concentrations were relatively low in monitoring wells across Site 1491 in January 2006, with values ranging from 0 (1491-MW05, 1491-MW10) to 3.12 mg/L (1491-MW12). Higher levels of dissolved oxygen were observed in groundwater monitoring wells reinstalled in the vicinity of the former tank cavity following the excavation. This is likely the result of the application of oxygen release compound (ORC®) to the excavation prior to backfilling.

Nitrate levels during the January 2006 sampling event were measured at <0.25, 15, 0.88, <0.25, 10, 10, <0.25, and <0.25 mg/L in wells 1491-MW05, 1491-MW06, 1491-MW07, 1491-MW08, 1491-MW09, 1491-MW10, 1491-MW11, and 1491-MW12, respectively. Higher nitrate levels were observed in groundwater monitoring wells located further away from the source area.

Sulfate concentrations during the January 2006 sampling event ranged from 47J mg/L in well 1491-MW12 to 650J mg/L in well 1491-MW10. Higher sulfate levels were observed in wells with lower or non-detectable concentrations of petroleum hydrocarbon constituents, which would be expected.

Reduced iron (Fe^{2+}) concentrations fell below the detection limit (<0.050 mg/L) in all wells except 1491-MW05 (2.3J mg/L) and 1491-MW11 (0.4J mg/L) during the January 2006 sampling event. With the exception of 1491-MW12, these wells are located in the vicinity of the former source area and have the highest hydrocarbon concentrations at the site. Therefore, elevated reduced iron concentrations in these wells may be a result of the occurrence of hydrocarbon biodegradation.

Reduced manganese (Mn^{2+}) fell below the detection limit (<0.0050 mg/L) in wells 1491-MW06 and 1491-MW07. Reduced manganese (Mn^{2+}) concentrations were measured at 1.9, 0.034,

0.0085, 0.60, 2.8, and 4.1 µg/L in wells 1491-MW05, 1491-MW08, 1491-MW09, 1491-MW10, 1491-MW11, and 1491-MW12, respectively.

Methane was detected in wells 1491-MW05, 1491-MW11, and 1491-MW12 in January 2006 at concentrations of 200, 280, and 120 µg/L, respectively. These three wells exhibit the highest hydrocarbon concentrations at former UST Site 1491. Methane fell below the detection limit (<10 µg/L) in all other wells during the January 2006 sampling event.

Alkalinity concentrations during the January 2006 sampling event ranged from 360 mg/L in 1491-MW07 to 1,000 mg/L in 1491-MW12.

Oxidation-reduction potential values in the January 2006 sampling event ranged from -93 millivolts (mV) in well 1491-MW05 to 268 mV in well 1491-MW11.

Groundwater samples collected at former UST Site 1491 indicate that, in general, electron acceptors are depleted in the source area (with the exception of some DO measurements which may be the result of the recent ORC® application following excavation activities) and in wells with higher levels of petroleum constituents (1491-MW05, 1491-MW11, and 1491-MW12). Conversely, metabolic byproducts of hydrocarbon mineralization are elevated in the source area, as well as in wells with higher hydrocarbon levels. These trends would be expected, and provide evidence that natural attenuation of petroleum constituents in groundwater may be occurring at former UST Site 1491. Acquisition of biological indicator parameters will continue during subsequent quarterly groundwater monitoring events conducted at Site 1491 to further evaluate the occurrence of natural attenuation at this site.

Section 3.0: QUALITY ASSURANCE/QUALITY CONTROL

All groundwater samples were collected and analyzed in accordance with the United States Environmental Protection Agency (U.S. EPA) methods stated in the *Final Project Plan/Sampling and Analysis Plan for Remediation of Various Former UST Sites in Areas 13, 14, 15, and 21 at MCB Camp Pendleton* (Battelle, 1999b), as summarized in Table 3. All organic samples were analyzed within the analytical holding times. The analytical laboratory was required to maintain certification from DHS for the analytical methods performed on the samples. Alpha Analytical, Inc. analyzed all organic groundwater samples. Samples were analyzed according to the *Quality Assurance Plan for Alpha Analytical, Inc.* (Alpha Analytical, 2004).

Laboratory quality control (QC) summaries for the most recent quarterly sampling events are provided as Appendix C. The laboratory's quality assurance (QA) oversight involved the performance of a first-level screening of the data being provided and an indication of any deviations from their precision, accuracy, detection limit, or laboratory quality assurance/quality control (QA/QC) criteria. A representative from the laboratory signed the data sheets, ensuring that this screening described above had been completed. Subsequently, Battelle completed data review by comparing the chain-of-custody and field notebook entries with the data for each sample. This was done by comparing hard copies of analytical reports to electronically entered data within Battelle. Review of these summaries confirmed that data quality objectives were met. Additionally, the analytical data, along with the associated laboratory QC information, was forwarded to an independent data validation service for data validation. A U.S. EPA Level III data validation was performed on 90% of the groundwater samples; the remaining 10% of the samples underwent a Level IV data validation.

The results indicated that the data generally met all analytical criteria. There were a few exceptions to the analytical criteria as noted in the laboratory validation reports:

- The holding time requirement was exceeded for the ferrous iron analyses for samples collected during the January 2006 sampling event.
- The MS/MSD relative percent difference for the sulfate analyses was slightly above the acceptable range for samples collected during the January 2006 sampling event.
- The MS and MSD percent recoveries for the total organic carbon analyses were slightly below the acceptable range for samples collected during the January 2006 sampling event.

All exceptions to the analytical criteria resulted in the assignment of "J" flags to the results by Laboratory Data Consultants, Inc. (Carlsbad, CA). The "J" flag indicates that the result is an estimated value. The laboratory data validation reports for the samples are included in Appendix D.

QA/QC measurements were taken in the field to ensure that meaningful and representative data sets were generated at Site 1491. Field duplicate samples were collected at a rate of >10% of the total number of groundwater monitoring wells sampled at former UST Site 1491. These samples were collected to ensure the consistency and integrity of sample collection methods. A duplicate sample was collected during the January 2006 sampling event from monitoring well 1491-MW08. Results from the duplicate sample were consistent with the primary sample collected from this well (see Table 2).

Field blanks were collected daily to detect any possible contamination of the sample from airborne hydrocarbons during the sample collection process. Trip blanks were sent with every shipment

of samples to ensure that no contamination occurred during transportation. The field and trip blanks were analyzed only if VOCs were detected in the groundwater. In addition to the field blanks, bailer and/or pump rinsate blanks also were collected in the field and analyzed for TPH-E to ensure that the sampling devices were not a source of contamination for the samples.

No hydrocarbon constituents were detected in any of the QA/QC samples collected during groundwater sampling activities at Site 1491. These results indicate that no cross-contamination occurred during sampling activities conducted at Site 1491, and that laboratory detections are indicative of actual groundwater conditions at the site. Refer to Table 4 for the results of the January 2006 field QA/QC analyses. Appendix B provides the laboratory data sheets for the field QA/QC samples. Chain-of-custody documentation is provided in Appendix E.

Section 4.0: WASTE MANAGEMENT

Approximately 40 L of purged groundwater and water used to decontaminate the field equipment was generated at Site 1491 during the January 2006 sampling event. This water was contained in polyethylene holding tanks and mixed with purged groundwater and equipment rinsate water generated from groundwater sampling at other MCB Camp Pendleton sites. Following analysis by a stationary analytical laboratory, EFR Environmental Services of Alpine, CA, transported the water for nonhazardous disposal. A copy of the manifest for waste removal during the January 2006 sampling event is provided in Appendix F.

Section 5.0: CONCLUSIONS

This quarterly report contains groundwater monitoring data collected from Site 1491, MCB Camp Pendleton, during the most recent groundwater sampling event (January 2006) and includes data from all previous groundwater monitoring events. The monitoring program, which has been implemented at Site 1491, is designed to evaluate the occurrence of dissolved-phase petroleum hydrocarbon constituents in the groundwater, as well as monitor the stability of the plume.

As part of an interim remedial action conducted at former UST Site 1491, 690 yd^3 of soil were removed from the vicinity of the former tank cavity during January 2006 (Battelle, 2006). Prior to initiating this remedial action, three groundwater monitoring wells located in the region to be excavated (1491-MW01, 1491-MW02, and 1491-MW03) were destroyed. Following completion of the remedial action, two groundwater monitoring wells (1491-MW11 and 1491-MW12) were reinstalled in the former tank cavity area to monitor for the presence of free product and petroleum constituents in groundwater. In summary, the current groundwater monitoring well network at Site 1491 consists of nine groundwater monitoring wells, 1491-MW04 through 1491-MW12.

Groundwater samples collected from the monitoring well network at Site 1491 during January 2006 indicated that TPH-D was present in the following wells: 1491-MW05 (1.0 mg/L), 1491-MW09 (0.088 mg/L), 1491-MW11 (3.5 mg/L), and 1491-MW12 (2.5 mg/L). The TPH-D detections in 1491-MW05, 1491-MW11 and 1491-MW12 exceed the Water Quality Criterion (i.e., taste and odor threshold) for TPH-D of 0.10 mg/L outlined in the amended *Water Quality Control Plan for the San Diego Basin* (RWQCB, 1998). Benzene was detected in well 1491-MW12 at a concentration of 1.5 μg/L, which exceeds its MCL of 1.0 μg/L. With the exception of TCE, which is not suspected to be associated with the former UST release, no other VOCs and no PAHs were detected in the groundwater at former UST Site 1491 during January 2006.

TCE was detected in wells 1491-MW06 and 1491-MW10 at concentrations of 31 and 2.3 μg/L, respectively. These two wells serve as sentry wells for the UST groundwater monitoring well network, and no TPH constituents have been detected in these wells. Therefore, it appears that a separate source may be creating a chlorinated solvent plume in the southeastern region of this site. The TCE detection in well 1491-MW06 exceeds the MCL set for this compound (5 μg/L).

Approximately 0.05 ft of free product was observed in 1491-MW04 during the January 2006 groundwater monitoring event. No other measurable free product was detected at Site 1491.

Future groundwater monitoring efforts are scheduled to occur at former UST Site 1491 on a quarterly basis to evaluate the nature and extent of free product and petroleum hydrocarbon constituents in groundwater at the site. Results from these efforts will be reported on a semi-annual basis.

Section 6.0: REFERENCES

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DEH, see San Diego County Department of Environmental Health.

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RWQCB, see Regional Water Quality Control Board, San Diego Region.

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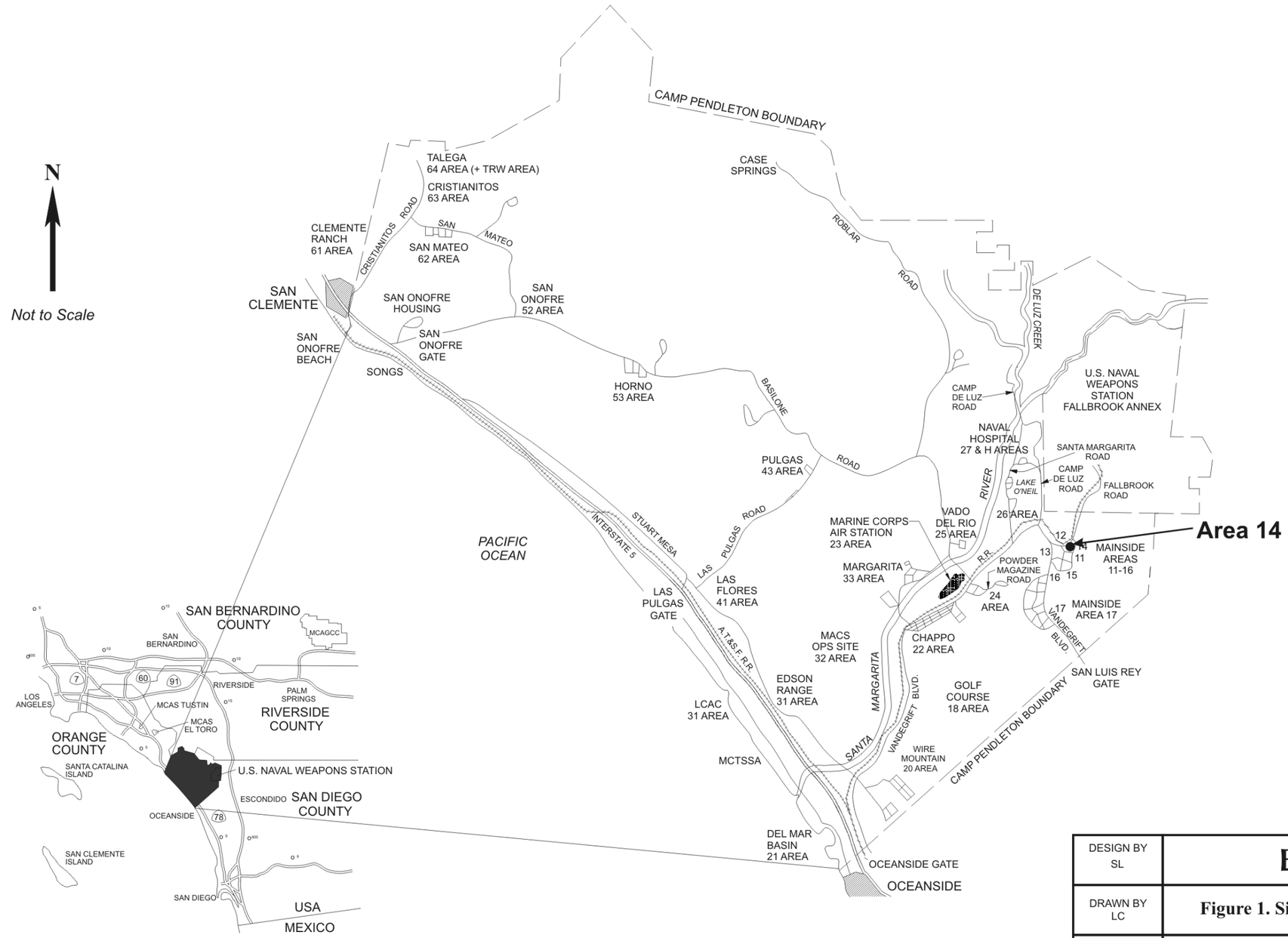
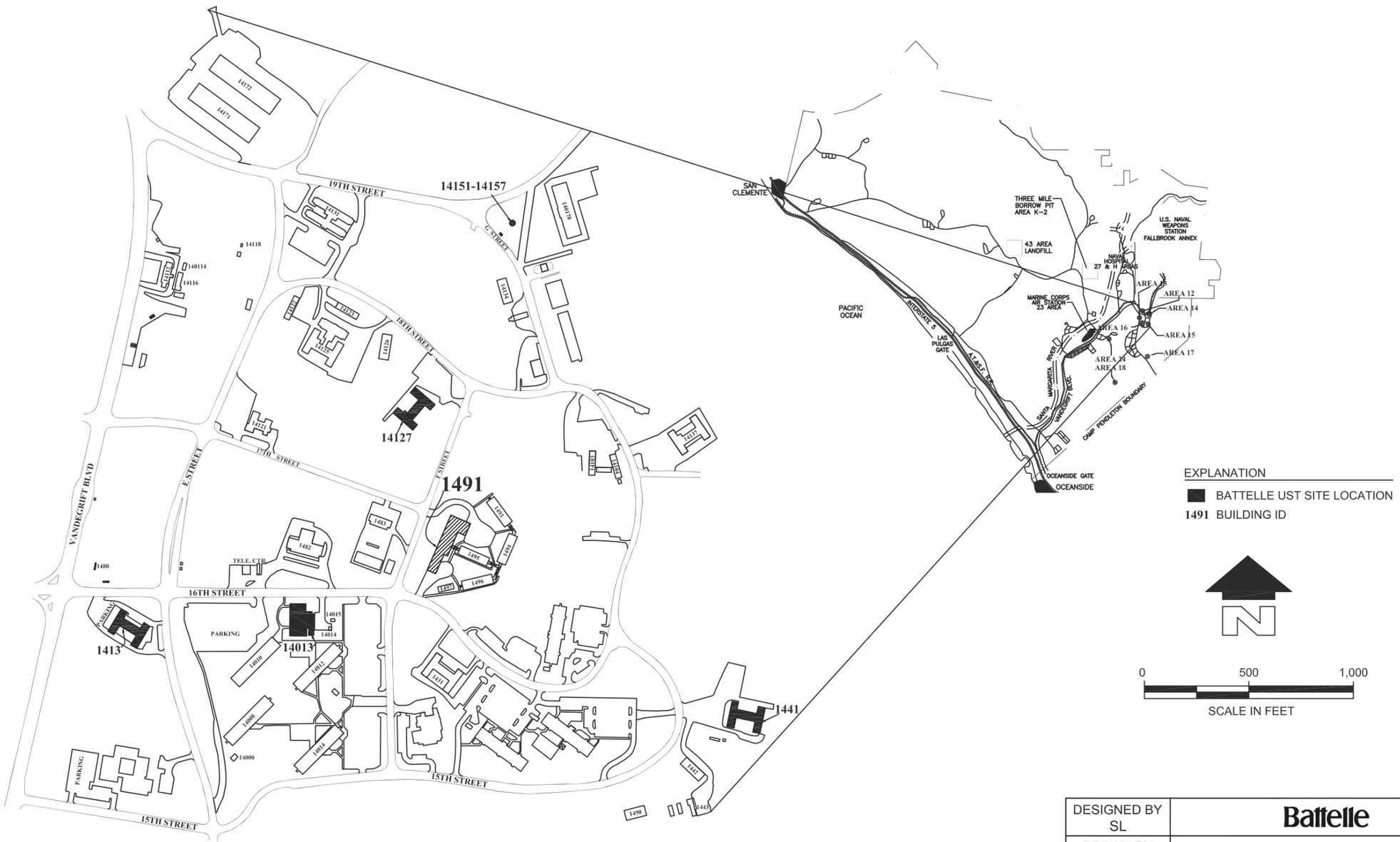
FIGURES

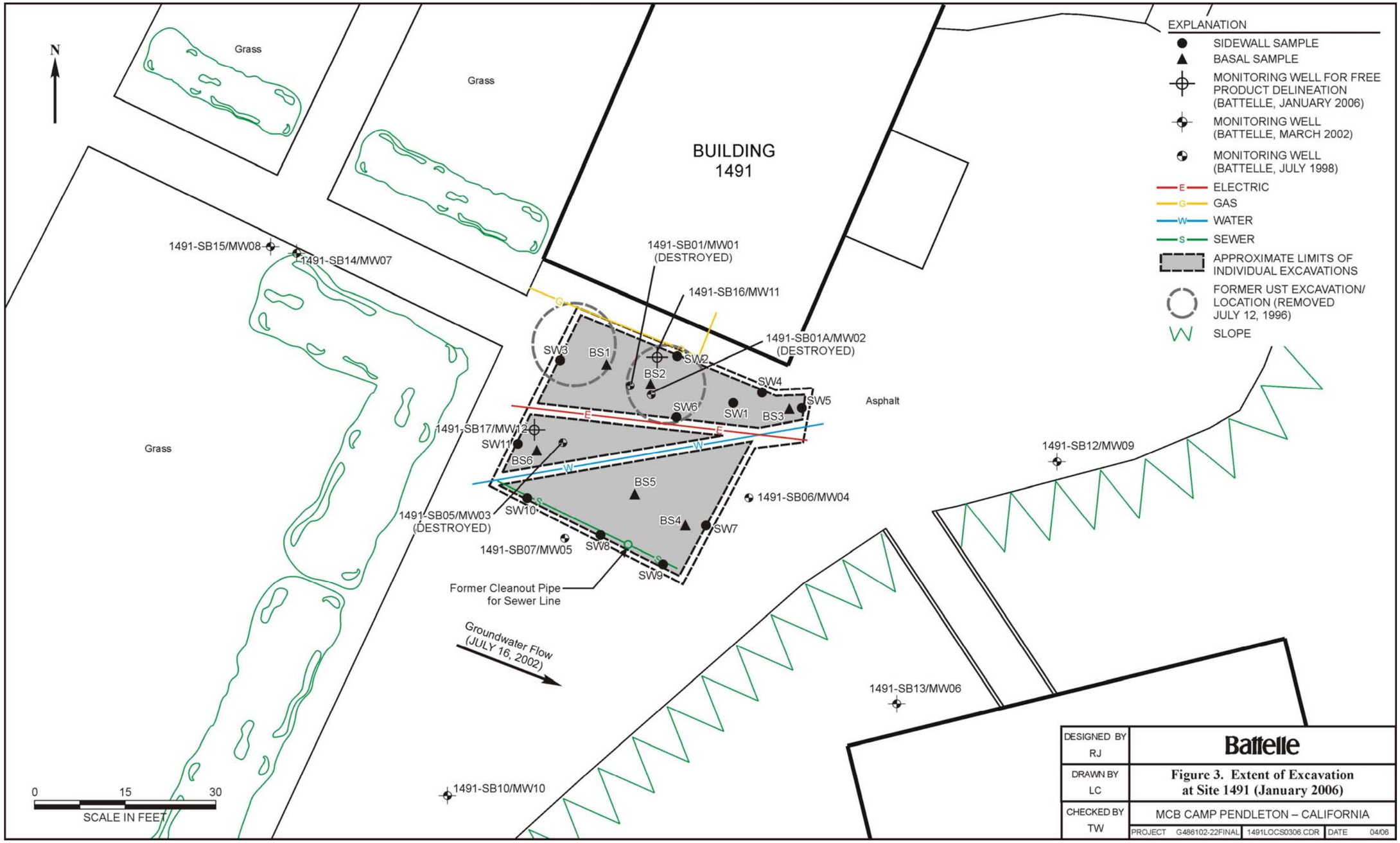


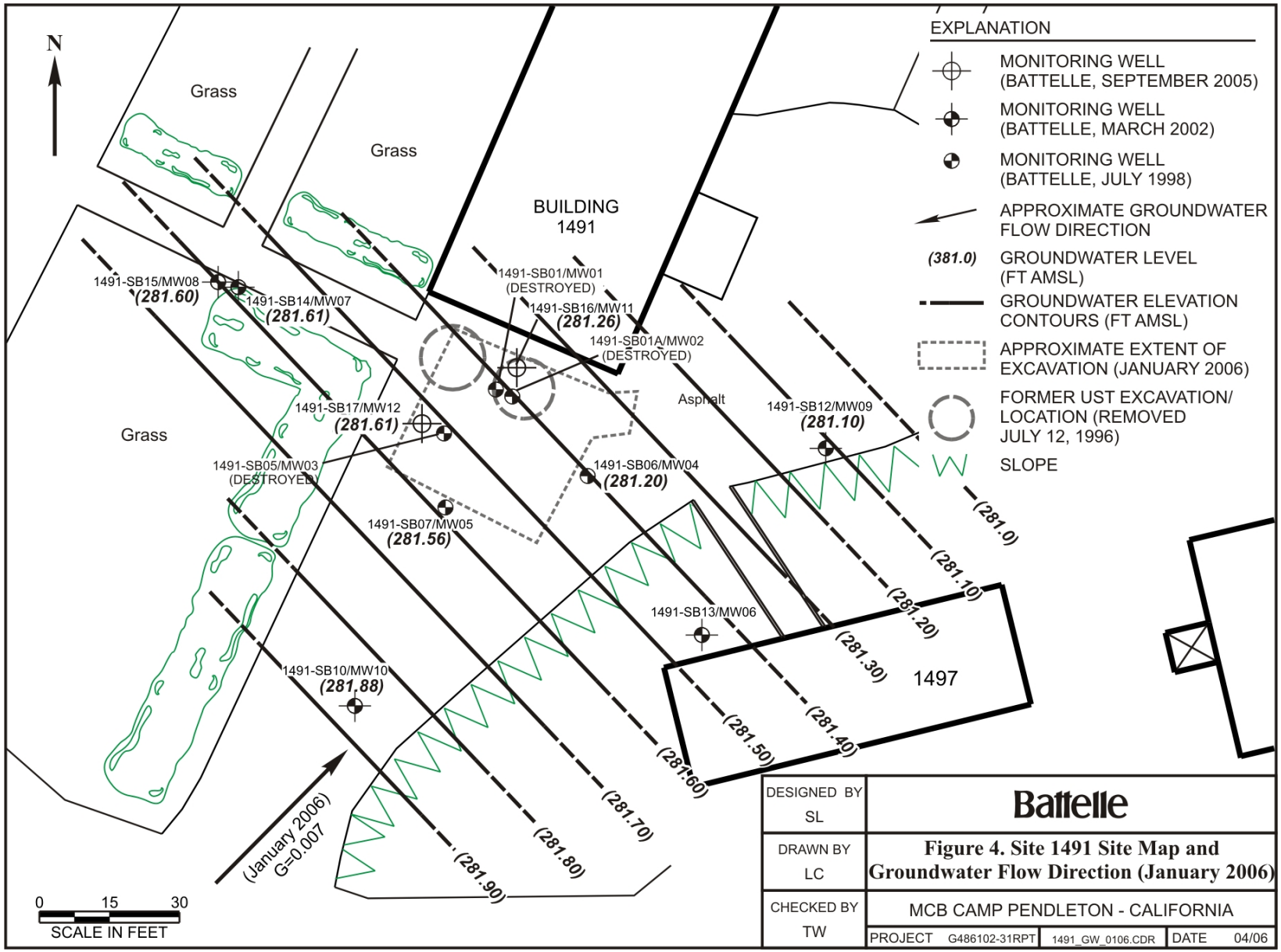
NOTE: MODIFIED FROM KLEINFELDER, REMOVAL OF UNDERGROUND STORAGE TANKS, CAMP JOSEPH H. PENDLETON, CAMP PENDLETON, CALIFORNIA
NAVFAC DWG. NO. 8029558 AND 8029553

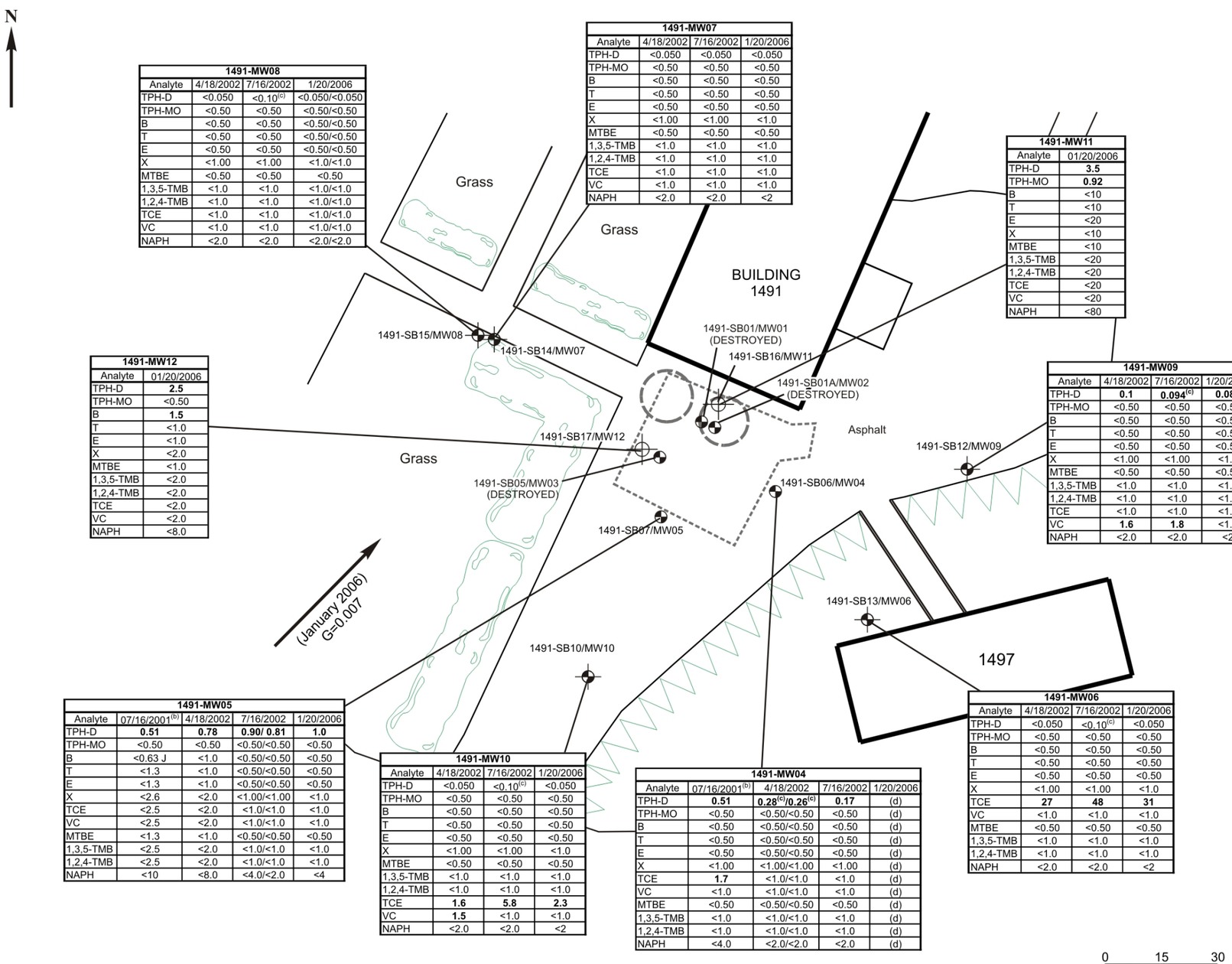
DESIGN BY SL	Battelle		
DRAWN BY LC	**Figure 1. Site 1491 Vicinity Map**		
CHECKED BY TW	MCB CAMP PENDLETON, CALIFORNIA		
	PROJECT G486102-31RPT	FILE FIGURE 1.CDR	DATE 04/06



DESIGNED BY SL	Battelle		
DRAWN BY LC	**Figure 2. Site 1491 Location Map**		
CHECKED BY TW	MCB CAMP PENDLETON - CALIFORNIA		
	G486102-31RPT	FIGURE 2.DWG	04/06


N
Grass
Grass
BUILDING
1491
EXPLANATION
SIDEWALL SAMPLE
BASAL SAMPLE
MONITORING WELL FOR FREE PRODUCT DELINEATION (BATTELLE, JANUARY 2006)
MONITORING WELL (BATTELLE, MARCH 2002)
MONITORING WELL (BATTELLE, JULY 1998)
ELECTRIC
GAS
WATER
SEWER
APPROXIMATE LIMITS OF INDIVIDUAL EXCAVATIONS
FORMER UST EXCAVATION/ LOCATION (REMOVED JULY 12, 1996)
SLOPE
1491-SB15/MW08
1491-SB14/MW07
1491-SB01/MW01 (DESTROYED)
1491-SB16/MW11
1491-SB01A/MW02 (DESTROYED)
SW3
BS1
BS2
SW2
SW4
SW5
SW6
SW1
BS3
Asphalt
1491-SB17/MW12
SW11
BS6
Grass
1491-SB12/MW09
BS5
1491-SB06/MW04
1491-SB05/MW03 (DESTROYED)
SW10
BS4
SW7
1491-SB07/MW05
SW8
SW9
Former Cleanout Pipe for Sewer Line
Groundwater Flow (JULY 16, 2002)
1491-SB13/MW06
1491-SB10/MW10
0
15
30
SCALE IN FEET
DESIGNED BY RJ
DRAWN BY LC
CHECKED BY TW
Battelle
Figure 3. Extent of Excavation at Site 1491 (January 2006)
MCB CAMP PENDLETON – CALIFORNIA
PROJECT G486102-22FINAL
1491LOCS0306.CDR
DATE 04/06


N
Grass
Grass
Grass
BUILDING
1491
1491-SB15/MW08
(281.60)
1491-SB14/MW07
(281.61)
1491-SB01/MW01
(DESTROYED)
1491-SB16/MW11
(281.26)
1491-SB01A/MW02
(DESTROYED)
Asphalt
1491-SB12/MW09
(281.10)
1491-SB17/MW12
(281.61)
1491-SB05/MW03
(DESTROYED)
1491-SB06/MW04
(281.20)
1491-SB07/MW05
(281.56)
1491-SB13/MW06
1491-SB10/MW10
(281.88)
1497
(281.0)
(281.10)
(281.20)
(281.30)
(281.40)
(281.50)
(281.60)
(281.70)
(281.80)
(281.90)
(January 2006)
G=0.007
0 15 30
SCALE IN FEET
EXPLANATION
MONITORING WELL (BATTELLE, SEPTEMBER 2005)
MONITORING WELL (BATTELLE, MARCH 2002)
MONITORING WELL (BATTELLE, JULY 1998)
APPROXIMATE GROUNDWATER FLOW DIRECTION
(381.0) GROUNDWATER LEVEL (FT AMSL)
GROUNDWATER ELEVATION CONTOURS (FT AMSL)
APPROXIMATE EXTENT OF EXCAVATION (JANUARY 2006)
FORMER UST EXCAVATION/ LOCATION (REMOVED JULY 12, 1996)
SLOPE
DESIGNED BY SL
DRAWN BY LC
CHECKED BY TW
Battelle
Figure 4. Site 1491 Site Map and Groundwater Flow Direction (January 2006)
MCB CAMP PENDLETON - CALIFORNIA
PROJECT G486102-31RPT
1491_GW_0106.CDR
DATE 04/06



1491-MW08			
Analyte	4/18/2002	7/16/2002	1/20/2006
TPH-D	<0.050	<0.10[c]	<0.050/<0.050
TPH-MO	<0.50	<0.50	<0.50/<0.50
B	<0.50	<0.50	<0.50/<0.50
T	<0.50	<0.50	<0.50/<0.50
E	<0.50	<0.50	<0.50/<0.50
X	<1.00	<1.00	<1.0/<1.0
MTBE	<0.50	<0.50	<0.50
1,3,5-TMB	<1.0	<1.0	<1.0/<1.0
1,2,4-TMB	<1.0	<1.0	<1.0/<1.0
TCE	<1.0	<1.0	<1.0/<1.0
VC	<1.0	<1.0	<1.0/<1.0
NAPH	<2.0	<2.0	<2.0/<2.0

1491-MW07			
Analyte	4/18/2002	7/16/2002	1/20/2006
TPH-D	<0.050	<0.050	<0.050
TPH-MO	<0.50	<0.50	<0.50
B	<0.50	<0.50	<0.50
T	<0.50	<0.50	<0.50
E	<0.50	<0.50	<0.50
X	<1.00	<1.00	<1.0
MTBE	<0.50	<0.50	<0.50
1,3,5-TMB	<1.0	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0	<1.0
TCE	<1.0	<1.0	<1.0
VC	<1.0	<1.0	<1.0
NAPH	<2.0	<2.0	<2

1491-MW11	
Analyte	01/20/2006
TPH-D	**3.5**
TPH-MO	**0.92**
B	<10
T	<10
E	<20
X	<10
MTBE	<10
1,3,5-TMB	<20
1,2,4-TMB	<20
TCE	<20
VC	<20
NAPH	<80

1491-MW12	
Analyte	01/20/2006
TPH-D	**2.5**
TPH-MO	<0.50
B	**1.5**
T	<1.0
E	<1.0
X	<2.0
MTBE	<1.0
1,3,5-TMB	<2.0
1,2,4-TMB	<2.0
TCE	<2.0
VC	<2.0
NAPH	<8.0

1491-MW09			
Analyte	4/18/2002	7/16/2002	1/20/2006
TPH-D	**0.1**	**0.094[c]**	**0.088**
TPH-MO	<0.50	<0.50	<0.50
B	<0.50	<0.50	<0.50
T	<0.50	<0.50	<0.50
E	<0.50	<0.50	<0.50
X	<1.00	<1.00	<1.0
MTBE	<0.50	<0.50	<0.50
1,3,5-TMB	<1.0	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0	<1.0
TCE	<1.0	<1.0	<1.0
VC	**1.6**	**1.8**	<1.0
NAPH	<2.0	<2.0	<2

1491-MW05				
Analyte	07/16/2001[b]	4/18/2002	7/16/2002	1/20/2006
TPH-D	**0.51**	**0.78**	**0.90/ 0.81**	**1.0**
TPH-MO	<0.50	<0.50	<0.50/<0.50	<0.50
B	<0.63 J	<1.0	<0.50/<0.50	<0.50
T	<1.3	<1.0	<0.50/<0.50	<0.50
E	<1.3	<1.0	<0.50/<0.50	<0.50
X	<2.6	<2.0	<1.00/<1.00	<1.0
TCE	<2.5	<2.0	<1.0/<1.0	<1.0
VC	<2.5	<2.0	<1.0/<1.0	<1.0
MTBE	<1.3	<1.0	<0.50/<0.50	<0.50
1,3,5-TMB	<2.5	<2.0	<1.0/<1.0	<1.0
1,2,4-TMB	<2.5	<2.0	<1.0/<1.0	<1.0
NAPH	<10	<8.0	<4.0/<2.0	<4

1491-MW10			
Analyte	4/18/2002	7/16/2002	1/20/2006
TPH-D	<0.050	<0.10[c]	<0.050
TPH-MO	<0.50	<0.50	<0.50
B	<0.50	<0.50	<0.50
T	<0.50	<0.50	<0.50
E	<0.50	<0.50	<0.50
X	<1.00	<1.00	<1.0
MTBE	<0.50	<0.50	<0.50
1,3,5-TMB	<1.0	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0	<1.0
TCE	**1.6**	**5.8**	**2.3**
VC	**1.5**	<1.0	<1.0
NAPH	<2.0	<2.0	<2

1491-MW04				
Analyte	07/16/2001[b]	4/18/2002	7/16/2002	1/20/2006
TPH-D	**0.51**	**0.28[c]/0.26[c]**	**0.17**	(d)
TPH-MO	<0.50	<0.50/<0.50	<0.50	(d)
B	<0.50	<0.50/<0.50	<0.50	(d)
T	<0.50	<0.50/<0.50	<0.50	(d)
E	<0.50	<0.50/<0.50	<0.50	(d)
X	<1.00	<1.00/<1.00	<1.00	(d)
TCE	**1.7**	<1.0/<1.0	<1.0	(d)
VC	<1.0	<1.0/<1.0	<1.0	(d)
MTBE	<0.50	<0.50/<0.50	<0.50	(d)
1,3,5-TMB	<1.0	<1.0/<1.0	<1.0	(d)
1,2,4-TMB	<1.0	<1.0/<1.0	<1.0	(d)
NAPH	<4.0	<2.0/<2.0	<2.0	(d)

1491-MW06			
Analyte	4/18/2002	7/16/2002	1/20/2006
TPH-D	<0.050	<0.10[c]	<0.050
TPH-MO	<0.50	<0.50	<0.50
B	<0.50	<0.50	<0.50
T	<0.50	<0.50	<0.50
E	<0.50	<0.50	<0.50
X	<1.00	<1.00	<1.0
TCE	**27**	**48**	**31**
VC	<1.0	<1.0	<1.0
MTBE	<0.50	<0.50	<0.50
1,3,5-TMB	<1.0	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0	<1.0
NAPH	<2.0	<2.0	<2

EXPLANATION

- MONITORING WELL (BATTELLE, SEPTEMBER 2005)
- MONITORING WELL (BATTELLE, MARCH 2002)
- MONITORING WELL (BATTELLE, JULY 1998)
- TPH-D TOTAL PETROLEUM HYDROCARBONS EXTRACTABLE AS DIESEL (mg/L)
- TPH-MO TOTAL PETROLEUM HYDROCARBONS EXTRACTABLE AS MOTOR OIL (mg/L)
- B BENZENE (µg/L)
- T TOLUENE (µg/L)
- E ETHYLBENZENE (µg/L)
- X TOTAL XYLENES (µg/L)
- TCE TRICHLOROETHENE (µg/L)
- VC VINYL CHLORIDE (µg/L)
- MTBE METHYL-*TERT*-BUTYL ETHER (µg/L)
- TMB TRIMETHYLBENZENE (µg/L)
- NAPH NAPHTHALENE (µg/L)
- (b) WELL PURGED DRY
- (c) REPORTED DIESEL CONCENTRATIONS MAY INCLUDE SOME UNDIFFERENTIATED LIGHTER-END HYDROCARBONS
- (d) WELL NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT
- J ESTIMATED VALUE
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- APPROXIMATE EXTENT OF SOIL EXCAVATION (JANUARY 2006)
- FORMER UST EXCAVATION/ LOCATION (REMOVED JULY 12, 1996)
- SLOPE

0 15 30
SCALE IN FEET

DESIGNED BY SL	Battelle
DRAWN BY LC	**Figure 5. Site 1491 Groundwater Contaminant Concentrations**
CHECKED BY TH	MCB CAMP PENDLETON - CALIFORNIA
	PROJECT G486102-31RPT 1491_GW_TABLES.CDR DATE 04/06

Figure 6. Historical Trends of Contaminant Concentrations at Site 1491

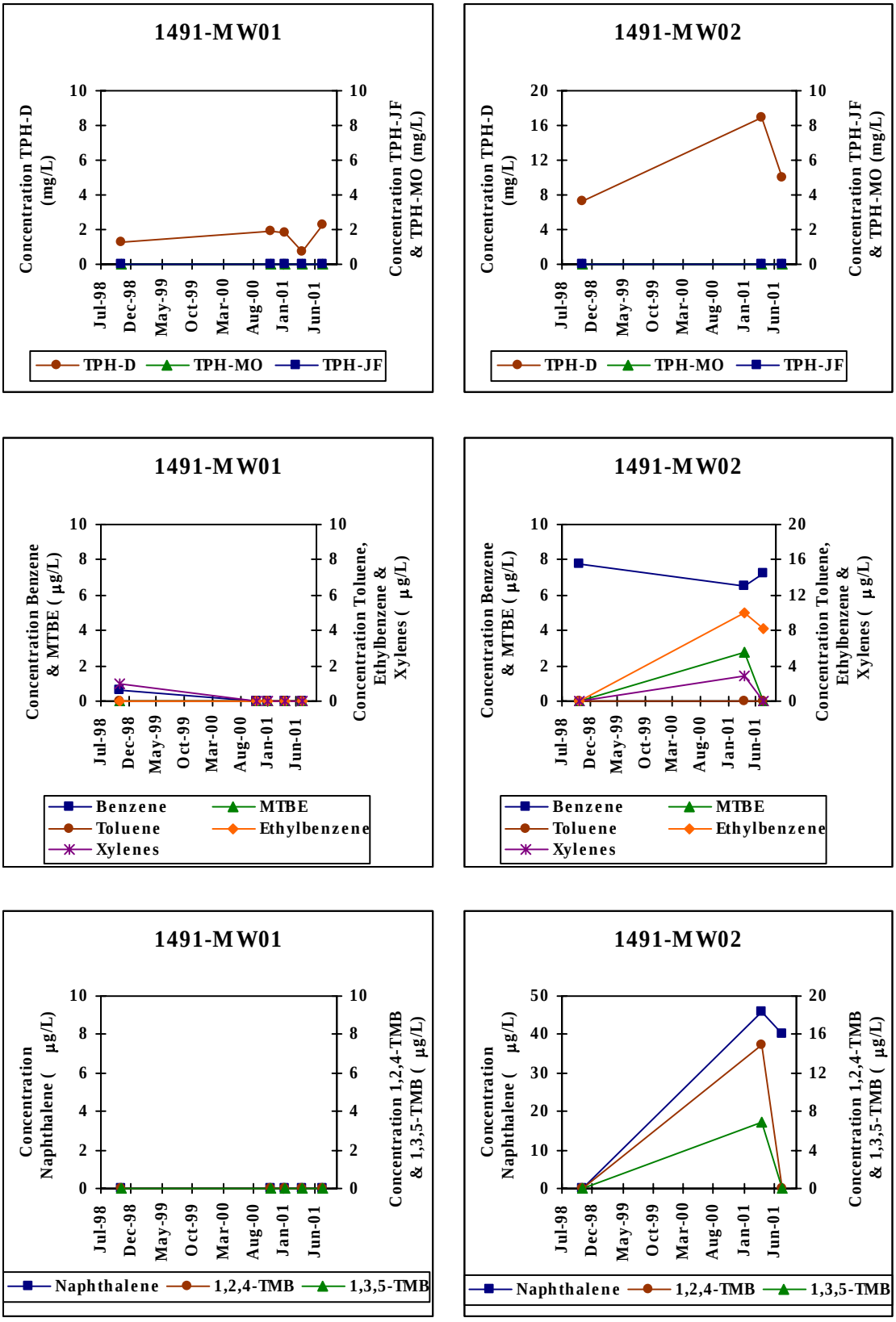


Figure 6. Historical Trends of Contaminant Concentrations at Site 1491 (continued)

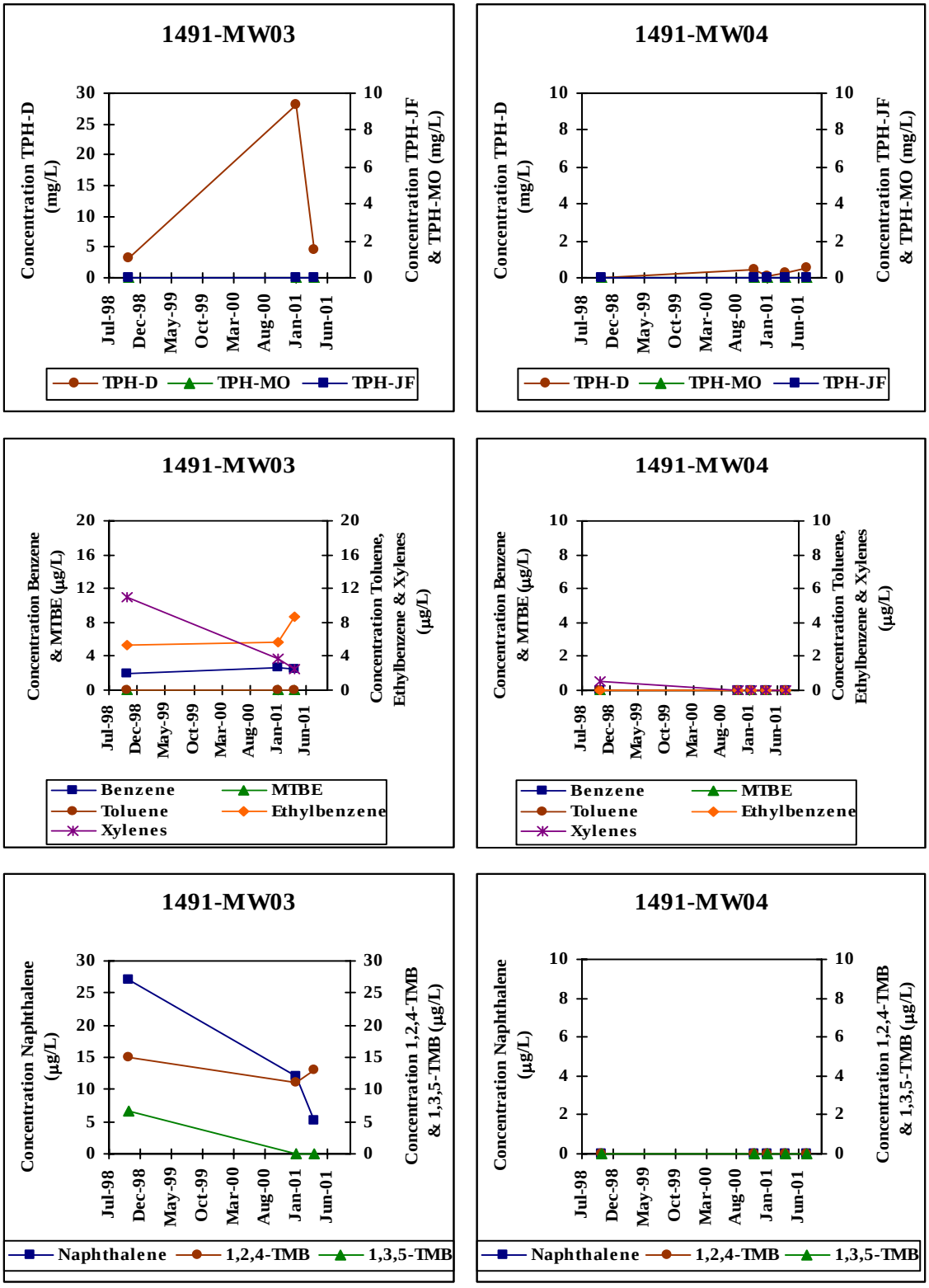
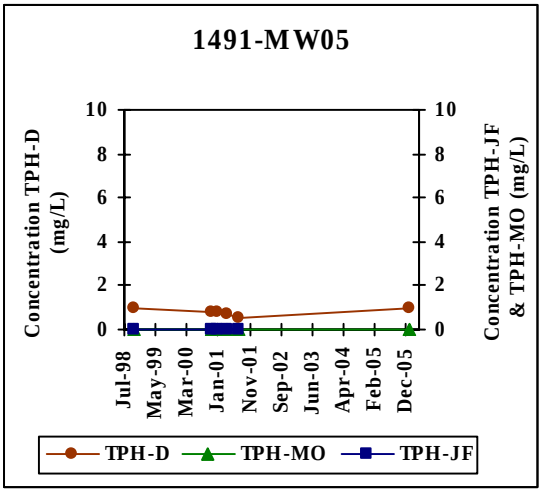
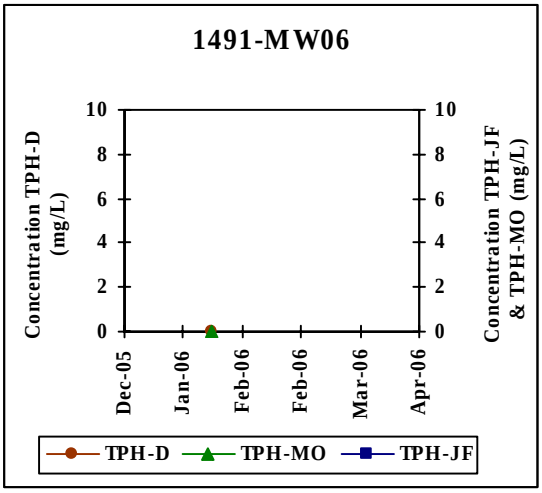
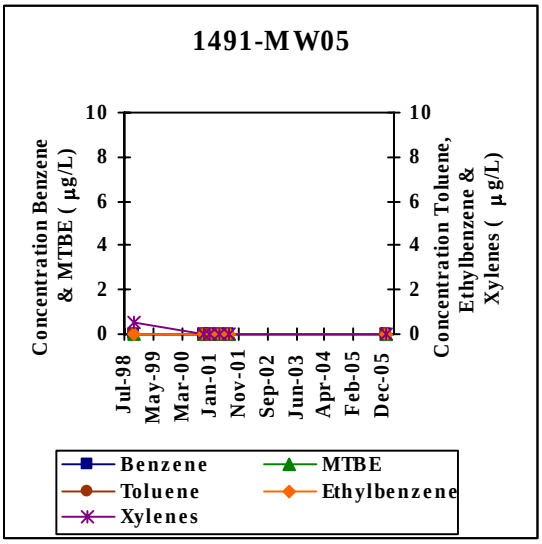
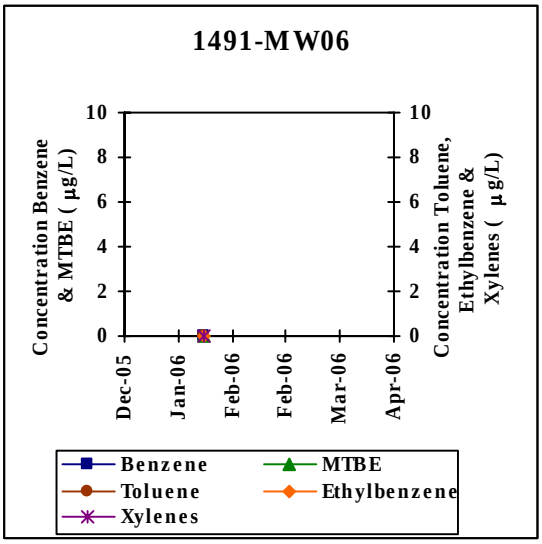


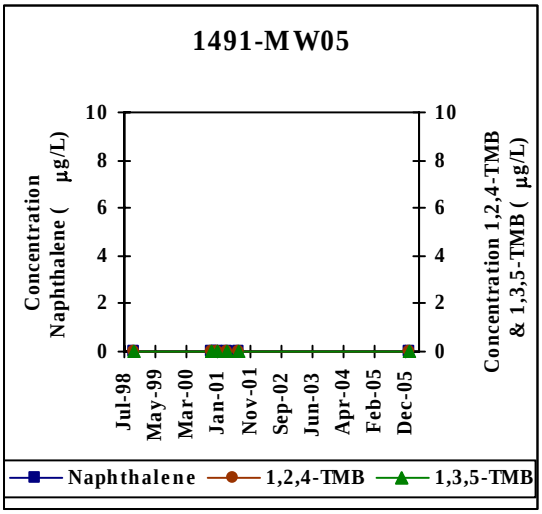
Figure 6. Historical Trends of Contaminant Concentrations at Site 1491 (continued)











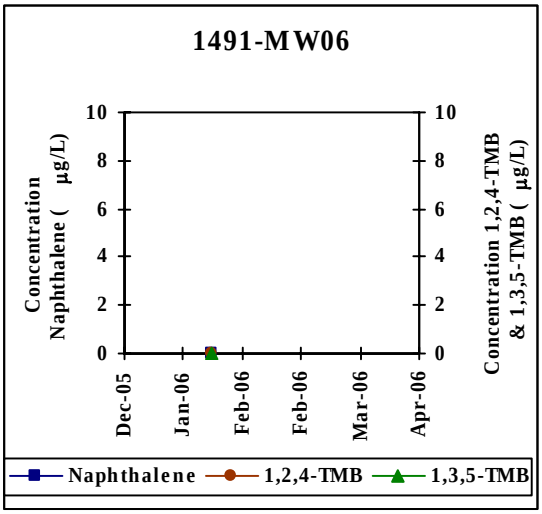


Figure 6. Historical Trends of Contaminant Concentrations at Site 1491 (continued)

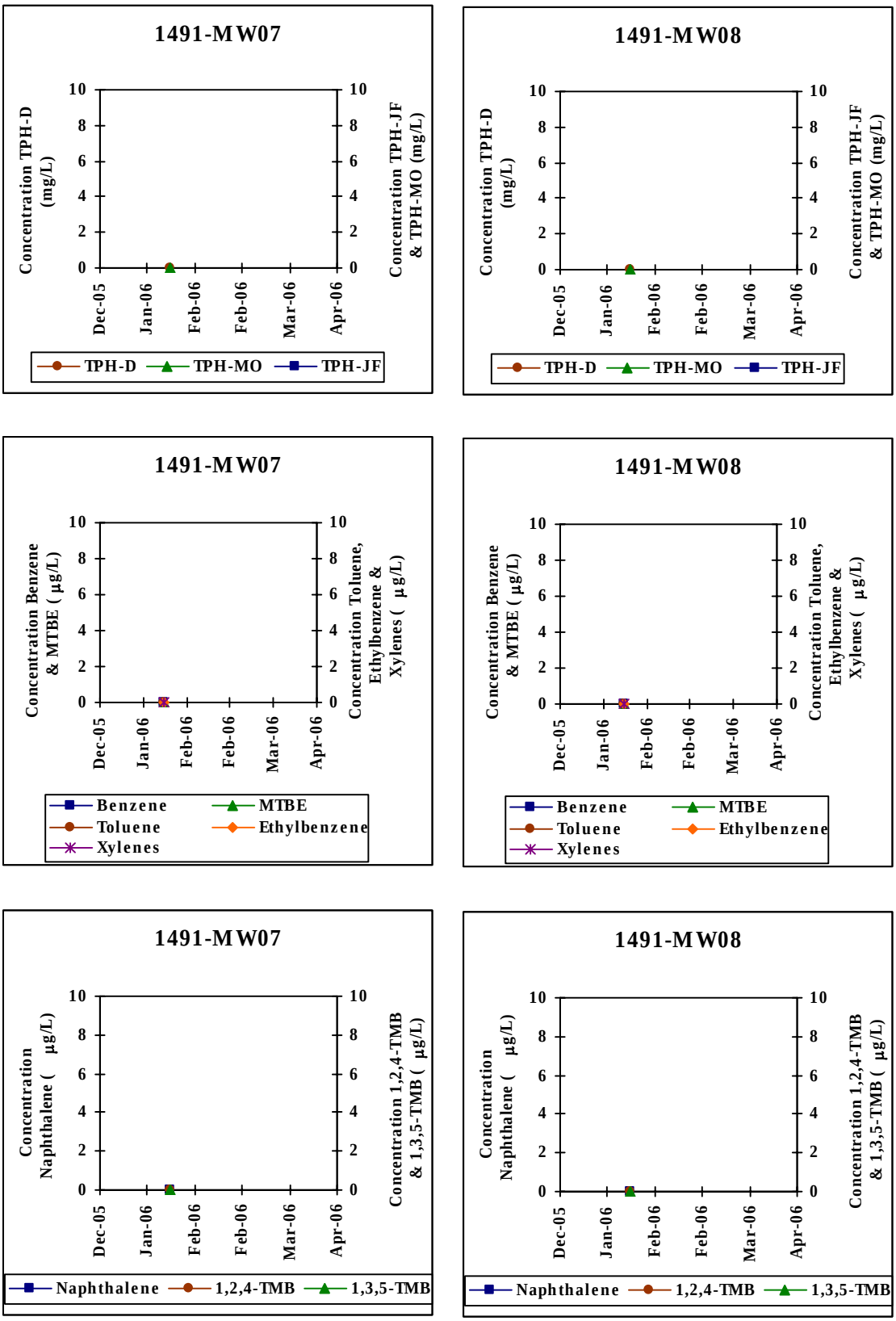
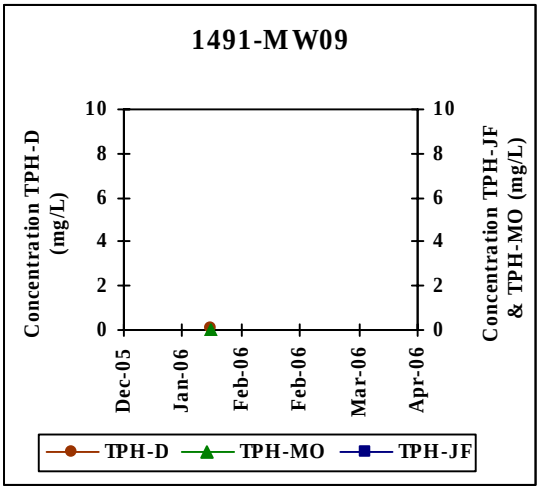
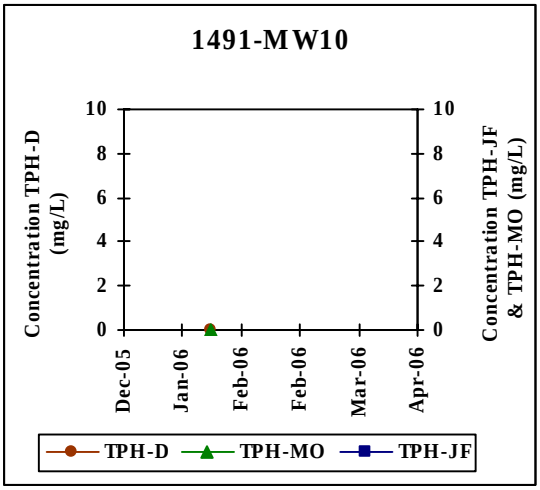
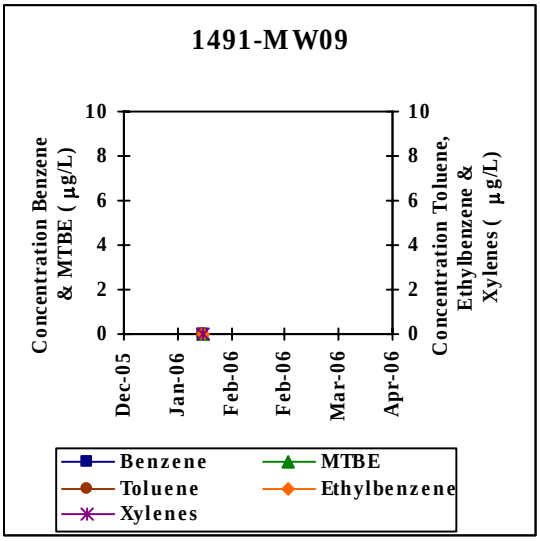
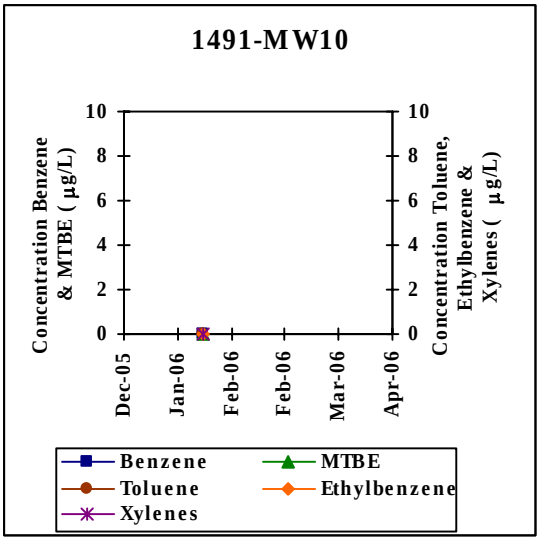


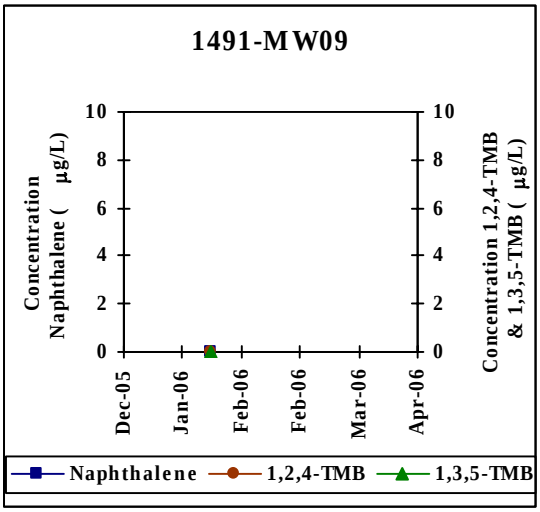
Figure 6. Historical Trends of Contaminant Concentrations at Site 1491 (continued)











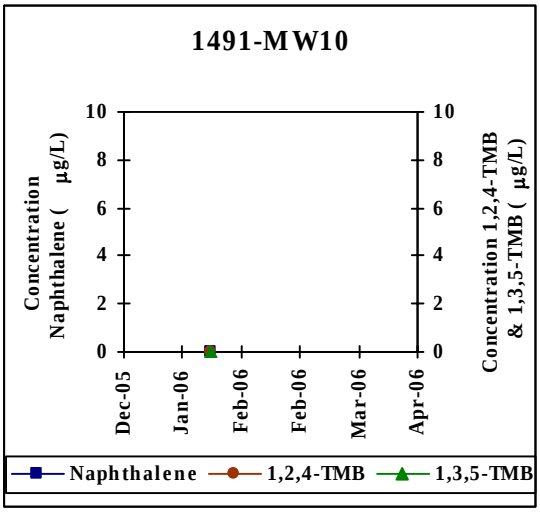
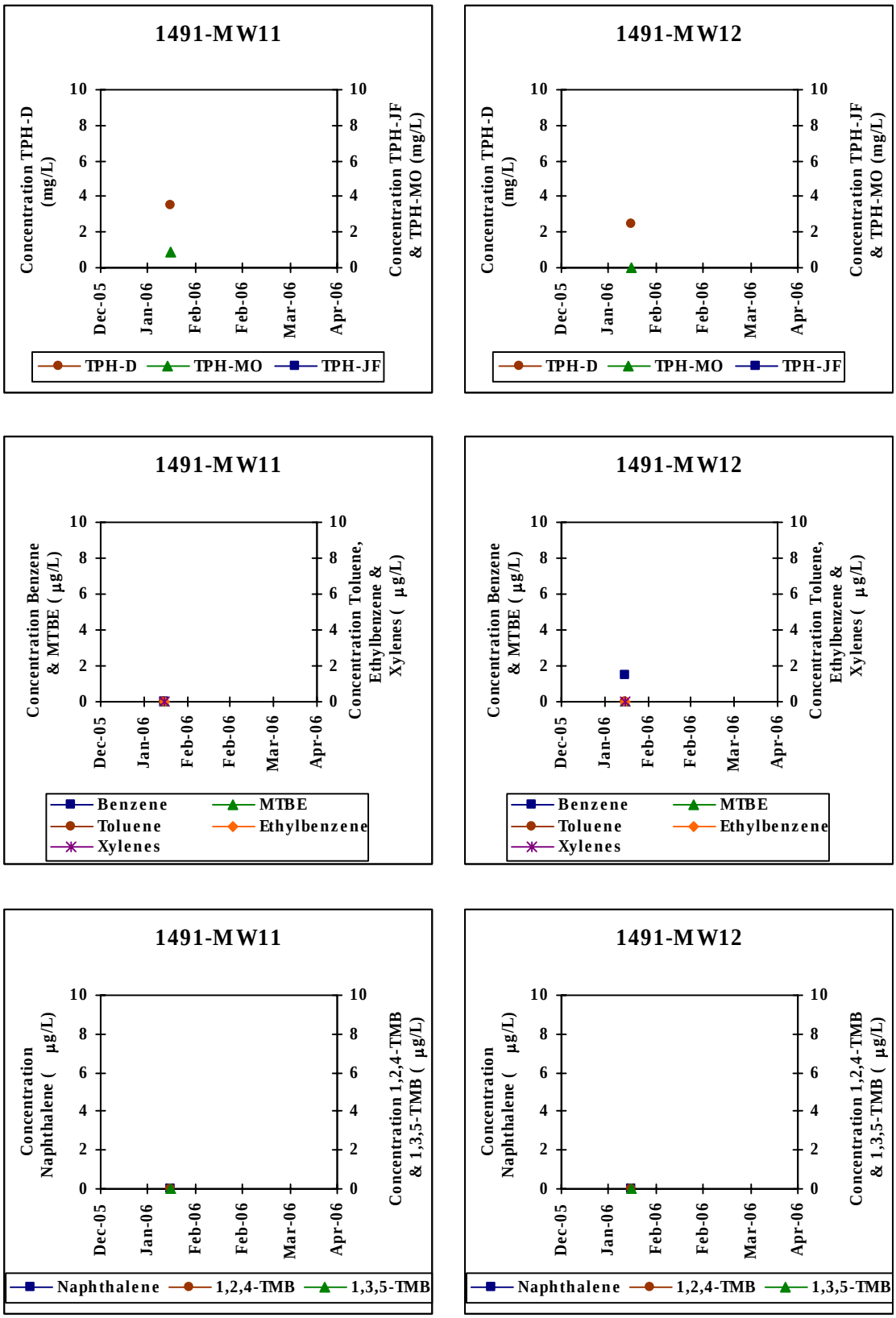


Figure 6. Historical Trends of Contaminant Concentrations at Site 1491 (continued)



TABLES

Table 1. Groundwater- and Product-Level Measurements

Well ID	Date Measured	Top of Casing Elevation (ft amsl)	Total Depth (ft btoc)	Water Level (ft btoc)	Water Elevation (ft amsl) [(a)]	Product Level (ft btoc)	Product Elevation (ft amsl)
1491-MW01	10/30/1998	295.72	34.8	13.26	282.46	–	–
	11/5/2000			13.22	282.5	–	–
	1/10/2001			13.42	282.3	–	–
	4/7/2001			12.16	283.56	–	–
	7/16/2001			12.76	282.96	–	–
	4/18/2002			14.1	281.62	–	–
	7/16/2002			12.77	282.95	–	–
1491-MW02	10/30/1998	295.49	20	15.53	279.96	–	–
	11/5/2000			13.21	282.28 (282.34)	13.14	282.35
	1/10/2001			13.3	282.19 (282.24)	13.24	282.25
	4/7/2001			11.98	283.51	–	–
	7/16/2001			12.515	282.975 (282.98)	12.51	282.98
	4/18/2002			14.02	281.47 (281.71)	13.73	281.76
	7/16/2002			12.66	282.83 (282.91)	12.56	282.93
1491-MW03	10/29/1998	295.25	22.3	13.22	282.03 (282.21)	13.01	282.24
	11/5/2000			12.91	282.34 (282.45)	12.78	282.47
	1/10/2001			12.87	282.38	12.87(b)	282.38
	4/7/2001			11.55	283.7	11.55(b)	283.7
	7/16/2001			12.54	282.71 (283.03)	12.16	283.09
	4/18/2002			14.29	280.96 (281.79)	13.3	281.95
	7/16/2002			12.36	282.89 (283.02)	12.2	283.05
1491-MW04	10/30/1998	295.99	25.3	14.05	281.94	–	–
	11/5/2000			13.03	282.96	–	–
	1/10/2001			13.99	282	–	–
	4/7/2001			12.83	283.16	–	–
	7/16/2001			12.6	283.39	–	–
	4/18/2002			14.56	281.43	–	–
	7/16/2002			13.63	282.36 (282.37)	13.62	282.37
	1/20/2006			14.79	281.20 (281.16)	14.74	281.25
1491-MW05	10/29/1998	294.52	18.6	11.98	282.54	–	–
	11/5/2000			12.1	282.42	–	–
	1/10/2001			12.14	282.38	12.14(b)	282.38
	4/7/2001			10.98	283.54	–	–
	7/16/2001			11.5	283.02	–	–
	4/18/2002			12.65	281.87	–	–
	7/16/2002			11.54	282.98	–	–
	1/20/2006			12.96	281.56	–	–

Table 1. Groundwater- and Product-Level Measurements (Continued)

Well ID	Date Measured	Top of Casing Elevation (ft amsl)	Total Depth (ft btoc)	Water Level (ft btoc)	Water Elevation (ft amsl) [(a)]	Product Level (ft btoc)	Product Elevation (ft amsl)
1491-MW06	4/18/2002	290.98	16.0	9.74	281.24	–	–
	7/16/2002			9.12	281.86	–	–
	1/20/06			9.61	281.37	–	–
1491-MW07	4/18/2002	294.75	40.0	12.89	281.86	–	–
	7/16/2002			10.46	284.29	–	–
	1/20/06			13.14	281.61	–	–
1491-MW08	4/18/2002	294.62	20.0	12.7	281.92	–	–
	7/16/2002			10.18	284.44	–	–
	1/20/06			13.02	281.60	–	–
1491-MW09	4/18/2002	296.3	25.0	15.35	280.95	–	–
	7/16/2002			14.8	281.5	–	–
	1/20/06			15.2	281.10	–	–
1491-MW10	4/18/2002	293.8	18.0	11.75	282.05	–	–
	7/16/2002			10.74	283.06	–	–
	1/20/06			11.92	281.88	–	–
1491-MW11	1/20/06	295.66	20.3	14.4	281.26	–	–
1491-MW12	1/20/06	295.11	20.3	13.5	281.61	–	–

(a) Value in parentheses indicates groundwater elevation corrected for the presence of free product using a density factor for diesel fuel of 0.84 g/cm^3 (Dragun, 1998).
(b) A sheen of free product was detected in the well.
amsl = above mean sea level.
btoc = below top of casing.
ID = identification.

Table 2. Analytical Results and Water Quality Parameters

Analyte	Units	1491-MW01							1491-MW02						
		10/30/98[a]	11/5/2000	1/10/2001	4/7/2001	7/16/2001	4/18/2002	7/16/2002	10/30/98[a] [b]	11/5/2000	1/10/2001	04/07/01[b]	07/16/01[b]	4/18/2002	7/16/2002
Organics															
TPH-JF	mg/L	<0.50	<0.050	<0.050	<0.050	<0.050	1.5 I	<0.050	<0.50	NS	NS	<0.050	<0.050	NS	NS
TPH-D	mg/L	1.3	1.9	1.8[c]	0.72	2.3	1.3	0.13	7.2	NS	NS	17	10	NS	NS
TPH-MO	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NS	NS	<0.50	<0.50	NS	NS
Benzene	µg/L	0.59	<1.3 J	<2.5 J	<1.3 J	<2.5 J	2.5 J	<0.50	7.8	NS	NS	6.5	7.2	NS	NS
Toluene	µg/L	<0.50	<2.5	<5.0	<2.5	<5.0	<5.0	<0.50	<2.5	NS	NS	<2.5	<5.0	NS	NS
Ethylbenzene	µg/L	<0.50	<2.5	<5.0	<2.5	<5.0	<5.0	<0.50	<2.5	NS	NS	10	8.2	NS	NS
Total Xylenes	µg/L	1	<5.0	<10.0	<5.0	<10.0	<10.0	<1.00	<5.0	NS	NS	2.8	<10.0	NS	NS
MTBE	µg/L	<0.50	<2.5	<5.0	<2.5	<5.0	<5.0	<0.50	<2.5	NS	NS	2.8	<5.0	NS	NS
TBA	µg/L	NA	<100	NA	NA	NA	NA	NA	NA	NS	NS	<100	NA	NS	NS
DIPE	µg/L	NA	<10	NA	NA	NA	NA	NA	NA	NS	NS	<5.0	NA	NS	NS
ETBE	µg/L	NA	<10	NA	NA	NA	NA	NA	NA	NS	NS	<5.0	NA	NS	NS
TAME	µg/L	NA	<10	NA	NA	NA	NA	NA	NA	NS	NS	<5.0	NA	NS	NS
1,3,5-TMB	µg/L	<1.0	<10	<10	<5.0	<10	<10	<1.0	<5.0	NS	NS	6.9	<10	NS	NS
1,2,4-TMB	µg/L	<1.0	<10	<10	<5.0	<10	<10	<1.0	<5.0	NS	NS	15	<10	NS	NS
Naphthalene	µg/L	<2.0	<20	<20	<20	<40	<40	<2.0	<10	NS	NS	46	40	NS	NS
Trichloroethene	µg/L	<1.0	<10	<10	<5.0	<10	<10	<1.0	<5.0	NS	NS	<5.0	<10	NS	NS
Vinyl Chloride	µg/L	<1.0	<10	<10	<5.0	<10	<10	<1.0	<5.0	NS	NS	<5.0	<10	NS	NS
TOC	mg/L	NA	72	77	12	13	70	4.8	NA	NS	NS	230	86	NS	NS
Methane	µg/L	NA	1,100	2,900	330	740	3,400	110	NA	NS	NS	5,900	3,400	NS	NS
Inorganics															
Nitrate	mg/L	NA	<0.3	<0.3	<0.5	5.1	<0.25 *	0.77	NA	NS	NS	<0.5	<0.5	NS	NS
Nitrite	mg/L	NA	<0.5	<0.5	<0.5	<0.5	<0.25 *	<0.25	NA	NS	NS	<0.5	<0.5	NS	NS
Sulfate	mg/L	NA	120	88	310	350	130	470	NA	NS	NS	9.8	<10	NS	NS
Manganese	mg/L	NA	2.6	2	1.6	0.38	2.5	0.776	NA	NS	NS	5.7	4.6	NS	NS
Iron	mg/L	NA	1.1	0.38	<0.1	<0.1	0.13	<0.05	NA	NS	NS	1.2	2.1	NS	NS
Lead	mg/L	NA	<0.005	<0.005	<0.005	<0.005	0.0022 J	0.0018J	NA	NS	NS	<0.005	<0.005	NS	NS
Groundwater Quality Parameters															
Alkalinity	mg/L as $CaCO_3$	NA	950	500	590	440	980	242	NA	NS	NS	1,300	1,300	NS	NS
TDS	mg/L	NA	2,000	1,900	2,700	2,600	1,900	2,510	NA	NS	NS	2,000	1,900	NS	NS
pH	units	7.14	6.67	6.6	6.91	6.89	6.65	8.06	6.94	NS	NS	6.88	6.83	NS	NS
Conductivity	mS/cm	2.72	5.53	5.6	5.11	3.98	3.15	3.73	2.96	NS	NS	2.88	2.86	NS	NS
DO	mg/L	0	0.14	0	1.2	0.81	0.7	0.1	0.3	NS	NS	1	0.04	NS	NS
Turbidity	NTU	48	0	0	20	0	-10	5	348	NS	NS	709	0	NS	NS
Temperature	°C	22.3	21.9	21.8	21.3	22.6	21.9	24.5	24	NS	NS	20.8	23.1	NS	NS
Salinity	%	0.13	0.29	0.29	0.26	0.2	0.15	0.18	0.16	NS	NS	0.14	0.14	NS	NS
ORP	mV	-60	-107	-265.3	-9	6	116.7	57.1	-164	NS	NS	-173	-153	NS	NS

Table 2. Analytical Results and Water Quality Parameters (Page 2 of 6)

Analyte	Units	1491-MW03						
		10/29/98[a]	11/5/2000	01/10/01[b]	04/07/01[b]	7/16/2001	4/18/2002	7/16/2002
Organics								
TPH-JF	mg/L	<0.50	NS	<0.050	<0.050	NS	NS	NS
TPH-D	mg/L	3.1	NS	28	4.6	NS	NS	NS
TPH-MO	mg/L	<0.50	NS	<0.50	<0.50	NS	NS	NS
Benzene	µg/L	1.9	NS	2.7	2.5	NS	NS	NS
Toluene	µg/L	<0.50	NS	<1.0	<0.50	NS	NS	NS
Ethylbenzene	µg/L	5.3	NS	5.7	8.6	NS	NS	NS
Total Xylenes	µg/L	11	NS	3.8	2.5	NS	NS	NS
MTBE	µg/L	<0.50	NS	<1.0	<0.50	NS	NS	NS
TBA	µg/L	NA	NS	NA	<20	NS	NS	NS
DIPE	µg/L	NA	NS	NA	<1.0	NS	NS	NS
ETBE	µg/L	NA	NS	NA	<1.0	NS	NS	NS
TAME	µg/L	NA	NS	NA	<1.0	NS	NS	NS
1,3,5-TMB	µg/L	6.7	NS	<2.0	<1.0	NS	NS	NS
1,2,4-TMB	µg/L	15	NS	11	13	NS	NS	NS
Naphthalene	µg/L	27	NS	12	5.2	NS	NS	NS
Trichloroethene	µg/L	2.2	NS	<2.0	2.1	NS	NS	NS
Vinyl Chloride	µg/L	<1.0	NS	<2.0	<1.0	NS	NS	NS
TOC	mg/L	NA	NS	13	3.7	NS	NS	NS
Methane	µg/L	NA	NS	4,900	1,400	NS	NS	NS
Inorganics								
Nitrate	mg/L	NA	NS	1.3	0.64	NS	NS	NS
Nitrite	mg/L	NA	NS	<0.5	<0.5	NS	NS	NS
Sulfate	mg/L	NA	NS	270	270	NS	NS	NS
Manganese	mg/L	NA	NS	2.5	2.8	NS	NS	NS
Iron	mg/L	NA	NS	4.2	2.8	NS	NS	NS
Lead	mg/L	NA	NS	<0.005	<0.005	NS	NS	NS
Groundwater Quality Parameters								
Alkalinity	mg/L as $CaCO_3$	NA	NS	480	450	NS	NS	NS
TDS	mg/L	NA	NS	2,100	2,300	NS	NS	NS
pH	units	7.05	NS	6.46	6.83	NS	NS	NS
Conductivity	mS/cm	2.63	NS	2.99	3.64	NS	NS	NS
DO	mg/L	0.01	NS	0.28	0	NS	NS	NS
Turbidity	NTU	50	NS	125	38	NS	NS	NS
Temperature	°C	22.2	NS	21.8	20.4	NS	NS	NS
Salinity	%	0.12	NS	0.14	0.18	NS	NS	NS
ORP	mV	-231	NS	6.3	-224	NS	NS	NS

Table 2. Analytical Results and Water Quality Parameters (Page 3 of 6)

Analyte	Units	1491-MW04							
		10/30/98[(a) (b)]	11/05/00[(b)]	01/10/01[(b)]	04/07/01[(b)]	07/16/01[(b)]	4/18/2002	7/16/2002	1/20/2006
Organics									
TPH-JF	mg/L	<0.50	<0.050	<0.050	<0.050	<0.050	<0.050 / <0.050	<0.050	NS
TPH-D	mg/L	<0.50	0.41	0.12	0.28	0.51	0.28 [(c)] / 0.26 [(c)]	0.17	NS
TPH-MO	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50 / <0.50	<0.50	NS
Benzene	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50 / <0.50	<0.50	NS
Toluene	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50 / <0.50	<0.50	NS
Ethylbenzene	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50 / <0.50	<0.50	NS
Total Xylenes	µg/L	0.55	<1.00	<1.00	<1.00	<1.00	<1.00 / <1.00	<1.00	NS
MTBE	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50 / <0.50	<0.50	NS
TBA	µg/L	NA	<10	NA	NA	NA	NA/ NA	NA	NS
DIPE	µg/L	NA	<1.0	NA	NA	NA	NA / NA	NA	NS
ETBE	µg/L	NA	<1.0	NA	NA	NA	NA / NA	NA	NS
TAME	µg/L	NA	<1.0	NA	NA	NA	NA / NA	NA	NS
1,3,5-TMB	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 / <1.0	<1.0	NS
1,2,4-TMB	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 / <1.0	<1.0	NS
Naphthalene	µg/L	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0 / <2.0	<2.0	NS
Trichloroethene	µg/L	<1.0	3.7	4.7	4.1	1.7	<1.0 / <1.0	<1.0	NS
Vinyl Chloride	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 / <1.0	<1.0	NS
TOC	mg/L	NA	6.3	3	3	4.9	2.4 / 2.0	4.1	NS
Methane	µg/L	NA	62	40	14	21	48 / 47	18	NS
Inorganics									
Nitrate	mg/L	NA	2.3	3	2.9	4.3	1.2 * / 1.2 *	1.1	NS
Nitrite	mg/L	NA	<0.9	<0.9	<2.5	<0.5	<0.25 * / <0.25 *	<1.0	NS
Sulfate	mg/L	NA	330	340	360	350	380 / 360	420	NS
Manganese	mg/L	NA	0.36	0.33	0.52	0.33	1.09 / 1.08	0.777	NS
Iron	mg/L	NA	<0.1	<0.1	<0.1	<0.1	<0.05 / <0.05	<0.05	NS
Lead	mg/L	NA	<0.005	<0.005	<0.005	<0.005	<0.005 / <0.005	<0.005	NS
Groundwater Quality Parameters									
Alkalinity	mg/L as $CaCO_3$	NA	360	370	320	420	469 / 469	509	NS
TDS	mg/L	NA	2,400	2,800	2,900	2,900	3,160 / 3,120	2,940	NS
pH	units	7.25	6.67	6.77	6.86	6.88	7.43	7.98	NS
Conductivity	mS/cm	3.5	4.36	4.71	4.87	4.96	5	4.53	NS
DO	mg/L	0.95	1.16	0.54	0.71	0.44	0.21	0.02	NS
Turbidity	NTU	151	9	0	16	0	0	13	NS
Temperature	°C	23.6	23.4	22.6	21.2	23.6	22.4	24.4	NS
Salinity	%	0.17	0.22	0.24	0.25	0.25	0.26	0.23	NS
ORP	mV	65	94	10.9	-10	5	118.9	48.8	NS

Table 2. Analytical Results and Water Quality Parameters (Page 4 of 6)

Analyte	Units	1491-MW05							
		10/29/98[(a) (b)]	11/05/00[(b)]	01/10/01[(b)]	04/07/01[(b)]	07/16/01[(b)]	4/18/2002	7/16/2002	1/20/2006
Organics									
TPH-JF	mg/L	<0.50 / <0.50	<0.050 / <0.050	<0.050	<0.050	<0.050	<0.050	<0.050 / <0.050	NA
TPH-D	mg/L	1.0 / 0.82	0.83 / 1.0	0.78	0.69	0.51	0.78	0.90 / 0.81	1.0
TPH-MO	mg/L	<0.50 / <0.50	<0.50 / <0.50	<0.50	<0.50	<0.50	<0.50	<0.50 / <0.50	<0.50
Benzene	µg/L	<0.50 / <0.50	<0.63 J / <0.63 J	<0.50	<0.63 J	<0.63 J	<1.0	<0.50 / <0.50	<0.50
Toluene	µg/L	<0.50 / <0.50	<1.3 / <1.3	<0.50	<1.3	<1.3	<1.0	<0.50 / <0.50	<0.50
Ethylbenzene	µg/L	<0.50 / <0.50	<1.3 / <1.3	<0.50	<1.3	<1.3	<1.0	<0.50 / <0.50	<0.50
Total Xylenes	µg/L	0.54 / 0.69	<2.6 / <2.6	<1.00	<2.6	<2.6	<2.0	<1.00 / <1.00	<1.0
MTBE	µg/L	<0.50 / <0.50	<1.3 / <1.3	<0.50	<1.3	<1.3	<1.0	<0.50 / <0.50	<0.50
TBA	µg/L	NA / NA	<50 / <50	NA	NA	NA	NA	NA / NA	NA
DIPE	µg/L	NA / NA	<5.0 / <5.0	NA	NA	NA	NA	NA / NA	NA
ETBE	µg/L	NA / NA	<5.0 / <5.0	NA	NA	NA	NA	NA / NA	NA
TAME	µg/L	NA / NA	<5.0 / <5.0	NA	NA	NA	NA	NA / NA	NA
1,3,5-TMB	µg/L	<1.0 / <1.0	<5.0 / <5.0	<1.0	<2.5	<2.5	<2.0	<1.0 / <1.0	<1.0
1,2,4-TMB	µg/L	<1.0 / <1.0	<5.0 / <5.0	<1.0	<2.5	<2.5	<2.0	<1.0 / <1.0	<1.0
Naphthalene	µg/L	<2.0 / <2.0	<10 / <10	<2.0	<10	<10	<8.0	<4.0 / <2.0	<4
Trichloroethene	µg/L	<1.0	<5.0 / <5.0	<1.0	<2.5	<2.5	<2.0	<1.0 / <1.0	<1.0
Vinyl Chloride	µg/L	<1.0	<5.0 / <5.0	<1.0	<2.5	<2.5	<2.0	<1.0 / <1.0	<1.0
TOC	mg/L	NA / NA	8.9 / 11	6.6	10	15	22	14 / 14	34J
Methane	µg/L	NA / NA	2,500 / 1,600	4,600	560	260	220	460/410	200
Inorganics									
Nitrate	mg/L	NA / NA	<0.3 / <0.3	<0.7	<2.5	<0.5	<0.25 *	0.90 / 0.85	<0.25
Nitrite	mg/L	NA / NA	<0.5 / <0.5	<0.9	<2.5	<0.5	<0.25 *	<0.25 / <0.25	<0.25
Sulfate	mg/L	NA / NA	330 / 290	360	560	410	160	320 / 320	100J
Manganese	mg/L	NA / NA	2.8 / 2.9	5	2.2	0.92	1.13	1.28 / 1.13	1.9
Iron	mg/L	NA / NA	1.9 / 1.9	0.97	0.22	0.11	0.14	0.14 / <0.05	2.3J
Lead	mg/L	NA / NA	<0.005 / <0.005	<0.005	<0.005	<0.005	0.0015 J	<0.005 / 0.0085	<0.0050
Groundwater Quality Parameters									
Alkalinity	mg/L as $CaCO_3$	NA / NA	570 / 600	460	530	520	653	544 / 526	970
TDS	mg/L	NA / NA	2,300 / 2,400	2,900	2,300	1,800	1,630	1,810 / 1,820	2,200
pH	units	6.99	6.54	6.41	6.71	6.73	7.1	7.16	6.7
Conductivity	mS/cm	3.57	3.86	4.18	3.45	2.72	2.7	2.87	4.03
DO	mg/L	3.1	1.28	0.08	0.1	0.08	0.12	0.25	0
Turbidity	NTU	999	71	86	15	0	0	-10	0.2
Temperature	°C	22.9	23.1	21.8	20.2	23.5	21.9	25.6	22.2
Salinity	%	0.17	0.19	0.21	0.17	0.13	0.13	0.14	0.2
ORP	mV	15	-96	6.3	-102	-10	9.2	47.8	-93

Table 2. Analytical Results and Water Quality Parameters (Page 5 of 6)

Analyte	Units	1491-MW06			1491-MW07			1491-MW08		
		4/18/2002	7/16/2002	1/20/2006	4/18/2002	7/16/2002	1/20/2006	4/18/2002	7/16/2002	1/20/2006
Organics										
TPH-JF	mg/L	<0.050	<0.050	NA	<0.050	<0.050	NA	<0.050	<0.050	NA / NA
TPH-D	mg/L	<0.050	<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.10	<0.050/<0.050
TPH-MO	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50/<0.50
Benzene	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50/<0.50
Toluene	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50/<0.50
Ethylbenzene	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50/<0.50
Total Xylenes	µg/L	<1.00	<1.00	<1.0	<1.00	<1.00	<1.0	<1.00	<1.00	<1.0/<1.0
MTBE	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50/<0.50
TBA	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA / NA
DIPE	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA / NA
ETBE	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA / NA
TAME	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA / NA
1,3,5-TMB	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0/<1.0
1,2,4-TMB	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0/<1.0
Naphthalene	µg/L	<2.0	<2.0	<2	<2.0	<2.0	<2	<2.0	<2.0	<2.0/<2.0
Trichloroethene	µg/L	27	48	31	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0/<1.0
Vinyl Chloride	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0/<1.0
TOC	mg/L	3.1	4.7	5.3J	2.5	4.3	3.4J	5.5	4.8	5.2J/5.3J
Methane	µg/L	<5.0	<10	<10	6.5	<10	<10	<5.0	<10	<10/<10
Inorganics										
Nitrate	mg/L	8.0 *	9	15	4.5 *	3.4	0.88	0.41 *	0.96	<0.25/<0.25
Nitrite	mg/L	<1.0 *	<1.0	<0.25	<0.25 *	<1.0	<0.25	<0.25 *	<0.25	<0.25/<0.25
Sulfate	mg/L	560	530	550J	510	530	370J	510	630	600J/600J
Manganese	mg/L	0.0068	0.0046 J	<0.0050	0.403	0.371	<0.0050	0.0573	0.0542	0.033/0.034
Iron	mg/L	<0.05	<0.05	<0.050	<0.05	<0.05	<0.050	<0.05	<0.05	<0.05/<0.05
Lead	mg/L	<0.005	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.005	0.0025 J	<0.0050/<0.0050
Groundwater Quality Parameters										
Alkalinity	mg/L as $CaCO_3$	561	583	530	417	394	360	457	360	460/460
TDS	mg/L	3,920	3,650	3,900	3,860	4,010	3,100	2,240	2,280	2,300/2,300
pH	units	6.95	7.98	6.95	7.68	7.15	6.81	6.3	7.29	6.65
Conductivity	mS/cm	6.28	5.51	6.28	5.98	5.83	4.92	3.38	3.15	3.49
DO	mg/L	0.12	0.05	0.12	3.55	1.39	0.76	2.69	1.61	2.2
Turbidity	NTU	-10	2	0	0	-10	0	0	-10	0
Temperature	°C	20.4	22.5	20.7	20.3	24.9	20	19.9	22.5	19.7
Salinity	%	0.33	0.29	0.33	0.31	0.31	0.25	0.17	0.15	0.17
ORP	mV	146.4	115.9	159.2	165.8	96	230	201	110	240

Table 2. Analytical Results and Water Quality Parameters (Page 6 of 6)

Analyte	Units	1491-MW09			1491-MW10			1491-MW11[e]	1491-MW12[e]
		4/18/2002	7/16/2002	1/20/2006	4/18/2002	7/16/2002	1/20/2006	1/20/2006	1/20/2006
Organics									
TPH-JF	mg/L	<0.050	<0.050	NA	<0.050	<0.050	NA	NA	NA
TPH-D	mg/L	0.1	0.094[d]	0.088	<0.050	<0.10[c]	<0.050	3.5	2.5
TPH-MO	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.92	<0.50
Benzene	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	1.5
Toluene	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0
Ethylbenzene	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0
Total Xylenes	µg/L	<1.00	<1.00	<1.0	<1.00	<1.00	<1.0	<20	<2.0
MTBE	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<1.0
TBA	µg/L	NA	NA	NA	NA	NA	NA	NA	NA
DIPE	µg/L	NA	NA	NA	NA	NA	NA	NA	NA
ETBE	µg/L	NA	NA	NA	NA	NA	NA	NA	NA
TAME	µg/L	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-TMB	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<2.0
1,2,4-TMB	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<2.0
Naphthalene	µg/L	<2.0	<2.0	<2	<2.0	<2.0	<2	<80	<8.0
Trichloroethene	µg/L	<1.0	<1.0	<1.0	1.6	5.8	2.3	<20	<2.0
Vinyl Chloride	µg/L	1.6	1.8	<1.0	1.5	<1.0	<1.0	<20	<2.0
TOC	mg/L	3.9	3.8	6.4J	4.5	5.3	6	230	37J
Methane	µg/L	<5.0	<10	<10	9.4	<10	<10	280	120
Inorganics									
Nitrate	mg/L	1.3 *	1.7	10	2.5 *	6.8	10	<0.25	<0.25
Nitrite	mg/L	<0.25 *	<1.0[f]	<0.25	<0.25 *	<1.0[f]	<0.25	<0.25	<0.25
Sulfate	mg/L	280	310	210J	570	600	650J	200J	47J
Manganese	mg/L	0.724	0.725	0.0085	1.17	0.683	0.60	2.8	4.1
Iron	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.4J	<0.05
Lead	mg/L	<0.005	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050	<0.0050
Groundwater Quality Parameters									
Alkalinity	mg/L as $CaCO_3$	465	438	710	519	534	520	730	1,000
TDS	mg/L	2,670	3,030	1,700	3,640	4,230	4,300	1,800	2,100
pH	units	6.8	7.99	6.79	7.49	7.11	6.77	6.99	6.68
Conductivity	mS/cm	4.64	4.66	3.14	5.62	6.1	6.71	2.52	4.02
DO	mg/L	2.56	0.03	0.34	0.22	1.29	0	2.03	3.12
Turbidity	NTU	-10	4	1.4	0	-10	3	0	25.1
Temperature	°C	21.4	22.6	21.8	22	24.2	22.8	18.6	21.8
Salinity	%	0.24	0.24	0.2	0.29	0.32	0.4	0.12	0.2
ORP	mV	205.3	88.4	103	146.8	137.4	121	268	-72

Note: Detection limits may be increased due to sample foaming.
J = estimated value.
(a) Water samples collected from developed well during site assessment work.
(b) Well purged dry.
(c) Reported diesel concentration may include some undifferentiated lighter-end hydrocarbons.
(d) Reported diesel concentration may include some undifferentiated heavier-end hydrocarbons.
(e) Reporting limits were increased due to sample foaming.

mS/cm = millisiemens per centimeter.
mV = millivolts.
NA = not analyzed.
NS = not sampled due to the presence of free product.
NTU = nephelometric turbidity units

DIPE = di-isopropyl ether.
ETBE = ethyl-*tertiary*-butyl ether.
TAME = *tertiary*-amyl methyl ether.
TBA = *tertiary*-butyl alcohol.
TDS = total dissolved solids.

MCL for benzene = 1 µg/L.
MCL for toluene = 150 µg/L.
MCL for ethylbenzene = 700 µg/L.
MCL for xylenes = 1,750 µg/L.
MCL for MTBE = 13 µg/L.

* The concentration of Nitrite-N and Nitrate-N were determined using an acid-preserved subsample. The total sum of Nitrite-N plus Nitrate-N is considered to be accurate. The concentrations of the individual parameters of Nitrite-N and Nitrate-N may not be accurate due to alterations of the relative proportions of the two compounds by the preservation process.

Table 3. Groundwater Sampling Methods, Analytical Methods, and Standard Reporting Limits

Analyte	Volume/Storage Container	Preservation	Sample Holding Time	Analytical Method	Standard Reporting Limit[a]
Organic Analyses					
TPH-D	3×40 mL Glass	4°C	14 d	EPA SW 8015B	0.05 mg/L
TPH-MO	3×40 mL Glass	4°C	14 d	EPA SW 8015B	0.50 mg/L
BTEX	3×40 mL Glass	4°C; pH<2	14 d	EPA 624/SW8260B	0.50 µg/L
Naphthalene	3×40 mL Glass	4°C; pH<2	14 d	EPA 624/SW 8260B	2.0 µg/L
TMBs	3×40 mL Glass	4°C; pH<2	14 d	EPA 624/SW 8260B	1.0 µg/L
MTBE	3×40 mL Glass	4°C; pH<2	14 d	EPA 624/SW 8260B	0.50 µg/L
TBA	3×40 mL Glass	4°C; pH<2	14 d	EPA 624/SW 8260B	10 µg/L
DIPE	3×40 mL Glass	4°C; pH<2	14 d	EPA 624/SW 8260B	1 µg/L
ETBE	3×40 mL Glass	4°C; pH<2	14 d	EPA 624/SW 8260B	1 µg/L
TAME	3×40 mL Glass	4°C; pH<2	14 d	EPA 624/SW 8260B	1 µg/L
TOC	125 mL Glass	4°C; pH<2	28 d	EPA SW9060/415.1/SM-5310C	1.0 mg/L
Methane	3×40 mL Glass	4°C; pH<2	14 d	RSK-175	10 µg/L
PAH	250 mL Glass	4°C	7 d	EPA 8270	10 µg/L
Inorganic Analyses					
Sulfate	250 mL Glass or Plastic	4°C	28 d	EPA 300.0	1.5 mg/L
Nitrate[b]	250 mL Glass or Plastic	4°C; pH<2	28 d	EPA 300.0	0.3 mg/L
Nitrite	250 mL Glass or Plastic	4°C	48 h	EPA 300.0	0.5 mg/L
Lead	250 mL Glass or Plastic	4°C; pH<2	6 mo	EPA SW 6020	0.005 mg/L
Manganese	250 mL Glass or Plastic	4°C; pH<2	6 mo	EPA 200.8	0.01 mg/L
Iron	250 mL Glass or Plastic	4°C; pH<2	6 mo	SM 3500 Fe D	0.1 mg/L
Water Quality Parameters					
Alkalinity	250 mL Glass or Plastic	4°C	14 d	EPA 310.1	0.1 mg/L
TDS	500 mL Glass or Plastic	4°C	7 d	EPA 160.1/SM 2540C	7 mg/L

(a) The reporting limit may vary depending on concentration in the sample, sample matrix, sample volume, and the amount of TDS. Reporting limit is less than or equal to the recommended detection limit in the County of San Diego DEH *SAM Manual* (DEH, 2004).

(b) Nitrate reporting limits may vary if the analysis is performed on a preserved sample (preserved samples have a 28-day holding time, whereas unpreserved samples have a 2-day holding time).

Table 4. QA/QC Analytical Results

Analyte	Units	**1491-QCTB** 1/20/06	**1491-QCFB** 1/20/06	**1491-QCEB** 1/20/06
TPH-D	mg/L	NA	NA	<0.050
TPH-MO	mg/L	NA	NA	<0.50
Benzene	µg/L	<0.50	<0.50	NA
Toluene	µg/L	<0.50	<0.50	NA
Ethylbenzene	µg/L	<0.50	<0.50	NA
Total Xylenes	µg/L	<1.00	<1.00	NA
MTBE	µg/L	<0.50	<0.50	NA
1,3,5-TMB	µg/L	<1.0	<1.0	NA
1,2,4-TMB	µg/L	<1.0	<1.0	NA
Naphthalene	µg/L	<2.0	<2.0	NA

NA = not analyzed.
EB = equipment blank.
FB = field blank.
TB = trip blank.

APPENDIX A

FIELD DATA COLLECTION LOG SHEETS

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Well Development / Purge Log

GH

Location: 1491	Well No.: MW-04	Date: 20JAN06	Project No. ~~CG37942~~ TO 102	Page 1 of 1

Equipment:

HORIBA U 10	☐	HORIBA U22	☐
S/N:		S/N:	
FID/PHOTO VAC	☐	ORION 290A	☐
INTERFACE PROBE	☒ /	OVA 128	☐
HORIBA ORP	☐	WATER LEVEL	☐

Personnel: G. Heady, S. Lowe

EXPOSURE MONITORING
Background: _____ PPM
Reading: _____ PPM

WELL CONDITION
Good ☐
Fair ☐
Poor ☒ Riser broken thru ~6" below TOC

Total Well Depth: 25.30'			
Static Water Level: 14.79'	Depth to Product: 14.74'	Pump Type: Peristaltic ☐	Submersible ☐
Water Column:	Product Layer:	Liquid Ring ☐	Bladder Pump ☐
Well Casing Diameter: 0.33'		Pump Rate:	
Borehole Diameter:	Multiplier:	Purge Start Time: HRS	
Low Flow Method ☐		Purge Stop Time: HRS	
Minimal Purge Sampling ☐		Total volume Purged: Gal.	

Criteria used to stop purging / development: Dry Well ☐ Parameter Stabilization ☐

Time	Water Depth (btoc)	Volume Recovered (gal)	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
										product in well NO Sample
										80% Recharge Level:
										Sample Collected: HRS

Field Team Leader Signature _____ Doug Heady

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Well Development / Purge Log

Location: 1491	Well No.:MW-05	Date: 1-20-06	Project No.: ~~G337342~~ 6H TO 102	Page 1 of 1

Equipment:	Personnel: SL, GH
HORIBA U 10 ☐ HORIBA U22 ☒	
S/N: S/N:	
FID/PHOTO VAC ☐ ORION 290A ☐	EXPOSURE MONITORING / WELL CONDITION
INTERFACE PROBE ☒ OVA 128 ☐	Background:_____PPM / Good ☒
HORIBA ORP ☐ WATER LEVEL ☐	Reading:_____PPM / Fair ☐
Total Well Depth: 18.60'	Poor ☐
Static Water Level: 12.96 / Depth to Product: —	Pump Type: Peristaltic ☐ Submersible ☐
Water Column: / Product Layer: —	Liquid Ring ☐ Bladder Pump ☒
Well Casing Diameter: 0.33'	Pump Rate:
Borehole Diameter: / Multiplier: N/A	Purge Start Time: 0927 HRS
Low Flow Method ☒	Purge Stop Time: 0945 HRS
Minimal Purge Sampling ☐	Total volume Purged: 3.0L ~~Gal.~~ + SAMPLE VOLUME
Criteria used to stop purging / development: Dry Well ☐	Parameter Stabilization ☒

Time	Water Depth (btoc)	Volume Recovered ~~(gal)~~ L	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
0930	13.03	0.5	6.55	4.17	7.1	2.40	21.9	0.2	-7	• PUMP SET ON 1-19-06
0933	13.09	1.0	6.63	4.10	1.5	0.0	22.1	0.2	-62	
0936	13.13	1.5	6.65	4.07	0.6	0.0	22.1	0.2	-78	• MODERATE HYDROCARBON
0939	13.19	2.0	6.66	4.04	0.4	0.0	22.1	0.2	-86	ODOR IN PURGEWATER
0942	13.23	2.5	6.68	4.03	0.2	0.0	22.1	0.2	-91	• LIGHT SHEEN IN PURGEWATER
0945	13.27	3.0	6.70	4.03	0.2	0.0	22.2	0.2	-93	
										80% Recharge Level:
										Sample Collected: 1000 HRS

• QCFB COLLECTED @ 0945

Field Team Leader Signature

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Well Development / Purge Log

GH

Location: 1491	Well No.:MW-06	Date: 20 JAN 06	Project No.: ~~G337342~~ TO 102	Page 1 of 1

Equipment:

HORIBA U 10	☐	HORIBA U22	☐
S/N: 101028		S/N:	
FID/PHOTO VAC	☐	ORION 290A	☐
INTERFACE PROBE	☒ 1	OVA 128	☐
HORIBA ORP	☐	WATER LEVEL	☐

Personnel: S. Lowe, G. Headington

EXPOSURE MONITORING
Background:_____PPM
Reading:_____PPM

WELL CONDITION
Good ☒
Fair ☐
Poor ☐

Total Well Depth: 16.00'

Static Water Level: 9.61' Depth to Product:

Water Column: Product Layer:

Pump Type: Peristaltic ☐ Submersible ☐ Liquid Ring ☐ Bladder Pump ☒

Well Casing Diameter: 0.33'

Pump Rate:

Borehole Diameter: Multiplier:

Purge Start Time: 1401 HRS

Low Flow Method ☒

Purge Stop Time: 1446 HRS

Minimal Purge Sampling ☐

Total volume Purged: 4.3 liters Gal. plus volume collected

Criteria used to stop purging / development: Dry Well ☐ Parameter Stabilization ☒

Time	Water Depth (btoc)	Volume Recovered (gal)	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
1406	9.66'		6.51	6.28	0.0	6.73	20.3	0.33	185.2	
1415	9.66'		6.93	6.27	0.0	0.14	20.6	0.33	162.6	
1418	9.66'		6.94	6.27	0.0	0.16	20.7	0.33	161.0	
1421	9.67'		6.95	6.28	0.0	0.12	20.7	0.33	159.2	
										80% Recharge Level:
										Sample Collected: 1425 HRS

Field Team Leader Signature _____

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Well Development / Purge Log

Location: SITE 1491	Well No.: MW-06	Date: 1-26-06	Project No.: G486044	Page 1 of 1

Equipment:

- HORIBA U 10 ☐
- S/N:
- FID/PHOTO VAC ☐
- INTERFACE PROBE ☒
- HORIBA ORP ☐
- HORIBA U22 ☒ OAKTON ORP X #174908
- S/N: 927056
- ORION 290A ☐
- OVA 128 ☐
- WATER LEVEL ☐

Personnel: SCOTT LOWE

EXPOSURE MONITORING
Background: _____ PPM
Reading: _____ PPM

WELL CONDITION
Good ☒
Fair ☐
Poor ☐

Total Well Depth:

Static Water Level: 9.90' Depth to Product: —

Water Column: Product Layer: —

Pump Type: Peristaltic ☐ Submersible ☐
Liquid Ring ☐ S.S. Bladder Pump ☒ 1" DIAMETER

WELL CASING DIAMETER: 4" PVC

Borehole Diameter: Multiplier:

Pump Rate: 150 CC / min

Purge Start Time: 1014 HRS

Low Flow Method ☒

Purge Stop Time: HRS

Minimal Purge Sampling ☐

Total volume Purged: 2700 CC ~~Gal~~ + SAMPLE VOL.

Criteria used to stop purging / development: Dry Well ☐ Parameter Stabilization ☒

Time	Water Depth (btoc)	Volume Recovered ~~(gal)~~ CC	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20 OAKTON ORP	Comments
										RESAMPLED for broken PNA samples 2H
1017	9.96	450	7.08	6.64	-0.1	2.62	19.1	0.4	270	• PUMP SET @ 0800, 1-26-06
1020	9.97	900	7.04	6.66	-0.3	0.46	19.7	0.4	270	• ONLY PNA's COLLECTED
1023	9.97	1350	7.00	6.66	-0.4	0.0	20.0	0.4	266	(3x 500 ml Amber glass)
1026	9.98	1800	6.93	6.66	-0.3	0.0	20.1	0.4	266	
1029	9.98	2250	6.86	6.67	0.1	0.0	20.1	0.4	266	• SAMPLE VOL: 1.50L
1032	9.99	2700	6.84	6.68	-0.3	0.0	20.1	0.4	266	
										80% Recharge Level:
										Sample Collected: 1035 HRS

Field Team Leader Signature: Doug Heady

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Well Development / Purge Log

Location: 1491	Well No.:MW-07	Date: 20 JAN 06	Project No.: ~~G337342~~ 6H	Page 1 of 1

Equipment:			Personnel: Greg Headington, S. Lowe
HORIBA U 10 ☒	HORIBA U22 ☐		
S/N:	S/N:	OAKTON ORP ☒	
FID/PHOTO VAC ☐	ORION 290A ☐		EXPOSURE MONITORING
INTERFACE PROBE ☒ 7	OVA 128 ☐		Background:_____PPM
HORIBA ORP ☐	WATER LEVEL ☐		Reading:_____PPM
Total Well Depth: 40.00'			
Static Water Level: 13.14'	Depth to Product:		Pump Type: Peristaltic ☐ Submersible ☐
Water Column:	Product Layer:		Liquid Ring ☐ Bladder Pump ☒
Well Casing Diameter: 0.33'			Pump Rate:
Borehole Diameter:	Multiplier:		Purge Start Time: 1109 HRS
Low Flow Method ☐			Purge Stop Time: 1156 HRS
Minimal Purge Sampling ☒			Total volume Purged: 2.4 liters Gal. plus volume collected
Criteria used to stop purging / development: Dry Well ☐			Parameter Stabilization ☐

WELL CONDITION: Good ☒ Fair ☐ Poor ☐

Time	Water Depth (btoc)	Volume Recovered (gal)	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
1117	13.51'		6.83	4.84	0.0	1.08	20.3	0.25	228	
1121	13.61'		6.81	4.92	0.0	0.88	20.1	0.25	230	Flow 100 cc/min
~~1113~~ 1124	13.72'		6.81	4.92	0.0	0.76	20.0	0.25	230	
										80% Recharge Level:
										Sample Collected: 1126 HRS

Field Team Leader Signature [signature]

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Well Development / Purge Log

Location: 1491	Well No.:MW-08	Date: 20JAN06	Project No.: ~~G337342~~ GH F0102	Page 1 of 1

Equipment:

- HORIBA U 10 ☒
- S/N: 101028
- FID/PHOTO VAC ☐
- INTERFACE PROBE ☒ 1
- HORIBA ORP ☐
- HORIBA U22 ☐
- S/N:
- ORION 290A ☐
- OVA 128 ☐
- WATER LEVEL ☐
- OAKton ORP ☒

Total Well Depth: 20.00'

Static Water Level: 13.02 / 13.09' Depth to Product:

Water Column: Product Layer:

Well Casing Diameter: 0.33'

Borehole Diameter: Multiplier:

Low Flow Method ☐

Minimal Purge Sampling ☒

Criteria used to stop purging / development: Dry Well ☐

Personnel:

EXPOSURE MONITORING
Background:_____PPM
Reading:_____PPM

WELL CONDITION
Good ☐
Fair ☐
Poor ☐

Pump Type: Peristaltic ☐ Submersible ☐
Liquid Ring ☐ Bladder Pump ☒

Pump Rate:

Purge Start Time: 1211 HRS

Purge Stop Time: 1337 HRS

Total volume Purged: 4.9 Liters Gal. Plus volumes collected

Parameter Stabilization ☐

Time	Water Depth (btoc)	Volume Recovered (gal)	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
1221	13.54'		6.51	3.49	0.00	2.34	19.9	0.17	251	
1226	13.61'		6.62	3.50	0.0	2.19	19.7	0.17	247	Flow ~100 cc/min
1231	13.64'		6.64	3.49	0.0	2.07	19.7	0.17	245	
1234	13.66'		6.65	3.49	0.0	2.20	19.7	0.17	240	Level continues to drop
1316	14.03'									
										80% Recharge Level:
										Sample Collected: 1235 HRS

Field Team Leader Signature [signature]

1491 - MW08 DUP — 1235 HRS
1491 - MW08-MS — 1235 HRS
1491 - MW08 MSD — 1235 HRS

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Well Development / Purge Log

Location: 1491	Well No.:MW-09	Date: 1-20-06	Project No.: ~~G337342~~ GH TO 102	Page 1 of 1

Equipment:	Personnel: SL, GH
HORIBA U 10 ☐ HORIBA U22 ☒	
S/N: S/N:	
FID/PHOTO VAC ☐ ORION 290A ☐	EXPOSURE MONITORING / WELL CONDITION
INTERFACE PROBE ☒ OVA 128 ☐	Background:_____PPM / Good ☒
HORIBA ORP ☐ WATER LEVEL ☐	Reading:_____PPM / Fair ☐
Total Well Depth: 25.00'	Poor ☐
Static Water Level: 15.20 Depth to Product: —	Pump Type: Peristaltic ☐ Submersible ☐
Water Column: Product Layer: —	Liquid Ring ☐ Bladder Pump ☒
Well Casing Diameter: 0.33'	Pump Rate:
Borehole Diameter: Multiplier: N/A	Purge Start Time: 1257 HRS
Low Flow Method ☒	Purge Stop Time: 1315 HRS
Minimal Purge Sampling ☐	Total volume Purged: 2.0 L ~~Gal.~~ + SAMPLE VOLUME
Criteria used to stop purging / development: Dry Well ☐	Parameter Stabilization ☒

Time	Water Depth (btoc)	Volume Recovered (~~gal~~ L)	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
1300	15.25	0.3	6.90	3.18	5.9	1.90	22.3	0.2	105	PUMP SET ON 1-19-06
1303	15.28	0.6	6.88	3.16	3.5	1.22	21.7	0.2	102	
1306	15.30	1.0	6.85	3.16	2.4	0.63	21.6	0.2	103	QCEB COLLECTED @1425
1309	15.35	1.3	6.82	3.14	1.8	0.46	21.8	0.2	104	
1312	15.40	1.6	6.80	3.13	1.5	0.35	21.8	0.2	103	
1315	15.43	2.0	6.79	3.14	1.4	0.34	21.8	0.2	103	
										80% Recharge Level:
										Sample Collected: 1330 HRS

Field Team Leader Signature [signature]

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MCB Camp Pendleton

Well Development / Purge Log

GH

Location: 1491	Well No.:MW-10	Date: 1-20-06	Project No.: ~~G337342~~ T0102	Page 1 of 1

Equipment:

HORIBA U 10	☐	HORIBA U22	☒
S/N:		S/N:	
FID/PHOTO VAC	☐	ORION 290A	☐
INTERFACE PROBE	☒	OVA 128	☐
HORIBA ORP	☐	WATER LEVEL	☐

Personnel: SL, GH

EXPOSURE MONITORING
Background:_____PPM
Reading:_____PPM

WELL CONDITION
Good ☒
Fair ☐
Poor ☐

Total Well Depth: 18.00'

Static Water Level: 11.92 Depth to Product: —

Water Column: Product Layer: —

Pump Type: Peristaltic ☐ Submersible ☐
Liquid Ring ☐ Bladder Pump ☒

Well Casing Diameter: 0.33'

Pump Rate:

Borehole Diameter: Multiplier: N/A

Purge Start Time: 1042 HRS

Low Flow Method ☒

Purge Stop Time: 1103 HRS

Minimal Purge Sampling ☐

Total volume Purged: 3.5 L ~~Gal.~~ + SAMPLE VOLUME

Criteria used to stop purging / development: Dry Well ☐ Parameter Stabilization ☒

Time	Water Depth (btoc)	Volume Recovered ~~(gal)~~ L	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
1045	12.03	0.5	6.54	0.0	48.3	7.39	29.0	0.0	146	PUMP SET ON 1-19-06
1048	12.10	1.0	6.49	0.0	48.9	7.69	27.3	0.0	134	
1051	12.14	1.5	6.60	0.0	47.7	7.86	26.5	0.0	125	
1054	12.17	2.0	6.77	3.46	19.8	1.62	24.1	0.2	122	
1057	12.19	2.5	6.81	6.71	5.0	0.0	22.8	0.4	120	
1100	12.21	3.0	6.78	6.71	3.0	0.0	22.8	0.4	119	
1103	12.24	3.5	6.77	6.71	3.0	0.0	22.8	0.4	121	80% Recharge Level:
										Sample Collected: 1115 HRS

Field Team Leader Signature [signature]

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Well Development / Purge Log

Location: 1491	Well No.:MW-11	Date: 20 JAN06	Project No.: T0102	Page 1 of 1

Equipment:

HORIBA U 10	☒	HORIBA U22	☐
S/N:		S/N:	
FID/PHOTO VAC	☐	ORION 290A	☐
INTERFACE PROBE	☒ 1	OVA 128	☐
HORIBA ORP	☐	WATER LEVEL	☐

ORION ORP ☒

Personnel: S. Lowe, G. Headington

EXPOSURE MONITORING
Background:_____PPM
Reading:_____PPM

WELL CONDITION NEW well
Good ☐
Fair ☒ Needs section of Riser attached so well plug will fit proper
Poor ☐

Total Well Depth:

Static Water Level: 14.40' Depth to Product:

Water Column: Product Layer:

Pump Type: Peristaltic ☐ Submersible ☐
Liquid Ring ☐ Bladder Pump ☒

Well Casing Diameter:

Pump Rate:

Borehole Diameter: Multiplier:

Purge Start Time: 0948 HRS

Low Flow Method ☒

Purge Stop Time: 1051 HRS

Minimal Purge Sampling ☐

Total volume Purged: 2.9 liter Gal. plus volume collected

Criteria used to stop purging / development: Dry Well ☐ Parameter Stabilization ☒

Time	Water Depth (btoc)	Volume Recovered (gal)	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
										Located in excavation area
0957	14.68'		6.72	2.51	0.0	2.16	18.7	0.12	284	
1001	14.74'		6.92	2.52	0.0	2.11	18.7	0.12	278	
1005	14.76'		6.98	2.52	0.0	2.02	18.6	0.12	272	
1008	14.78'		6.99	2.52	0.0	2.03	18.6	0.12	268	
										80% Recharge Level:
										Sample Collected: 1010 HRS

Field Team Leader Signature [signature]

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Well Development / Purge Log

Location: 1491	Well No.: MW-12	Date: 1-20-06	Project No.: T0102	Page 1 of 1

Equipment:

HORIBA U 10	☐	HORIBA U22	☒
S/N:		S/N:	
FID/PHOTO VAC	☐	ORION 290A	☐
INTERFACE PROBE	☒	OVA 128	☐
HORIBA ORP	☐	WATER LEVEL	☐

Personnel: SL, GH

EXPOSURE MONITORING
Background:_____PPM
Reading:_____PPM

WELL CONDITION
Good ☒
Fair ☐
Poor ☐

Total Well Depth:

Static Water Level: 14.50 Depth to Product: —

Water Column: 13.50 Product Layer: —

Pump Type: Peristaltic ☐ Submersible ☐
Liquid Ring ☐ Bladder Pump ☒

Well Casing Diameter: 2"

Pump Rate:

Borehole Diameter: Multiplier: N/A

Purge Start Time: 1147 HRS

Low Flow Method ☒

Purge Stop Time: 1205 HRS

Minimal Purge Sampling ☐

Total volume Purged: 3.0L ~~Gal.~~ + SAMPLE VOLUME

Criteria used to stop purging / development: Dry Well ☐ Parameter Stabilization ☒

Time	Water Depth (btoc)	Volume Recovered ~~(Gal)~~ L	PH (units) +/- 0.2	Conductivity (mS/cm) +/- 5%	Turbidity (NTU) +/- 10%	Dissolved Oxygen (mg/l) +/- 0.2	Temp. (°C) +/- 3%	Salinity (%) -	ORP (mV) +/- 20	Comments
1150	13.78	0.5	6.56	3.99	43.2	3.61	22.0	0.2	-45	PUMP SET ON 1-19-06
1153	13.80	1.0	6.60	3.99	30.6	3.49	22.0	0.2	-53	
1156	13.80	1.5	6.67	4.00	26.2	3.33	21.9	0.2	-64	
1159	13.91	2.0	6.67	4.05	27.0	3.25	21.7	0.2	-68	
1202	14.00	2.5	6.68	4.02	26.0	3.17	21.8	0.2	-72	
1205	14.11	3.0	6.68	4.02	25.1	3.12	21.8	0.2	-72	
										80% Recharge Level:
										Sample Collected: 1225 HRS

Field Team Leader Signature [signature]

APPENDIX B

LABORATORY ANALYTICAL RESULTS

Alpha Analytical, Inc.

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

Date: *18-Feb-06*

Chris Zimmerman
Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
(614) 424-3779

CASE NARRATIVE

Project: TO102-1491
Work Order: BMI06012351 **Cooler Temp:** 4 °C

Alpha's Sample ID	Client's Sample ID	Matrix
06012351-01A	1491-MW05	Aqueous
06012351-02A	1491-MW06	Aqueous
06012351-03A	1491-MW07	Aqueous
06012351-04A	1491-MW08	Aqueous
06012351-05A	1491-MW09	Aqueous
06012351-06A	1491-MW10	Aqueous
06012351-07A	1491-MW11	Aqueous
06012351-08A	1491-MW12	Aqueous
06012351-09A	1491-MW08Dup	Aqueous
06012351-10A	1491-QCTB	Aqueous
06012351-11A	1491-QCFB	Aqueous
06012351-12A	1491-QCEB	Aqueous

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

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

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

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Total Petroleum Hydrocarbons - Extractable (TPH-E) EPA Method SW8015B/DHS LUFT Manual

		Parameter	Concentration		Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**	TPH-E (Diesel)	1.0		0.050 mg/L	01/20/06	01/25/06
Lab ID :	BMI06012351-01A	TPH-E (Oil)	ND		0.50 mg/L	01/20/06	01/25/06
		Surr: Nonane	94		%REC	01/20/06	01/25/06
Client ID :	**1491-MW06**	TPH-E (Diesel)	ND		0.050 mg/L	01/20/06	01/25/06
Lab ID :	BMI06012351-02A	TPH-E (Oil)	ND		0.50 mg/L	01/20/06	01/25/06
		Surr: Nonane	96		%REC	01/20/06	01/25/06
Client ID :	**1491-MW07**	TPH-E (Diesel)	ND		0.050 mg/L	01/20/06	01/25/06
Lab ID :	BMI06012351-03A	TPH-E (Oil)	ND		0.50 mg/L	01/20/06	01/25/06
		Surr: Nonane	99		%REC	01/20/06	01/25/06
Client ID :	**1491-MW08**	TPH-E (Diesel)	ND		0.050 mg/L	01/20/06	01/25/06
Lab ID :	BMI06012351-04A	TPH-E (Oil)	ND		0.50 mg/L	01/20/06	01/25/06
		Surr: Nonane	99		%REC	01/20/06	01/25/06
Client ID :	**1491-MW09**	TPH-E (Diesel)	0.088		0.050 mg/L	01/20/06	01/25/06
Lab ID :	BMI06012351-05A	TPH-E (Oil)	ND		0.50 mg/L	01/20/06	01/25/06
		Surr: Nonane	103		%REC	01/20/06	01/25/06
Client ID :	**1491-MW10**	TPH-E (Diesel)	ND		0.050 mg/L	01/20/06	01/26/06
Lab ID :	BMI06012351-06A	TPH-E (Oil)	ND		0.50 mg/L	01/20/06	01/26/06
		Surr: Nonane	101		%REC	01/20/06	01/26/06
Client ID :	**1491-MW11**	TPH-E (Diesel)	3.5		0.050 mg/L	01/20/06	01/26/06
Lab ID :	BMI06012351-07A	TPH-E (Oil)	0.92	G	0.50 mg/L	01/20/06	01/26/06
		Surr: Nonane	106		%REC	01/20/06	01/26/06
Client ID :	**1491-MW12**	TPH-E (Diesel)	2.5		0.050 mg/L	01/20/06	01/26/06
Lab ID :	BMI06012351-08A	TPH-E (Oil)	ND		0.50 mg/L	01/20/06	01/26/06
		Surr: Nonane	103		%REC	01/20/06	01/26/06
Client ID :	**1491-MW08Dup**	TPH-E (Diesel)	ND		0.050 mg/L	01/20/06	01/26/06
Lab ID :	BMI06012351-09A	TPH-E (Oil)	ND		0.50 mg/L	01/20/06	01/26/06
		Surr: Nonane	100		%REC	01/20/06	01/26/06
Client ID :	**1491-QCEB**	TPH-E (Diesel)	ND		0.050 mg/L	01/20/06	01/26/06
Lab ID :	BMI06012351-12A	TPH-E (Oil)	ND		0.50 mg/L	01/20/06	01/26/06
		Surr: Nonane	100		%REC	01/20/06	01/26/06

Alpha Analytical, Inc.

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

G = Compounds outside the range of diesel have varying amounts of recovery.
ND = Not Detected

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-01A
Client I.D. Number: 1491-MW05

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	1.0	µg/L	36	m,p-Xylene	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND	4.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	4.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	4.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	6.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	4.0	µg/L
23	Trichloroethene	ND	1.0	µg/L	58	Naphthalene	ND	4.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	4.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	4.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	108		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	95		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	95		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	4.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

Some Reporting Limits were increased due to sample foaming.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-02A
Client I.D. Number: 1491-MW06

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	1.0	µg/L	36	m,p-Xylene	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	2.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
23	Trichloroethene	31	1.0	µg/L	58	Naphthalene	ND	2.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	2.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	114		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	96		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	96		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-03A
Client I.D. Number: 1491-MW07

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	1.0	µg/L	36	m,p-Xylene	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	2.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
23	Trichloroethene	ND	1.0	µg/L	58	Naphthalene	ND	2.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	2.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	111		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	97		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	98		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-04A
Client I.D. Number: 1491-MW08

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	1.0	µg/L	36	m,p-Xylene	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	2.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
23	Trichloroethene	ND	1.0	µg/L	58	Naphthalene	ND	2.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	2.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	111		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	96		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	99		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Report Date

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-09A
Client I.D. Number: 1491-MW08Dup

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	1.0	µg/L	36	m,p-Xylene	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	2.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
23	Trichloroethene	ND	1.0	µg/L	58	Naphthalene	ND	2.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	2.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	107		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	93		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	96		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-05A
Client I.D. Number: 1491-MW09

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	1.0	µg/L	36	m,p-Xylene	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	2.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
23	Trichloroethene	ND	1.0	µg/L	58	Naphthalene	ND	2.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	2.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	110		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	93		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	96		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-06A
Client I.D. Number: 1491-MW10

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	1.0	µg/L	36	m,p-Xylene	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	2.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
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16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
23	Trichloroethene	2.3	1.0	µg/L	58	Naphthalene	ND	2.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	2.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
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27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	93		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	97		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-07A
Client I.D. Number: 1491-MW11

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	20	µg/L	36	m,p-Xylene	ND	10	µg/L
2	Chloromethane	ND	40	µg/L	37	Bromoform	ND	20	µg/L
3	Vinyl chloride	ND	20	µg/L	38	Styrene	ND	20	µg/L
4	Chloroethane	ND	20	µg/L	39	o-Xylene	ND	10	µg/L
5	Bromomethane	ND	80	µg/L	40	1,1,2,2-Tetrachloroethane	ND	20	µg/L
6	Trichlorofluoromethane	ND	20	µg/L	41	1,2,3-Trichloropropane	ND	80	µg/L
7	1,1-Dichloroethene	ND	20	µg/L	42	Isopropylbenzene	ND	20	µg/L
8	Dichloromethane	ND	80	µg/L	43	Bromobenzene	ND	20	µg/L
9	trans-1,2-Dichloroethene	ND	20	µg/L	44	n-Propylbenzene	ND	20	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	10	µg/L	45	4-Chlorotoluene	ND	20	µg/L
11	1,1-Dichloroethane	ND	20	µg/L	46	2-Chlorotoluene	ND	20	µg/L
12	cis-1,2-Dichloroethene	ND	20	µg/L	47	1,3,5-Trimethylbenzene	ND	20	µg/L
13	Bromochloromethane	ND	20	µg/L	48	tert-Butylbenzene	ND	20	µg/L
14	Chloroform	ND	20	µg/L	49	1,2,4-Trimethylbenzene	ND	20	µg/L
15	2,2-Dichloropropane	ND	20	µg/L	50	sec-Butylbenzene	ND	20	µg/L
16	1,2-Dichloroethane	ND	20	µg/L	51	1,3-Dichlorobenzene	ND	20	µg/L
17	1,1,1-Trichloroethane	ND	20	µg/L	52	1,4-Dichlorobenzene	ND	20	µg/L
18	1,1-Dichloropropene	ND	20	µg/L	53	4-Isopropyltoluene	ND	20	µg/L
19	Carbon tetrachloride	ND	20	µg/L	54	1,2-Dichlorobenzene	ND	20	µg/L
20	Benzene	ND	10	µg/L	55	n-Butylbenzene	ND	20	µg/L
21	Dibromomethane	ND	20	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	120	µg/L
22	1,2-Dichloropropane	ND	20	µg/L	57	1,2,4-Trichlorobenzene	ND	80	µg/L
23	Trichloroethene	ND	20	µg/L	58	Naphthalene	ND	80	µg/L
24	Bromodichloromethane	ND	20	µg/L	59	Hexachlorobutadiene	ND	80	µg/L
25	cis-1,3-Dichloropropene	ND	20	µg/L	60	1,2,3-Trichlorobenzene	ND	80	µg/L
26	trans-1,3-Dichloropropene	ND	20	µg/L	61	Surr: 1,2-Dichloroethane-d4	109		%REC
27	1,1,2-Trichloroethane	ND	20	µg/L	62	Surr: Toluene-d8	97		%REC
28	Toluene	ND	10	µg/L	63	Surr: 4-Bromofluorobenzene	96		%REC
29	1,3-Dichloropropane	ND	20	µg/L					
30	Dibromochloromethane	ND	20	µg/L					
31	1,2-Dibromoethane (EDB)	ND	80	µg/L					
32	Tetrachloroethene	ND	20	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	20	µg/L					
34	Chlorobenzene	ND	20	µg/L					
35	Ethylbenzene	ND	10	µg/L					

Reporting Limits were increased due to sample foaming.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-08A
Client I.D. Number: 1491-MW12

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	2.0	µg/L	36	m,p-Xylene	ND	1.0	µg/L
2	Chloromethane	ND	4.0	µg/L	37	Bromoform	ND	2.0	µg/L
3	Vinyl chloride	ND	2.0	µg/L	38	Styrene	ND	2.0	µg/L
4	Chloroethane	ND	2.0	µg/L	39	o-Xylene	ND	1.0	µg/L
5	Bromomethane	ND	8.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	2.0	µg/L
6	Trichlorofluoromethane	ND	2.0	µg/L	41	1,2,3-Trichloropropane	ND	8.0	µg/L
7	1,1-Dichloroethene	ND	2.0	µg/L	42	Isopropylbenzene	ND	2.0	µg/L
8	Dichloromethane	ND	8.0	µg/L	43	Bromobenzene	ND	2.0	µg/L
9	trans-1,2-Dichloroethene	ND	2.0	µg/L	44	n-Propylbenzene	ND	2.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	45	4-Chlorotoluene	ND	2.0	µg/L
11	1,1-Dichloroethane	ND	2.0	µg/L	46	2-Chlorotoluene	ND	2.0	µg/L
12	cis-1,2-Dichloroethene	ND	2.0	µg/L	47	1,3,5-Trimethylbenzene	ND	2.0	µg/L
13	Bromochloromethane	ND	2.0	µg/L	48	tert-Butylbenzene	ND	2.0	µg/L
14	Chloroform	ND	2.0	µg/L	49	1,2,4-Trimethylbenzene	ND	2.0	µg/L
15	2,2-Dichloropropane	ND	2.0	µg/L	50	sec-Butylbenzene	ND	2.0	µg/L
16	1,2-Dichloroethane	ND	2.0	µg/L	51	1,3-Dichlorobenzene	ND	2.0	µg/L
17	1,1,1-Trichloroethane	ND	2.0	µg/L	52	1,4-Dichlorobenzene	ND	2.0	µg/L
18	1,1-Dichloropropene	ND	2.0	µg/L	53	4-Isopropyltoluene	ND	2.0	µg/L
19	Carbon tetrachloride	ND	2.0	µg/L	54	1,2-Dichlorobenzene	ND	2.0	µg/L
20	Benzene	1.5	1.0	µg/L	55	n-Butylbenzene	ND	2.0	µg/L
21	Dibromomethane	ND	2.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	12	µg/L
22	1,2-Dichloropropane	ND	2.0	µg/L	57	1,2,4-Trichlorobenzene	ND	8.0	µg/L
23	Trichloroethene	ND	2.0	µg/L	58	Naphthalene	ND	8.0	µg/L
24	Bromodichloromethane	ND	2.0	µg/L	59	Hexachlorobutadiene	ND	8.0	µg/L
25	cis-1,3-Dichloropropene	ND	2.0	µg/L	60	1,2,3-Trichlorobenzene	ND	8.0	µg/L
26	trans-1,3-Dichloropropene	ND	2.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	105		%REC
27	1,1,2-Trichloroethane	ND	2.0	µg/L	62	Surr: Toluene-d8	95		%REC
28	Toluene	ND	1.0	µg/L	63	Surr: 4-Bromofluorobenzene	93		%REC
29	1,3-Dichloropropane	ND	2.0	µg/L					
30	Dibromochloromethane	ND	2.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	8.0	µg/L					
32	Tetrachloroethene	ND	2.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	2.0	µg/L					
34	Chlorobenzene	ND	2.0	µg/L					
35	Ethylbenzene	ND	1.0	µg/L					

Reporting Limits were increased due to sample foaming.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-10A
Client I.D. Number: 1491-QCTB

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	1.0	µg/L	36	m,p-Xylene	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	2.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
23	Trichloroethene	ND	1.0	µg/L	58	Naphthalene	ND	2.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	2.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	104		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	95		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	99		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-11A
Client I.D. Number: 1491-QCFB

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND	1.0	µg/L	36	m,p-Xylene	ND	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	2.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
23	Trichloroethene	ND	1.0	µg/L	58	Naphthalene	ND	2.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	2.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	104		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	96		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	98		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

Alpha Analytical, Inc.

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

VOC Sample Preservation Report

Work Order: BMI06012351 **Project:** TO102-1491

Alpha's Sample ID	Client's Sample ID	Matrix	pH
06012351-01A	1491-MW05	Aqueous	6
06012351-02A	1491-MW06	Aqueous	2
06012351-03A	1491-MW07	Aqueous	2
06012351-04A	1491-MW08	Aqueous	2
06012351-05A	1491-MW09	Aqueous	3
06012351-06A	1491-MW10	Aqueous	2
06012351-07A	1491-MW11	Aqueous	2
06012351-08A	1491-MW12	Aqueous	6
06012351-09A	1491-MW08Dup	Aqueous	2
06012351-10A	1491-QCTB	Aqueous	
06012351-11A	1491-QCFB	Aqueous	2

2/3/06
Report Date

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-01A
Client I.D. Number: 1491-MW05

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	20 µg/L
2	Acenaphthylene	ND	20 µg/L
3	Acenaphthene	ND	20 µg/L
4	Fluorene	ND	20 µg/L
5	Phenanthrene	ND	20 µg/L
6	Anthracene	ND	20 µg/L
7	Fluoranthene	ND	20 µg/L
8	Pyrene	ND	20 µg/L
9	Benzo(a)anthracene	ND	20 µg/L
10	Chrysene	ND	20 µg/L
11	Benzo(b)fluoranthene	ND	20 µg/L
12	Benzo(k)fluoranthene	ND	20 µg/L
13	Benzo(a)pyrene	ND	20 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	20 µg/L
15	Dibenz(a,h)anthracene	ND	20 µg/L
16	Benzo(g,h,i)perylene	ND	20 µg/L
17	Surr: Nitrobenzene-d5	84	%REC
18	Surr: 2-Fluorobiphenyl	69	%REC
19	Surr: 4-Terphenyl-d14	80	%REC

Reporting Limits were increased due to sample matrix interferences.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-02A
Client I.D. Number: 1491-MW06

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	10 µg/L
2	Acenaphthylene	ND	10 µg/L
3	Acenaphthene	ND	10 µg/L
4	Fluorene	ND	10 µg/L
5	Phenanthrene	ND	10 µg/L
6	Anthracene	ND	10 µg/L
7	Fluoranthene	ND	10 µg/L
8	Pyrene	ND	10 µg/L
9	Benzo(a)anthracene	ND	10 µg/L
10	Chrysene	ND	10 µg/L
11	Benzo(b)fluoranthene	ND	10 µg/L
12	Benzo(k)fluoranthene	ND	10 µg/L
13	Benzo(a)pyrene	ND	10 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	10 µg/L
15	Dibenz(a,h)anthracene	ND	10 µg/L
16	Benzo(g,h,i)perylene	ND	10 µg/L
17	Surr: Nitrobenzene-d5	101	%REC
18	Surr: 2-Fluorobiphenyl	81	%REC
19	Surr: 4-Terphenyl-d14	92	%REC

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-03A
Client I.D. Number: 1491-MW07

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	10 µg/L
2	Acenaphthylene	ND	10 µg/L
3	Acenaphthene	ND	10 µg/L
4	Fluorene	ND	10 µg/L
5	Phenanthrene	ND	10 µg/L
6	Anthracene	ND	10 µg/L
7	Fluoranthene	ND	10 µg/L
8	Pyrene	ND	10 µg/L
9	Benzo(a)anthracene	ND	10 µg/L
10	Chrysene	ND	10 µg/L
11	Benzo(b)fluoranthene	ND	10 µg/L
12	Benzo(k)fluoranthene	ND	10 µg/L
13	Benzo(a)pyrene	ND	10 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	10 µg/L
15	Dibenz(a,h)anthracene	ND	10 µg/L
16	Benzo(g,h,i)perylene	ND	10 µg/L
17	Surr: Nitrobenzene-d5	103	%REC
18	Surr: 2-Fluorobiphenyl	94	%REC
19	Surr: 4-Terphenyl-d14	96	%REC

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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2/3/06
Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-04A
Client I.D. Number: 1491-MW08

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	10 µg/L
2	Acenaphthylene	ND	10 µg/L
3	Acenaphthene	ND	10 µg/L
4	Fluorene	ND	10 µg/L
5	Phenanthrene	ND	10 µg/L
6	Anthracene	ND	10 µg/L
7	Fluoranthene	ND	10 µg/L
8	Pyrene	ND	10 µg/L
9	Benzo(a)anthracene	ND	10 µg/L
10	Chrysene	ND	10 µg/L
11	Benzo(b)fluoranthene	ND	10 µg/L
12	Benzo(k)fluoranthene	ND	10 µg/L
13	Benzo(a)pyrene	ND	10 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	10 µg/L
15	Dibenz(a,h)anthracene	ND	10 µg/L
16	Benzo(g,h,i)perylene	ND	10 µg/L
17	Surr: Nitrobenzene-d5	96	%REC
18	Surr: 2-Fluorobiphenyl	90	%REC
19	Surr: 4-Terphenyl-d14	92	%REC

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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2/3/06
Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-09A
Client I.D. Number: 1491-MW08Dup

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	10 µg/L
2	Acenaphthylene	ND	10 µg/L
3	Acenaphthene	ND	10 µg/L
4	Fluorene	ND	10 µg/L
5	Phenanthrene	ND	10 µg/L
6	Anthracene	ND	10 µg/L
7	Fluoranthene	ND	10 µg/L
8	Pyrene	ND	10 µg/L
9	Benzo(a)anthracene	ND	10 µg/L
10	Chrysene	ND	10 µg/L
11	Benzo(b)fluoranthene	ND	10 µg/L
12	Benzo(k)fluoranthene	ND	10 µg/L
13	Benzo(a)pyrene	ND	10 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	10 µg/L
15	Dibenz(a,h)anthracene	ND	10 µg/L
16	Benzo(g,h,i)perylene	ND	10 µg/L
17	Surr: Nitrobenzene-d5	93	%REC
18	Surr: 2-Fluorobiphenyl	72	%REC
19	Surr: 4-Terphenyl-d14	92	%REC

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-05A
Client I.D. Number: 1491-MW09

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	10 µg/L
2	Acenaphthylene	ND	10 µg/L
3	Acenaphthene	ND	10 µg/L
4	Fluorene	ND	10 µg/L
5	Phenanthrene	ND	10 µg/L
6	Anthracene	ND	10 µg/L
7	Fluoranthene	ND	10 µg/L
8	Pyrene	ND	10 µg/L
9	Benzo(a)anthracene	ND	10 µg/L
10	Chrysene	ND	10 µg/L
11	Benzo(b)fluoranthene	ND	10 µg/L
12	Benzo(k)fluoranthene	ND	10 µg/L
13	Benzo(a)pyrene	ND	10 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	10 µg/L
15	Dibenz(a,h)anthracene	ND	10 µg/L
16	Benzo(g,h,i)perylene	ND	10 µg/L
17	Surr: Nitrobenzene-d5	105	%REC
18	Surr: 2-Fluorobiphenyl	97	%REC
19	Surr: 4-Terphenyl-d14	105	%REC

ND = Not Detected

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-06A
Client I.D. Number: 1491-MW10

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	10 µg/L
2	Acenaphthylene	ND	10 µg/L
3	Acenaphthene	ND	10 µg/L
4	Fluorene	ND	10 µg/L
5	Phenanthrene	ND	10 µg/L
6	Anthracene	ND	10 µg/L
7	Fluoranthene	ND	10 µg/L
8	Pyrene	ND	10 µg/L
9	Benzo(a)anthracene	ND	10 µg/L
10	Chrysene	ND	10 µg/L
11	Benzo(b)fluoranthene	ND	10 µg/L
12	Benzo(k)fluoranthene	ND	10 µg/L
13	Benzo(a)pyrene	ND	10 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	10 µg/L
15	Dibenz(a,h)anthracene	ND	10 µg/L
16	Benzo(g,h,i)perylene	ND	10 µg/L
17	Surr: Nitrobenzene-d5	105	%REC
18	Surr: 2-Fluorobiphenyl	104	%REC
19	Surr: 4-Terphenyl-d14	101	%REC

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-07A
Client I.D. Number: 1491-MW11

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	200 µg/L
2	Acenaphthylene	ND	200 µg/L
3	Acenaphthene	ND	200 µg/L
4	Fluorene	ND	200 µg/L
5	Phenanthrene	ND	200 µg/L
6	Anthracene	ND	200 µg/L
7	Fluoranthene	ND	200 µg/L
8	Pyrene	ND	200 µg/L
9	Benzo(a)anthracene	ND	200 µg/L
10	Chrysene	ND	200 µg/L
11	Benzo(b)fluoranthene	ND	200 µg/L
12	Benzo(k)fluoranthene	ND	200 µg/L
13	Benzo(a)pyrene	ND	200 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	200 µg/L
15	Dibenz(a,h)anthracene	ND	200 µg/L
16	Benzo(g,h,i)perylene	ND	200 µg/L
17	Surr: Nitrobenzene-d5	76	%REC
18	Surr: 2-Fluorobiphenyl	95	%REC
19	Surr: 4-Terphenyl-d14	74	%REC

Reporting Limits were increased due to sample matrix interferences.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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2/3/06
Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-08A
Client I.D. Number: 1491-MW12

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	25 µg/L
2	Acenaphthylene	ND	25 µg/L
3	Acenaphthene	ND	25 µg/L
4	Fluorene	ND	25 µg/L
5	Phenanthrene	ND	25 µg/L
6	Anthracene	ND	25 µg/L
7	Fluoranthene	ND	25 µg/L
8	Pyrene	ND	25 µg/L
9	Benzo(a)anthracene	ND	25 µg/L
10	Chrysene	ND	25 µg/L
11	Benzo(b)fluoranthene	ND	25 µg/L
12	Benzo(k)fluoranthene	ND	25 µg/L
13	Benzo(a)pyrene	ND	25 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	25 µg/L
15	Dibenz(a,h)anthracene	ND	25 µg/L
16	Benzo(g,h,i)perylene	ND	25 µg/L
17	Surr: Nitrobenzene-d5	84	%REC
18	Surr: 2-Fluorobiphenyl	74	%REC
19	Surr: 4-Terphenyl-d14	82	%REC

Reporting Limits were increased due to sample matrix interferences.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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2/3/06
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Anions by IC
EPA Method 300.0 / 9056

	Parameter	Concentration		Reporting Limit	Date / Time Sampled	Date / Time Analyzed
Client ID :	Nitrite (NO2) - N	ND		0.25 mg/L	01/20/06 10:00	01/21/06 21:24
1491-MW05	Nitrate (NO3) - N	ND		0.25 mg/L	01/20/06 10:00	01/21/06 21:24
Lab ID :	Sulfate (SO4)	100		1.3 mg/L	01/20/06 10:00	01/23/06 22:55
BMI06012351-01A						
Client ID :	Nitrite (NO2) - N	ND		0.25 mg/L	01/20/06 14:25	01/21/06 21:42
1491-MW06	Nitrate (NO3) - N	15	*	0.63 mg/L	01/20/06 14:25	01/24/06 23:07
Lab ID :	Sulfate (SO4)	550		5.0 mg/L	01/20/06 14:25	01/23/06 23:50
BMI06012351-02A						
Client ID :	Nitrite (NO2) - N	ND		0.25 mg/L	01/20/06 11:26	01/21/06 22:38
1491-MW07	Nitrate (NO3) - N	0.88		0.25 mg/L	01/20/06 11:26	01/21/06 22:38
Lab ID :	Sulfate (SO4)	370		5.0 mg/L	01/20/06 11:26	01/24/06 00:09
BMI06012351-03A						
Client ID :	Nitrite (NO2) - N	ND		0.25 mg/L	01/20/06 12:35	01/21/06 22:57
1491-MW08	Nitrate (NO3) - N	ND		0.25 mg/L	01/20/06 12:35	01/21/06 22:57
Lab ID :	Sulfate (SO4)	600		13 mg/L	01/20/06 12:35	01/24/06 00:27
BMI06012351-04A						
Client ID :	Nitrite (NO2) - N	ND		0.25 mg/L	01/20/06 13:30	01/21/06 23:34
1491-MW09	Nitrate (NO3) - N	10		0.25 mg/L	01/20/06 13:30	01/21/06 23:34
Lab ID :	Sulfate (SO4)	210		2.5 mg/L	01/20/06 13:30	01/24/06 00:46
BMI06012351-05A						
Client ID :	Nitrite (NO2) - N	ND		0.25 mg/L	01/20/06 11:15	01/21/06 23:52
1491-MW10	Nitrate (NO3) - N	10	*	0.63 mg/L	01/20/06 11:15	01/24/06 23:26
Lab ID :	Sulfate (SO4)	650		13 mg/L	01/20/06 11:15	01/24/06 01:04
BMI06012351-06A						
Client ID :	Nitrite (NO2) - N	ND		0.25 mg/L	01/20/06 10:10	01/22/06 00:11
1491-MW11	Nitrate (NO3) - N	ND		0.25 mg/L	01/20/06 10:10	01/22/06 00:11
Lab ID :	Sulfate (SO4)	200		2.5 mg/L	01/20/06 10:10	01/24/06 01:23
BMI06012351-07A						
Client ID :	Nitrite (NO2) - N	ND		0.25 mg/L	01/20/06 12:25	01/22/06 00:29
1491-MW12	Nitrate (NO3) - N	ND		0.25 mg/L	01/20/06 12:25	01/22/06 00:29
Lab ID :	Sulfate (SO4)	47		1.3 mg/L	01/20/06 12:25	01/24/06 01:41
BMI06012351-08A						
Client ID :	Nitrite (NO2) - N	ND		0.25 mg/L	01/20/06 12:35	01/21/06 23:15
1491-MW08Dup	Nitrate (NO3) - N	ND		0.25 mg/L	01/20/06 12:35	01/21/06 23:15
Lab ID :	Sulfate (SO4)	600		13 mg/L	01/20/06 12:35	01/24/06 02:00
BMI06012351-09A						

Alpha Analytical, Inc.

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*Nitrate was analyzed on a preserved sample. The accuracy of Nitrate may be biased high due to the possible oxidation of Nitrite to Nitrate.

ND = Not Detected

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

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2/3/06

Report Date

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102: 1491

Iron by Spectrophotometer
SM3500-Fe D

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**					
Lab ID :	BMI06012351-01A	Iron, Ferrous (+2)	2.3	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW06**					
Lab ID :	BMI06012351-02A	Iron, Ferrous (+2)	ND	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW07**					
Lab ID :	BMI06012351-03A	Iron, Ferrous (+2)	ND	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW08**					
Lab ID :	BMI06012351-04A	Iron, Ferrous (+2)	ND	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW09**					
Lab ID :	BMI06012351-05A	Iron, Ferrous (+2)	ND	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW10**					
Lab ID :	BMI06012351-06A	Iron, Ferrous (+2)	ND	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW11**					
Lab ID :	BMI06012351-07A	Iron, Ferrous (+2)	0.40	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW12**					
Lab ID :	BMI06012351-08A	Iron, Ferrous (+2)	ND	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW08Dup**					
Lab ID :	BMI06012351-09A	Iron, Ferrous (+2)	ND	0.050 mg/L	01/20/06	01/23/06

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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2/3/06
Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Dissolved Metals by ICPMS
EPA Method SW6020

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**					
Lab ID :	BMI06012351-01A	Manganese (Mn), Dissolved	1.9	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW06**					
Lab ID :	BMI06012351-02A	Manganese (Mn), Dissolved	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW07**					
Lab ID :	BMI06012351-03A	Manganese (Mn), Dissolved	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW08**					
Lab ID :	BMI06012351-04A	Manganese (Mn), Dissolved	0.033	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW09**					
Lab ID :	BMI06012351-05A	Manganese (Mn), Dissolved	0.0085	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW10**					
Lab ID :	BMI06012351-06A	Manganese (Mn), Dissolved	0.60	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW11**					
Lab ID :	BMI06012351-07A	Manganese (Mn), Dissolved	2.8	0.020 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW12**					
Lab ID :	BMI06012351-08A	Manganese (Mn), Dissolved	4.1	0.010 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW08Dup**					
Lab ID :	BMI06012351-09A	Manganese (Mn), Dissolved	0.034	0.0050 mg/L	01/20/06	02/15/06

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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2/16/06
Report Date

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Dissolved Gases
Modified Method RSK-175 GC/FID

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**					
Lab ID :	BMI06012351-01A	Methane	0.20	0.010 mg/L	01/20/06	01/26/06
Client ID :	**1491-MW06**					
Lab ID :	BMI06012351-02A	Methane	ND	0.010 mg/L	01/20/06	01/26/06
Client ID :	**1491-MW07**					
Lab ID :	BMI06012351-03A	Methane	ND	0.010 mg/L	01/20/06	01/26/06
Client ID :	**1491-MW08**					
Lab ID :	BMI06012351-04A	Methane	ND	0.010 mg/L	01/20/06	01/26/06
Client ID :	**1491-MW09**					
Lab ID :	BMI06012351-05A	Methane	ND	0.010 mg/L	01/20/06	01/27/06
Client ID :	**1491-MW10**					
Lab ID :	BMI06012351-06A	Methane	ND	0.010 mg/L	01/20/06	01/27/06
Client ID :	**1491-MW11**					
Lab ID :	BMI06012351-07A	Methane	0.28	0.010 mg/L	01/20/06	01/27/06
Client ID :	**1491-MW12**					
Lab ID :	BMI06012351-08A	Methane	0.12	0.010 mg/L	01/20/06	01/27/06
Client ID :	**1491-MW08Dup**					
Lab ID :	BMI06012351-09A	Methane	ND	0.010 mg/L	01/20/06	01/27/06

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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2/3/06
Report Date

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Metals by ICPMS
EPA Method SW6020

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**					
Lab ID :	BMI06012351-01A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW06**					
Lab ID :	BMI06012351-02A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW07**					
Lab ID :	BMI06012351-03A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW08**					
Lab ID :	BMI06012351-04A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW09**					
Lab ID :	BMI06012351-05A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW10**					
Lab ID :	BMI06012351-06A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW11**					
Lab ID :	BMI06012351-07A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW12**					
Lab ID :	BMI06012351-08A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW08Dup**					
Lab ID :	BMI06012351-09A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06

ND – Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Total Organic Carbon as NonPurgeable Organic Carbon
EPA Method SW9060/415.1/SM-5310C

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**					
Lab ID :	BMI06012351-01A	Total Organic Carbon	34	4.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW06**					
Lab ID :	BMI06012351-02A	Total Organic Carbon	5.3	1.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW07**					
Lab ID :	BMI06012351-03A	Total Organic Carbon	3.4	1.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW08**					
Lab ID :	BMI06012351-04A	Total Organic Carbon	5.2	1.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW09**					
Lab ID :	BMI06012351-05A	Total Organic Carbon	6.4	1.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW10**					
Lab ID :	BMI06012351-06A	Total Organic Carbon	6.0	1.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW11**					
Lab ID :	BMI06012351-07A	Total Organic Carbon	230	20 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW12**					
Lab ID :	BMI06012351-08A	Total Organic Carbon	37	4.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW08Dup**					
Lab ID :	BMI06012351-09A	Total Organic Carbon	5.3	1.0 mg/L	01/20/06	01/24/06

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2/6/06
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ANALYTICAL REPORT

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Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Total Dissolved Solids (TDS)
EPA Method 160.1 / SM 2540 C

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**					
Lab ID :	BMI06012351-01A	Solids, Total Dissolved (TDS)	2,200	10 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW06**					
Lab ID :	BMI06012351-02A	Solids, Total Dissolved (TDS)	3,900	25 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW07**					
Lab ID :	BMI06012351-03A	Solids, Total Dissolved (TDS)	3,100	25 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW08**					
Lab ID :	BMI06012351-04A	Solids, Total Dissolved (TDS)	2,300	10 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW09**					
Lab ID :	BMI06012351-05A	Solids, Total Dissolved (TDS)	1,700	10 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW10**					
Lab ID :	BMI06012351-06A	Solids, Total Dissolved (TDS)	4,300	25 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW11**					
Lab ID :	BMI06012351-07A	Solids, Total Dissolved (TDS)	1,800	10 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW12**					
Lab ID :	BMI06012351-08A	Solids, Total Dissolved (TDS)	2,100	10 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW08Dup**					
Lab ID :	BMI06012351-09A	Solids, Total Dissolved (TDS)	2,300	10 mg/L	01/20/06	01/30/06

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Report Date

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Alkalinity
EPA Method 310.1

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**					
Lab ID :	BMI06012351-01A	Alkalinity, Total (As CaCO3 at pH 4.5)	970	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW06**					
Lab ID :	BMI06012351-02A	Alkalinity, Total (As CaCO3 at pH 4.5)	530	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW07**					
Lab ID :	BMI06012351-03A	Alkalinity, Total (As CaCO3 at pH 4.5)	360	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW08**					
Lab ID :	BMI06012351-04A	Alkalinity, Total (As CaCO3 at pH 4.5)	460	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW09**					
Lab ID :	BMI06012351-05A	Alkalinity, Total (As CaCO3 at pH 4.5)	710	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW10**					
Lab ID :	BMI06012351-06A	Alkalinity, Total (As CaCO3 at pH 4.5)	520	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW11**					
Lab ID :	BMI06012351-07A	Alkalinity, Total (As CaCO3 at pH 4.5)	730	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW12**					
Lab ID :	BMI06012351-08A	Alkalinity, Total (As CaCO3 at pH 4.5)	1,000	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW08Dup**					
Lab ID :	BMI06012351-09A	Alkalinity, Total (As CaCO3 at pH 4.5)	460	1.0 mg/L	01/20/06	02/03/06

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Report Date

APPENDIX C

LABORATORY QA/QC ANALYTICAL RESULTS

Alpha Analytical, Inc.

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

Method Blank

Type: **MBLK** Test Code: **EPA Method SW8015**

File ID: Batch ID: **13967** Analysis Date: **01/25/2006 16:31**

Sample ID: **MBLK-13967** Units : **mg/L** Run ID: **FID_1_060125A** Prep Date: **01/25/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
TPH-E (Diesel)	ND	0.05								
TPH-E (Oil)	ND	0.5								
Surr: Nonane	98.2		100		98	47	141			

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method SW8015**

File ID: Batch ID: **13967** Analysis Date: **01/25/2006 16:00**

Sample ID: **LCS-13967** Units : **mg/L** Run ID: **FID_1_060125A** Prep Date: **01/25/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
TPH-E (Diesel)	2.21	0.5	2.5		88	64	129			
Surr: Nonane	98.7		100		99	47	141			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method SW8015**

File ID: Batch ID: **13967** Analysis Date: **01/25/2006 20:12**

Sample ID: **06012351-02AMS** Units : **mg/L** Run ID: **FID_1_060125A** Prep Date: **01/25/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
TPH-E (Diesel)	2.25	0.5	2.5	0	90	56	147			
Surr: Nonane	108		100		108	47	141			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method SW8015**

File ID: Batch ID: **13967** Analysis Date: **01/25/2006 20:43**

Sample ID: **06012351-02AMSD** Units : **mg/L** Run ID: **FID_1_060125A** Prep Date: **01/25/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
TPH-E (Diesel)	2.32	0.5	2.5	0	93	56	147	2.25	3.0(25)	
Surr: Nonane	102		100		102	47	141			

Comments:

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

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

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

File ID: **C:\HPCHEM\MS10\DATA\060126\06012605.D** Batch ID: **MS10W0126A** Analysis Date: **01/26/2006 09:16**

Sample ID: **MBLK MS10W0126A** Units : **µg/L** Run ID: **MSD_10_060126A** Prep Date: **01/26/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	ND	1								
Chloromethane	ND	2								
Vinyl chloride	ND	1								
Chloroethane	ND	1								
Bromomethane	ND	2								
Trichlorofluoromethane	ND	1								
1,1-Dichloroethene	ND	1								
Dichloromethane	ND	2								
trans-1,2-Dichloroethene	ND	1								
Methyl tert-butyl ether (MTBE)	ND	0.5								
1,1-Dichloroethane	ND	1								
cis-1,2-Dichloroethene	ND	1								
Bromochloromethane	ND	1								
Chloroform	ND	1								
2,2-Dichloropropane	ND	1								
1,2-Dichloroethane	ND	1								
1,1,1-Trichloroethane	ND	1								
1,1-Dichloropropene	ND	1								
Carbon tetrachloride	ND	1								
Benzene	ND	0.5								
Dibromomethane	ND	1								
1,2-Dichloropropane	ND	1								
Trichloroethene	ND	1								
Bromodichloromethane	ND	1								
cis-1,3-Dichloropropene	ND	1								
trans-1,3-Dichloropropene	ND	1								
1,1,2-Trichloroethane	ND	1								
Toluene	ND	0.5								
1,3-Dichloropropane	ND	1								
Dibromochloromethane	ND	1								
1,2-Dibromoethane (EDB)	ND	2								
Tetrachloroethene	ND	1								
1,1,1,2-Tetrachloroethane	ND	1								
Chlorobenzene	ND	1								
Ethylbenzene	ND	0.5								
m,p-Xylene	ND	0.5								
Bromoform	ND	1								
Styrene	ND	1								
o-Xylene	ND	0.5								
1,1,2,2-Tetrachloroethane	ND	1								
1,2,3-Trichloropropane	ND	2								
Isopropylbenzene	ND	1								
Bromobenzene	ND	1								
n-Propylbenzene	ND	1								
4-Chlorotoluene	ND	1								
2-Chlorotoluene	ND	1								
1,3,5-Trimethylbenzene	ND	1								
tert-Butylbenzene	ND	1								
1,2,4-Trimethylbenzene	ND	1								
sec-Butylbenzene	ND	1								
1,3-Dichlorobenzene	ND	1								
1,4-Dichlorobenzene	ND	1								
4-Isopropyltoluene	ND	1								
1,2-Dichlorobenzene	ND	1								
n-Butylbenzene	ND	1								
1,2-Dibromo-3-chloropropane (DBCP)	ND	5								
1,2,4-Trichlorobenzene	ND	2								
Naphthalene	ND	2								
Hexachlorobutadiene	ND	2								
1,2,3-Trichlorobenzene	ND	2								
Surr: 1,2-Dichloroethane-d4	10.2		10		102	76	127			
Surr: Toluene-d8	9.61		10		96	84	113			
Surr: 4-Bromofluorobenzene	9.96		10		99.6	79	119			

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

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

File ID: **C:\HPCHEM\MS10\DATA\060126\06012603.D** Batch ID: **MS10W0126A** Analysis Date: **01/26/2006 08:33**

Sample ID: **LCS MS10W0126A** Units : **µg/L** Run ID: **MSD_10_060126A** Prep Date: **01/26/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	7.57	1	10		76	32	129			
Chloromethane	9.67	2	10		97	44	121			
Vinyl chloride	9.77	1	10		98	80	120			
Chloroethane	12.9	1	10		129	52	142			
Bromomethane	10.3	2	10		103	5	151			
Trichlorofluoromethane	10.7	1	10		107	70	141			
1,1-Dichloroethene	9.76	1	10		98	80	120			
Dichloromethane	9.43	2	10		94	73	117			
trans-1,2-Dichloroethene	10.3	1	10		103	74	129			
1,1-Dichloroethane	10.6	1	10		106	78	125			
cis-1,2-Dichloroethene	10.7	1	10		107	79	126			
Bromochloromethane	9.7	1	10		97	76	126			
Chloroform	9.63	1	10		96	80	120			
2,2-Dichloropropane	10.8	1	10		108	71	156			
1,2-Dichloroethane	10.1	1	10		101	72	135			
1,1,1-Trichloroethane	9.08	1	10		91	74	132			
1,1-Dichloropropene	11.4	1	10		114	83	129			
Carbon tetrachloride	9.05	1	10		91	68	137			
Benzene	10.7	0.5	10		107	81	122			
Dibromomethane	10.3	1	10		103	75	127			
1,2-Dichloropropane	9.9	1	10		99	80	120			
Trichloroethene	9.53	1	10		95	74	125			
Bromodichloromethane	10.1	1	10		101	75	130			
cis-1,3-Dichloropropene	11.1	1	10		111	78	128			
trans-1,3-Dichloropropene	11.1	1	10		111	74	134			
1,1,2-Trichloroethane	10.9	1	10		109	75	129			
Toluene	9.43	0.5	10		94	80	120			
1,3-Dichloropropane	9.99	1	10		99.9	73	129			
Dibromochloromethane	8.73	1	10		87	71	130			
1,2-Dibromoethane (EDB)	18.9	2	20		95	75	132			
Tetrachloroethene	8.63	1	10		86	73	131			
1,1,1,2-Tetrachloroethane	9.27	1	10		93	78	125			
Chlorobenzene	9.99	1	10		99.9	79	124			
Ethylbenzene	9.39	0.5	10		94	80	120			
m,p-Xylene	9.24	0.5	10		92	80	129			
Bromoform	9	1	10		90	66	138			
Styrene	9.18	1	10		92	79	130			
o-Xylene	9.09	0.5	10		91	80	129			
1,1,2,2-Tetrachloroethane	10.2	1	10		102	63	142			
1,2,3-Trichloropropane	20.8	2	20		104	73	132			
Isopropylbenzene	10.7	1	10		107	78	133			
Bromobenzene	10.3	1	10		103	76	127			
n-Propylbenzene	11.1	1	10		111	78	130			
4-Chlorotoluene	10.7	1	10		107	80	129			
2-Chlorotoluene	11	1	10		110	79	129			
1,3,5-Trimethylbenzene	11.4	1	10		114	77	134			
tert-Butylbenzene	10.3	1	10		103	80	129			
1,2,4-Trimethylbenzene	11.4	1	10		114	77	133			
sec-Butylbenzene	10.9	1	10		109	79	129			
1,3-Dichlorobenzene	10.1	1	10		101	80	125			
1,4-Dichlorobenzene	10.5	1	10		105	79	125			
4-Isopropyltoluene	10.8	1	10		108	77	133			
1,2-Dichlorobenzene	10.5	1	10		105	79	119			
n-Butylbenzene	12.2	1	10		122	72	138			
1,2-Dibromo-3-chloropropane (DBCP)	47.6	3	50		95	61	138			
1,2,4-Trichlorobenzene	10	2	10		100	55	139			
Naphthalene	9.82	2	10		98	35	150			
Hexachlorobutadiene	16.5	2	20		83	65	135			
1,2,3-Trichlorobenzene	9.44	2	10		94	39	147			
Surr: 1,2-Dichloroethane-d4	10.8		10		108	76	127			
Surr: Toluene-d8	9.32		10		93	84	113			
Surr: 4-Bromofluorobenzene	9.73		10		97	79	119			

Alpha Analytical, Inc.

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

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

File ID: **C:\HPCHEM\MS10\DATA\060126\06012610.D** Batch ID: **MS10W0126A** Analysis Date: **01/26/2006 11:05**

Sample ID: **06012351-01AMS** Units : **µg/L** Run ID: **MSD_10_060126A** Prep Date: **01/26/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	49.9	2.5	50	0	99.7	17	130			
Chloromethane	58.5	5	50	0	117	31	127			
Vinyl chloride	56.3	2.5	50	0	113	52	131			
Chloroethane	68.8	2.5	50	0	138	40	146			
Bromomethane	56.8	10	50	0	114	4	152			
Trichlorofluoromethane	53.3	2.5	50	0	107	57	143			
1,1-Dichloroethene	49.3	2.5	50	0	99	65	127			
Dichloromethane	51.3	10	50	0	103	68	119			
trans-1,2-Dichloroethene	51	2.5	50	0	102	67	131			
1,1-Dichloroethane	54.2	2.5	50	0	108	71	128			
cis-1,2-Dichloroethene	55.4	2.5	50	0	111	73	129			
Bromochloromethane	50.9	2.5	50	0	102	71	130			
Chloroform	49.5	2.5	50	0	99	71	124			
2,2-Dichloropropane	50.4	2.5	50	0	101	52	157			
1,2-Dichloroethane	52.7	2.5	50	0	105	68	139			
1,1,1-Trichloroethane	45.4	2.5	50	0	91	67	134			
1,1-Dichloropropene	56.1	2.5	50	0	112	75	130			
Carbon tetrachloride	44.4	2.5	50	0	89	62	137			
Benzene	54.5	1.3	50	0	109	74	125			
Dibromomethane	54.9	2.5	50	0	110	73	130			
1,2-Dichloropropane	51.9	2.5	50	0	104	72	130			
Trichloroethene	47.7	2.5	50	0	95	66	126			
Bromodichloromethane	53.4	2.5	50	0	107	70	133			
cis-1,3-Dichloropropene	54.2	2.5	50	0	108	61	130			
trans-1,3-Dichloropropene	55.2	2.5	50	0	110	67	134			
1,1,2-Trichloroethane	60.1	2.5	50	0	120	72	132			
Toluene	46.2	1.3	50	0	92	76	120			
1,3-Dichloropropane	48.6	2.5	50	0	97	73	129			
Dibromochloromethane	43.9	2.5	50	0	88	70	130			
1,2-Dibromoethane (EDB)	96.1	10	100	0	96	75	133			
Tetrachloroethene	40.4	2.5	50	0	81	66	131			
1,1,1,2-Tetrachloroethane	46.1	2.5	50	0	92	76	126			
Chlorobenzene	51.4	2.5	50	0	103	76	124			
Ethylbenzene	48.4	1.3	50	0	97	77	124			
m,p-Xylene	47.8	1.3	50	0	96	73	130			
Bromoform	49.5	2.5	50	0	99	66	140			
Styrene	49	2.5	50	0	98	73	131			
o-Xylene	48.2	1.3	50	0	96	74	131			
1,1,2,2-Tetrachloroethane	59	2.5	50	0	118	63	146			
1,2,3-Trichloropropane	116	10	100	0	116	73	136			
Isopropylbenzene	50.6	2.5	50	0	101	73	133			
Bromobenzene	50.4	2.5	50	0	101	75	127			
n-Propylbenzene	52.7	2.5	50	0	105	73	130			
4-Chlorotoluene	53.4	2.5	50	0	107	76	129			
2-Chlorotoluene	52.8	2.5	50	0	106	76	129			
1,3,5-Trimethylbenzene	54.9	2.5	50	0	110	70	135			
tert-Butylbenzene	49.3	2.5	50	0	99	74	129			
1,2,4-Trimethylbenzene	54.9	2.5	50	0	110	70	134			
sec-Butylbenzene	52.2	2.5	50	0	104	74	129			
1,3-Dichlorobenzene	50.7	2.5	50	0	101	77	125			
1,4-Dichlorobenzene	51.6	2.5	50	0	103	76	126			
4-Isopropyltoluene	52.7	2.5	50	0	105	71	133			
1,2-Dichlorobenzene	52.8	2.5	50	0	106	77	120			
n-Butylbenzene	59	2.5	50	0	118	63	138			
1,2-Dibromo-3-chloropropane (DBCP)	270	15	250	0	108	61	142			
1,2,4-Trichlorobenzene	50.6	10	50	0	101	54	143			
Naphthalene	57.3	10	50	0	115	35	159			
Hexachlorobutadiene	84.3	10	100	0	84	60	136			
1,2,3-Trichlorobenzene	51	10	50	0	102	38	154			
Surr: 1,2-Dichloroethane-d4	55.3		50		111	76	127			
Surr: Toluene-d8	44.2		50		88	84	113			
Surr: 4-Bromofluorobenzene	46.3		50		93	79	119			

Alpha Analytical, Inc.

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

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

File ID: **C:\HPCHEM\MS10\DATA\060126\06012611.D** Batch ID: **MS10W0126A** Analysis Date: **01/26/2006 11:27**

Sample ID: **06012351-01AMSD** Units : **µg/L** Run ID: **MSD_10_060126A** Prep Date: **01/26/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Dichlorodifluoromethane	51	2.5	50	0	102	17	130	49.87	2.3(16)	
Chloromethane	61	5	50	0	122	31	127	58.54	4.1(20)	
Vinyl chloride	57.6	2.5	50	0	115	52	131	56.31	2.2(16)	
Chloroethane	66.1	2.5	50	0	132	40	146	68.75	4.0(40)	
Bromomethane	56.8	10	50	0	114	4	152	56.75	0.1(32)	
Trichlorofluoromethane	51.5	2.5	50	0	103	57	143	53.27	3.3(22)	
1,1-Dichloroethene	47.8	2.5	50	0	96	65	127	49.25	2.9(17)	
Dichloromethane	51.6	10	50	0	103	68	119	51.34	0.5(15)	
trans-1,2-Dichloroethene	50.4	2.5	50	0	101	67	131	50.97	1.1(30)	
1,1-Dichloroethane	53.5	2.5	50	0	107	71	128	54.2	1.2(14)	
cis-1,2-Dichloroethene	54.7	2.5	50	0	109	73	129	55.4	1.4(23)	
Bromochloromethane	50.9	2.5	50	0	102	71	130	50.91	0.0(15)	
Chloroform	49.3	2.5	50	0	99	71	124	49.48	0.4(13)	
2,2-Dichloropropane	49.5	2.5	50	0	99	52	157	50.41	1.9(14)	
1,2-Dichloroethane	52.3	2.5	50	0	105	68	139	52.67	0.7(14)	
1,1,1-Trichloroethane	44.2	2.5	50	0	88	67	134	45.44	2.7(14)	
1,1-Dichloropropene	55.2	2.5	50	0	110	75	130	56.08	1.6(14)	
Carbon tetrachloride	44.7	2.5	50	0	89	62	137	44.44	0.7(15)	
Benzene	54	1.3	50	0	108	74	125	54.48	1.0(13)	
Dibromomethane	54.8	2.5	50	0	110	73	130	54.89	0.3(15)	
1,2-Dichloropropane	52	2.5	50	0	104	72	130	51.86	0.3(13)	
Trichloroethene	46.6	2.5	50	0	93	66	126	47.66	2.2(13)	
Bromodichloromethane	53.6	2.5	50	0	107	70	133	53.41	0.3(14)	
cis-1,3-Dichloropropene	54.9	2.5	50	0	110	61	130	54.2	1.3(15)	
trans-1,3-Dichloropropene	55.2	2.5	50	0	110	67	134	55.2	0.1(16)	
1,1,2-Trichloroethane	60.2	2.5	50	0	120	72	132	60.13	0.1(16)	
Toluene	45.4	1.3	50	0	91	76	120	46.18	1.7(13)	
1,3-Dichloropropane	48.3	2.5	50	0	97	73	129	48.59	0.7(15)	
Dibromochloromethane	43.8	2.5	50	0	88	70	130	43.87	0.3(15)	
1,2-Dibromoethane (EDB)	96.3	10	100	0	96	75	133	96.07	0.2(15)	
Tetrachloroethene	39.7	2.5	50	0	79	66	131	40.44	1.9(14)	
1,1,1,2-Tetrachloroethane	45.8	2.5	50	0	92	76	126	46.12	0.8(13)	
Chlorobenzene	51.4	2.5	50	0	103	76	124	51.36	0.1(12)	
Ethylbenzene	47.8	1.3	50	0	96	77	124	48.38	1.2(13)	
m,p-Xylene	47.3	1.3	50	0	95	73	130	47.78	1.0(14)	
Bromoform	50	2.5	50	0	100	66	140	49.51	1.1(16)	
Styrene	49	2.5	50	0	98	73	131	49.03	0.2(13)	
o-Xylene	48.1	1.3	50	0	96	74	131	48.21	0.2(13)	
1,1,2,2-Tetrachloroethane	61.4	2.5	50	0	123	63	146	58.97	4.0(17)	
1,2,3-Trichloropropane	119	10	100	0	119	73	136	116.2	2.0(19)	
Isopropylbenzene	51.2	2.5	50	0	102	73	133	50.64	1.2(15)	
Bromobenzene	52.5	2.5	50	0	105	75	127	50.43	4.0(18)	
n-Propylbenzene	52.4	2.5	50	0	105	73	130	52.73	0.6(14)	
4-Chlorotoluene	54.4	2.5	50	0	109	76	129	53.37	2.0(13)	
2-Chlorotoluene	53.5	2.5	50	0	107	76	129	52.82	1.4(13)	
1,3,5-Trimethylbenzene	55	2.5	50	0	110	70	135	54.88	0.2(14)	
tert-Butylbenzene	49.8	2.5	50	0	99.5	74	129	49.34	0.9(14)	
1,2,4-Trimethylbenzene	55	2.5	50	0	110	70	134	54.89	0.3(14)	
sec-Butylbenzene	52.2	2.5	50	0	104	74	129	52.17	0.0(14)	
1,3-Dichlorobenzene	52.3	2.5	50	0	105	77	125	50.73	3.0(12)	
1,4-Dichlorobenzene	52.5	2.5	50	0	105	76	126	51.61	1.8(12)	
4-Isopropyltoluene	52.3	2.5	50	0	105	71	133	52.71	0.8(15)	
1,2-Dichlorobenzene	54.2	2.5	50	0	108	77	120	52.75	2.6(12)	
n-Butylbenzene	58.8	2.5	50	0	118	63	138	59.01	0.4(15)	
1,2-Dibromo-3-chloropropane (DBCP)	293	15	250	0	117	61	142	270	8.2(17)	
1,2,4-Trichlorobenzene	53.1	10	50	0	106	54	143	50.55	4.9(21)	
Naphthalene	61.2	10	50	0	122	35	159	57.29	6.6(28)	
Hexachlorobutadiene	86.6	10	100	0	87	60	136	84.27	2.7(17)	
1,2,3-Trichlorobenzene	54.9	10	50	0	110	38	154	51	7.3(33)	
Surr: 1,2-Dichloroethane-d4	55.8		50		112	76	127			
Surr: Toluene-d8	43.9		50		88	84	113			
Surr: 4-Bromofluorobenzene	47.6		50		95	79	119			

Alpha Analytical, Inc.

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

Comments:

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

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

Method Blank

Type: **MBLK** Test Code: **EPA Method SW8270C**

File ID: **06013104.D** Batch ID: **13983** Analysis Date: **01/31/2006 11:49**

Sample ID: **MBLK 13983** Units : **µg/L** Run ID: **MSD_14_060127B** Prep Date: **01/27/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Naphthalene	ND	10								
Acenaphthylene	ND	10								
Acenaphthene	ND	10								
Fluorene	ND	10								
Phenanthrene	ND	10								
Anthracene	ND	10								
Fluoranthene	ND	10								
Pyrene	ND	10								
Benzo(a)anthracene	ND	10								
Chrysene	ND	10								
Benzo(b)fluoranthene	ND	10								
Benzo(k)fluoranthene	ND	10								
Benzo(a)pyrene	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Dibenz(a,h)anthracene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Surr: Nitrobenzene-d5	94.2		100		94	62	124			
Surr: 2-Fluorobiphenyl	77.1		100		77	54	113			
Surr: 4-Terphenyl-d14	87.9		100		88	60	116			

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method SW8270C**

File ID: **06013105.D** Batch ID: **13983** Analysis Date: **01/31/2006 12:24**

Sample ID: **LCS 13983** Units : **µg/L** Run ID: **MSD_14_060127B** Prep Date: **01/27/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Naphthalene	73.3	10	100		73	62	104			
Acenaphthylene	85	10	100		85	71	120			
Acenaphthene	79.2	10	100		79	67	109			
Fluorene	81.8	10	100		82	67	114			
Phenanthrene	74.4	10	100		74	69	117			
Anthracene	76.1	10	100		76	70	117			
Fluoranthene	79	10	100		79	64	123			
Pyrene	77.3	10	100		77	70	119			
Benzo(a)anthracene	87.9	10	100		88	69	115			
Chrysene	90.5	10	100		91	63	129			
Benzo(b)fluoranthene	78.4	10	100		78	69	117			
Benzo(k)fluoranthene	83.1	10	100		83	70	122			
Benzo(a)pyrene	74.4	10	100		74	71	119			
Indeno(1,2,3-cd)pyrene	75.4	10	100		75	65	119			
Dibenz(a,h)anthracene	71	10	100		71	59	125			
Benzo(g,h,i)perylene	74.6	10	100		75	65	122			
Surr: Nitrobenzene-d5	109		100		109	62	124			
Surr: 2-Fluorobiphenyl	104		100		104	54	113			
Surr: 4-Terphenyl-d14	90.3		100		90	60	116			

Alpha Analytical, Inc.

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method SW8270C**

File ID: **06013118.D** Batch ID: **13983** Analysis Date: **01/31/2006 20:00**

Sample ID: **06012351-04AMS** Units : **µg/L** Run ID: **MSD_14_060127B** Prep Date: **01/27/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Naphthalene	72.4	10	100	0	72	30	116			
Acenaphthylene	82.3	10	100	0	82	57	120			
Acenaphthene	76.9	10	100	0	77	55	113			
Fluorene	78.5	10	100	0	78	57	116			
Phenanthrene	71.2	10	100	0	71	66	119			
Anthracene	73.4	10	100	0	73	61	120			
Fluoranthene	75.7	10	100	0	76	62	123			
Pyrene	74.1	10	100	0	74	63	120			
Benzo(a)anthracene	83.4	10	100	0	83	66	118			
Chrysene	84.4	10	100	0	84	58	130			
Benzo(b)fluoranthene	73.7	10	100	0	74	64	121			
Benzo(k)fluoranthene	76.9	10	100	0	77	65	122			
Benzo(a)pyrene	70.4	10	100	0	70	61	122			
Indeno(1,2,3-cd)pyrene	72.6	10	100	0	73	57	123			
Dibenz(a,h)anthracene	68.8	10	100	0	69	56	127			
Benzo(g,h,i)perylene	71.4	10	100	0	71	56	125			
Surr: Nitrobenzene-d5	102		100		102	62	124			
Surr: 2-Fluorobiphenyl	109		100		109	54	113			
Surr: 4-Terphenyl-d14	86.3		100		86	60	116			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method SW8270C**

File ID: **06013119.D** Batch ID: **13983** Analysis Date: **01/31/2006 20:39**

Sample ID: **06012351-04AMSD** Units : **µg/L** Run ID: **MSD_14_060127B** Prep Date: **01/27/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Naphthalene	72.7	10	100	0	73	30	116	72.4	0.4(35)	
Acenaphthylene	84.2	10	100	0	84	57	120	82.28	2.3(18)	
Acenaphthene	79	10	100	0	79	55	113	76.88	2.7(16)	
Fluorene	81.4	10	100	0	81	57	116	78.45	3.7(15)	
Phenanthrene	71.8	10	100	0	72	66	119	71.21	0.8(16)	
Anthracene	74.7	10	100	0	75	61	120	73.41	1.7(18)	
Fluoranthene	76.8	10	100	0	77	62	123	75.68	1.5(23)	
Pyrene	76	10	100	0	76	63	120	74.11	2.5(23)	
Benzo(a)anthracene	83.6	10	100	0	84	66	118	83.38	0.3(16)	
Chrysene	85.3	10	100	0	85	58	130	84.42	1.0(16)	
Benzo(b)fluoranthene	74.4	10	100	0	74	64	121	73.7	0.9(19)	
Benzo(k)fluoranthene	78.8	10	100	0	79	65	122	76.91	2.5(13)	
Benzo(a)pyrene	71.1	10	100	0	71	61	122	70.37	1.0(18)	
Indeno(1,2,3-cd)pyrene	74.6	10	100	0	75	57	123	72.59	2.7(22)	
Dibenz(a,h)anthracene	81.3	10	100	0	81	56	127	68.79	16.6(23)	
Benzo(g,h,i)perylene	74.8	10	100	0	75	56	125	71.41	4.6(25)	
Surr: Nitrobenzene-d5	106		100		106	62	124			
Surr: 2-Fluorobiphenyl	114		100		114	54	113			S55
Surr: 4-Terphenyl-d14	89.3		100		89	60	116			

Comments:

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

S55 = Surrogate recovery was above laboratory acceptance limits.

Alpha Analytical, Inc.

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Date: 3-Feb-200

QC Summary Report

Work Order: 06012351

Method Blank

Type: **MBLK** Test Code: **EPA Method 300.0 / 9056**

File ID: **17** Batch ID: **13964A** Analysis Date: **01/24/2006 16:57**

Sample ID: **MB-13964** Units : **mg/L** Run ID: **IC_2_060124A** Prep Date: **01/24/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 300.0 / 9056**

File ID: **18** Batch ID: **13964A** Analysis Date: **01/24/2006 17:16**

Sample ID: **LFB-13964** Units : **mg/L** Run ID: **IC_2_060124A** Prep Date: **01/24/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	0.488	0.25	0.5		98	90	110			
Nitrate (NO3) - N	0.521	0.25	0.5		104	90	110			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 300.0 / 9056**

File ID: **24** Batch ID: **13964A** Analysis Date: **01/24/2006 19:07**

Sample ID: **06012003-01ALFM** Units : **mg/L** Run ID: **IC_2_060124B** Prep Date: **01/24/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	116	2.5	100	0	116	80	120			
Nitrate (NO3) - N	157	2.5	100	49.52	107	80	120			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 300.0 / 9056**

File ID: **25** Batch ID: **13964A** Analysis Date: **01/24/2006 19:25**

Sample ID: **06012003-01ALFMD** Units : **mg/L** Run ID: **IC_2_060124B** Prep Date: **01/24/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	114	2.5	100	0	114	80	120	115.6	1.5(2)	
Nitrate (NO3) - N	158	2.5	100	49.52	109	80	120	156.7	0.9(2)	

Comments:

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

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

Method Blank

Type: **MBLK** Test Code: **EPA Method 300.0 / 9056**

File ID: **17** Batch ID: **13958B** Analysis Date: **01/23/2006 18:35**

Sample ID: **MB-13958** Units : **mg/L** Run ID: **IC_2_060123A** Prep Date: **01/23/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Sulfate (SO4)	ND	0.5								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 300.0 / 9056**

File ID: **18** Batch ID: **13958B** Analysis Date: **01/23/2006 18:54**

Sample ID: **LFB-13958** Units : **mg/L** Run ID: **IC_2_060123A** Prep Date: **01/23/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Sulfate (SO4)	0.945	0.5	1		94	90	110			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 300.0 / 9056**

File ID: **24** Batch ID: **13958B** Analysis Date: **01/23/2006 20:45**

Sample ID: **06011952-01ALFM** Units : **mg/L** Run ID: **IC_2_060123A** Prep Date: **01/23/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Sulfate (SO4)	142	1.3	50	93.6	97	80	120			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 300.0 / 9056**

File ID: **25** Batch ID: **13958B** Analysis Date: **01/23/2006 21:03**

Sample ID: **06011952-01ALFMD** Units : **mg/L** Run ID: **IC_2_060123A** Prep Date: **01/23/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Sulfate (SO4)	147	1.3	50	93.6	106	80	120	141.9	3.4(2)	R5

Comments:

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

R5 = MS/MSD RPD exceed the laboratory control limit. Recovery met acceptance criteria.

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Date: 22-Feb-06

QC Summary Report

Work Order: 06012351

Method Blank

Type: **MBLK** Test Code: **EPA Method SW6020**
File ID: **021406.B\156_ICB.D** Batch ID: **14071** Analysis Date: **02/15/2006 02:20**
Sample ID: **MB-14071** Units : **mg/L** Run ID: **ICP/MS_060214C** Prep Date: **02/13/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Lead (Pb)	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method SW6020**
File ID: **021406.B\157_LCS.D** Batch ID: **14071** Analysis Date: **02/15/2006 02:25**
Sample ID: **LCS-14071** Units : **mg/L** Run ID: **ICP/MS_060214C** Prep Date: **02/13/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Lead (Pb)	0.256	0.005	0.25		102	84	118			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method SW6020**
File ID: **021406.B\160MSL.D** Batch ID: **14071** Analysis Date: **02/15/2006 02:39**
Sample ID: **06020302-03AMS** Units : **mg/L** Run ID: **ICP/MS_060214C** Prep Date: **02/13/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Lead (Pb)	0.261	0.005	0.25	0	104	75	126			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method SW6020**
File ID: **021406.B\161MSDL.D** Batch ID: **14071** Analysis Date: **02/15/2006 02:44**
Sample ID: **06020302-03AMSD** Units : **mg/L** Run ID: **ICP/MS_060214C** Prep Date: **02/13/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Lead (Pb)	0.271	0.005	0.25	0	108	75	126	0.2611	3.7(10)	

Comments:

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

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Date: *22-Feb-06*

QC Summary Report

Work Order: 06012351

Method Blank

Type: **MBLK** Test Code: **EPA Method 200.8**
File ID: **021406.B\242_ICB.D** Batch ID: **14047** Analysis Date: **02/15/2006 09:21**
Sample ID: **MB-14047** Units : **mg/L** Run ID: **ICP/MS_060215C** Prep Date: **02/08/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Manganese (Mn), Dissolved	ND	0.005								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 200.8**
File ID: **021406.B\251_LCS.D** Batch ID: **14047** Analysis Date: **02/15/2006 10:05**
Sample ID: **LCS-14047** Units : **mg/L** Run ID: **ICP/MS_060215C** Prep Date: **02/08/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Manganese (Mn), Dissolved	0.0454	0.005	0.05		91	84	118			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method 200.8**
File ID: **021406.B\254MSL.D** Batch ID: **14047** Analysis Date: **02/15/2006 10:19**
Sample ID: **06012351-01AMS** Units : **mg/L** Run ID: **ICP/MS_060215C** Prep Date: **02/08/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Manganese (Mn), Dissolved	1.9	0.005	0.05	1.92	-44	75	126			M3

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method 200.8**
File ID: **021406.B\255MSD.D** Batch ID: **14047** Analysis Date: **02/15/2006 10:24**
Sample ID: **06012351-01AMSD** Units : **mg/L** Run ID: **ICP/MS_060215C** Prep Date: **02/08/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Manganese (Mn), Dissolved	1.99	0.005	0.05	1.92	146	75	126	1.898	4.9(10)	M3

Comments:

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

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

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

Method Blank

Type: **MBLK** Test Code: **EPA Method SW9060/415.1/SM-5310C**

File ID: **2** Batch ID: **TOC012406** Analysis Date: **01/24/2006 17:12**

Sample ID: **MBLK-012406-TOC** Units : **mg/L** Run ID: **TOC_060124B** Prep Date: **01/24/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Total Organic Carbon	ND	1								

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method SW9060/415.1/SM-5310C**

File ID: **1** Batch ID: **TOC012406** Analysis Date: **01/24/2006 16:50**

Sample ID: **LCS-012406-TOC** Units : **mg/L** Run ID: **TOC_060124B** Prep Date: **01/24/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Total Organic Carbon	5.22	1	5		104	74	125			

Sample Matrix Spike

Type: **MS** Test Code: **EPA Method SW9060/415.1/SM-5310C**

File ID: **4** Batch ID: **TOC012406** Analysis Date: **01/24/2006 23:20**

Sample ID: **06012350-04A-MS** Units : **mg/L** Run ID: **TOC_060124B** Prep Date: **01/24/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Total Organic Carbon	5.41	1	5	2.884	50	56	137			M3

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **EPA Method SW9060/415.1/SM-5310C**

File ID: **6** Batch ID: **TOC012406** Analysis Date: **01/24/2006 23:50**

Sample ID: **06012350-04A-MSD** Units : **mg/L** Run ID: **TOC_060124B** Prep Date: **01/24/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Total Organic Carbon	5.58	1	5	2.884	54	56	137	5.408	3.1(15)	M3

Comments:

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

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

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

Laboratory Control Spike Type: **LCS** Test Code: **EPA Method 310.1**

File ID: Batch ID: **W060202ALK** Analysis Date: **02/03/2006 00:00**

Sample ID: **LCS-W060202ALK** Units : **mg/L** Run ID: **WETLAB_060203A** Prep Date: **02/03/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Alkalinity, Total (As CaCO3 at pH 4.5)	5.05	1	5		101	90	110			

Comments:

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

The Alkalinity LCS data presented is a reflection of the LCS pH QC measurement.

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QC Summary Report

Work Order: 06012351

Method Blank

Type: **MBLK** Test Code: **Modified Method RSK-175 GC/FID**

File ID: Batch ID: **13975** Analysis Date: **01/26/2006 17:58**

Sample ID: **MBLK-13975** Units : **mg/L** Run ID: **FID_6_060126A** Prep Date: **01/26/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Methane	ND	0.01								

Laboratory Control Spike

Type: **LCS** Test Code: **Modified Method RSK-175 GC/FID**

File ID: Batch ID: **13975** Analysis Date: **01/26/2006 18:17**

Sample ID: **LCS-13975** Units : **mg/L** Run ID: **FID_6_060126A** Prep Date: **01/26/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Methane	0.575	0.01	0.532		108	70	130			

Sample Matrix Spike

Type: **MS** Test Code: **Modified Method RSK-175 GC/FID**

File ID: Batch ID: **13975** Analysis Date: **01/26/2006 19:49**

Sample ID: **06012350-04AMS** Units : **mg/L** Run ID: **FID_6_060126A** Prep Date: **01/26/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Methane	1.14	0.01	1.06	0.027	105	70	130			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **Modified Method RSK-175 GC/FID**

File ID: Batch ID: **13975** Analysis Date: **01/26/2006 20:07**

Sample ID: **06012350-04AMSD** Units : **mg/L** Run ID: **FID_6_060126A** Prep Date: **01/26/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Methane	1.23	0.01	1.06	0.027	114	70	130	1.136	8.2(20)	

Comments:

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

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

Method Blank

Type: **MBLK** Test Code: **EPA Method 160.1 / SM 2540 C**

File ID: Batch ID: **W060126TDS** Analysis Date: **01/26/2006 00:00**

Sample ID: **MBLK-W060126TDS** Units : **mg/L** Run ID: **WETLAB_060126E** Prep Date: **01/26/2006**

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

Laboratory Control Spike

Type: **LCS** Test Code: **EPA Method 160.1 / SM 2540 C**

File ID: Batch ID: **W060126TDS** Analysis Date: **01/26/2006 00:00**

Sample ID: **LCS-W060126TDS** Units : **mg/L** Run ID: **WETLAB_060126E** Prep Date: **01/26/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	208	10	200		104	84	116			

Comments:

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

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

Method Blank

Type: **MBLK** Test Code: **SM3500-Fe D**

File ID: Batch ID: **W060123FER** Analysis Date: **01/23/2006 00:00**

Sample ID: **MBLK-W060123FER** Units : **mg/L** Run ID: **WETLAB_060123D** Prep Date: **01/23/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Iron, Ferrous (+2)	ND	0.05								

Laboratory Control Spike

Type: **LCS** Test Code: **SM3500-Fe D**

File ID: Batch ID: **W060123FER** Analysis Date: **01/23/2006 00:00**

Sample ID: **LCS-W060123FER** Units : **mg/L** Run ID: **WETLAB_060123D** Prep Date: **01/23/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Iron, Ferrous (+2)	1.54	0.05	1.5		103	85	115			

Sample Matrix Spike

Type: **MS** Test Code: **SM3500-Fe D**

File ID: Batch ID: **W060123FER** Analysis Date: **01/23/2006 00:00**

Sample ID: **06012351-02AMS** Units : **mg/L** Run ID: **WETLAB_060123D** Prep Date: **01/23/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Iron, Ferrous (+2)	1.31	0.05	1.5	0	88	70	130			

Sample Matrix Spike Duplicate

Type: **MSD** Test Code: **SM3500-Fe D**

File ID: Batch ID: **W060123FER** Analysis Date: **01/23/2006 00:00**

Sample ID: **06012351-02AMSD** Units : **mg/L** Run ID: **WETLAB_060123D** Prep Date: **01/23/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Iron, Ferrous (+2)	1.31	0.05	1.5	0	87	70	130	1.315	0.2(20)	

Comments:

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

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Date: *18-Feb-06*

QC Summary Report

Work Order: 06012351

Method Blank

Type: **MBLK** Test Code: **EPA Method 300.0 / 9056**

File ID: **17** Batch ID: **13951A** Analysis Date: **01/21/2006 20:28**

Sample ID: **MB-13951** Units : **mg/L** Run ID: **IC_2_060121A** Prep Date: **01/21/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								

Laboratory Fortified Blank

Type: **LFB** Test Code: **EPA Method 300.0 / 9056**

File ID: **18** Batch ID: **13951A** Analysis Date: **01/21/2006 20:47**

Sample ID: **LFB-13951** Units : **mg/L** Run ID: **IC_2_060121A** Prep Date: **01/21/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	0.5	0.25	0.5		100	90	110			
Nitrate (NO3) - N	0.517	0.25	0.5		103	90	110			

Sample Matrix Spike

Type: **LFM** Test Code: **EPA Method 300.0 / 9056**

File ID: **22** Batch ID: **13951A** Analysis Date: **01/21/2006 22:01**

Sample ID: **06012351-02ALFM** Units : **mg/L** Run ID: **IC_2_060121A** Prep Date: **01/21/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	9.2	0.25	10	0	92	80	120			
Nitrate (NO3) - N	26.6	0.25	10	15.28	113	80	120			

Sample Matrix Spike Duplicate

Type: **LFMD** Test Code: **EPA Method 300.0 / 9056**

File ID: **23** Batch ID: **13951A** Analysis Date: **01/21/2006 22:20**

Sample ID: **06012351-02ALFMD** Units : **mg/L** Run ID: **IC_2_060121A** Prep Date: **01/21/2006**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LowLimit	HighLimit	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	9.22	0.25	10	0	92	80	120	9.196	0.3(2)	
Nitrate (NO3) - N	27	0.25	10	15.28	117	80	120	26.61	1.5(2)	

Comments:

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

APPENDIX D

LABORATORY DATA VALIDATION REPORTS

LDC Report# 14702G8

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Camp Pendleton, CTO 102

Collection Date: January 20, 2006

LDC Report Date: March 7, 2006

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: EPA Level III & IV

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): BMI06012351

Sample Identification

1491-MW05**
1491-MW06
1491-MW07
1491-MW08
1491-MW09
1491-MW10
1491-MW11
1491-MW12
1491-MW08Dup
1491-QCEB
1491-MW06MS
1491-MW06MSD

**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 8015 for Total Petroleum Hydrocarbons (TPH) as Extractables.

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

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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 difference (%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.

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

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples 1491-MW08 and 1491-MW08Dup were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples.

X. Field Blanks

Sample 1491-QCEB was identified as an equipment blank. No total petroleum hydrocarbons as extractable contaminants were found in this blank.

Camp Pendleton, CTO 102
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG BMI06012351

No Sample Data Qualified in this SDG

Camp Pendleton, CTO 102
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG BMI06012351

No Sample Data Qualified in this SDG

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Total Petroleum Hydrocarbons - Extractable (TPH-E) EPA Method SW8015B/DHS LUFT Manual

		Parameter	Concentration		Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**	TPH-E (Diesel)	1.0		0.050 mg/L	01/20/06	01/25/06
Lab ID :	BMI06012351-01A	TPH-E (Oil)	ND	u	0.50 mg/L	01/20/06	01/25/06
		Surr: Nonane	94		%REC	01/20/06	01/25/06
Client ID :	**1491-MW06**	TPH-E (Diesel)	ND	u	0.050 mg/L	01/20/06	01/25/06
Lab ID :	BMI06012351-02A	TPH-E (Oil)	ND	↓	0.50 mg/L	01/20/06	01/25/06
		Surr: Nonane	96		%REC	01/20/06	01/25/06
Client ID :	**1491-MW07**	TPH-E (Diesel)	ND	u	0.050 mg/L	01/20/06	01/25/06
Lab ID :	BMI06012351-03A	TPH-E (Oil)	ND	↓	0.50 mg/L	01/20/06	01/25/06
		Surr: Nonane	99		%REC	01/20/06	01/25/06
Client ID :	**1491-MW08**	TPH-E (Diesel)	ND	u	0.050 mg/L	01/20/06	01/25/06
Lab ID :	BMI06012351-04A	TPH-E (Oil)	ND	↓	0.50 mg/L	01/20/06	01/25/06
		Surr: Nonane	99		%REC	01/20/06	01/25/06
Client ID :	**1491-MW09**	TPH-E (Diesel)	0.088		0.050 mg/L	01/20/06	01/25/06
Lab ID :	BMI06012351-05A	TPH-E (Oil)	ND	u	0.50 mg/L	01/20/06	01/25/06
		Surr: Nonane	103		%REC	01/20/06	01/25/06
Client ID :	**1491-MW10**	TPH-E (Diesel)	ND	u	0.050 mg/L	01/20/06	01/26/06
Lab ID :	BMI06012351-06A	TPH-E (Oil)	ND	↓	0.50 mg/L	01/20/06	01/26/06
		Surr: Nonane	101		%REC	01/20/06	01/26/06
Client ID :	**1491-MW11**	TPH-E (Diesel)	3.5		0.050 mg/L	01/20/06	01/26/06
Lab ID :	BMI06012351-07A	TPH-E (Oil)	0.92	G	0.50 mg/L	01/20/06	01/26/06
		Surr: Nonane	106		%REC	01/20/06	01/26/06
Client ID :	**1491-MW12**	TPH-E (Diesel)	2.5		0.050 mg/L	01/20/06	01/26/06
Lab ID :	BMI06012351-08A	TPH-E (Oil)	ND	u	0.50 mg/L	01/20/06	01/26/06
		Surr: Nonane	103		%REC	01/20/06	01/26/06
Client ID :	**1491-MW08Dup**	TPH-E (Diesel)	ND	u	0.050 mg/L	01/20/06	01/26/06
Lab ID :	BMI06012351-09A	TPH-E (Oil)	ND	↓	0.50 mg/L	01/20/06	01/26/06
		Surr: Nonane	100		%REC	01/20/06	01/26/06
Client ID :	**1491-QCEB**	TPH-E (Diesel)	ND	u	0.050 mg/L	01/20/06	01/26/06
Lab ID :	BMI06012351-12A	TPH-E (Oil)	ND	↓	0.50 mg/L	01/20/06	01/26/06
		Surr: Nonane	100		%REC	01/20/06	01/26/06

LDC #: 14702G8

SDG #: BMI06012351

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 3/7/06

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: 1/20/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	~~no ICV~~
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 = 4 & 9
X.	Field blanks	ND	EB = 10

Note: A = Acceptable; ND = No compounds detected; D = Duplicate; N = Not provided/applicable; R = Rinsate; TB = Trip blank; SW = See worksheet; FB = Field blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV validation Water

1	1491-MW05 **	11	1491-MW06MS	21	MBLK-13967	31	
2	1491-MW06	12	1491-MW06MSD	22		32	
3	1491-MW07	13		23		33	
4	1491-MW08 D	14		24		34	
5	1491-MW09	15		25		35	
6	1491-MW10	16		26		36	
7	1491-MW11	17		27		37	
8	1491-MW12	18		28		38	
9	1491-MW08Dup D	19		29		39	
10	1491-QCEB	20		30		40	

Notes: NO ICV

LDC #: 14702G8
SDG #: BM1060123S1

VALIDATION FINDINGS CHECKLIST

Reviewer: B
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?	✓			
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 #: 14703G8
SDG #: BM1060123S1

VALIDATION FINDINGS CHECKLIST

Reviewer: R
2nd Reviewer: Q

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 #: 14702G8
SDG #: BM1060235

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer:
2nd Reviewer:

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 (100 std) ug/ml	Recalculated CF (100 std) ug/ml	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	KAL-GC1	12/27/05	Diesel	1.2582×10^{-4}	1.2582×10^{-4}	1.2664×10^{-4}	1.2664×10^{-4}	8.33	8.33
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 #: 14702G8
SDG #: BM10601235

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer:
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	IA012401. D37	1/25/06	Diesel	200	238.13	238.13	95.25	95.25
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 #: 1470268
SDG #: BM1069235 1

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	
Noname	DB-1	100	939966	94	94	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 #: 14702G8
SDG #: BM1060235 1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer:
2nd Reviewer:

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 (mg/L)		Sample Conc. (mg/L)	Spike Sample Concentration (mg/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)	2.5	2.5	0	2.25	2.32	90	90	93	93	3.0	3.1
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 #: 14702 G8

SDG #: BM1060235

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 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: LCS - 13967

Compound	Spike Added (mg/L)		Sample Conc. (mg/L)	Spike Sample Concentration (mg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	—	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)	2.5	NA	0	2.21	NA	88	88	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.

LDC #: 14702 G8
SDG #: BM10601235I

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. # 1 Compound Name Diesel

Concentration = $\frac{328632 \times 1.2664 \times 10^{-4} \times 1}{40}$

= 1.0 mg/L

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments:

SAMPCALew.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Camp Pendleton, CTO 102

Collection Date: January 20, 2006

LDC Report Date: March 9, 2006

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): BMI06012351

Sample Identification

1491-MW05**
1491-MW06
1491-MW07
1491-MW08
1491-MW09
1491-MW10
1491-MW11
1491-MW12
1491-MW08Dup
1491-QCTB
1491-QCFB
1491-MW05MS
1491-MW05MSD

**Indicates sample underwent EPA 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 a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 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 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
1/26/06	Chloroethane	28.5	All samples in SDG BMI06012351	J (all detects) UJ (all non-detects)	A

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

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
All samples in SDG BMI06012351	All TCL compounds	The LCS was analyzed as a continuing calibration standard.	The LCS should be analyzed independently from the calibration.	None	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

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

XII. Compound Quantitation and CRQLs

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

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

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

XV. Overall Assessment of Data

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

XVI. Field Duplicates

Samples 1491-MW08 and 1491-MW08Dup were identified as field duplicates. No volatiles were detected in any of the samples.

XVII. Field Blanks

Sample 1491-QCTB was identified as a trip blank. No volatile contaminants were found in this blank.

Sample 1491-QCFB was identified as a field blank. No volatile contaminants were found in this blank.

Camp Pendleton, CTO 102
Volatiles - Data Qualification Summary - SDG BMI06012351

SDG	Sample	Compound	Flag	A or P	Reason
BMI06012351	1491-MW05** 1491-MW06 1491-MW07 1491-MW08 1491-MW09 1491-MW10 1491-MW11 1491-MW12 1491-MW08Dup 1491-QCTB 1491-QCFB	Chloroethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
BMI06012351	1491-MW05** 1491-MW06 1491-MW07 1491-MW08 1491-MW09 1491-MW10 1491-MW11 1491-MW12 1491-MW08Dup 1491-QCTB 1491-QCFB	All TCL compounds	None	P	Laboratory control samples

Camp Pendleton, CTO 102
Volatiles - Laboratory Blank Data Qualification Summary - SDG BMI06012351

No Sample Data Qualified in this SDG

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-01A
Client I.D. Number: 1491-MW05

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND U	1.0	µg/L	36	m,p-Xylene	ND U	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND UJ	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND U	4.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	4.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	4.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	6.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	4.0	µg/L
23	Trichloroethene	ND	1.0	µg/L	58	Naphthalene	ND	4.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	4.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	4.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	108		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	95		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	95		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	4.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

Some Reporting Limits were increased due to sample foaming.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

3/10/06

Alpha Analytical, Inc.

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

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-02A
Client I.D. Number: 1491-MW06

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration		Reporting Limit			Compound	Concentration		Reporting Limit	
1	Dichlorodifluoromethane	ND	U	1.0	µg/L	36	m,p-Xylene	ND	U	0.50	µg/L
2	Chloromethane	ND		2.0	µg/L	37	Bromoform	ND		1.0	µg/L
3	Vinyl chloride	ND		1.0	µg/L	38	Styrene	ND		1.0	µg/L
4	Chloroethane	ND	UJ	1.0	µg/L	39	o-Xylene	ND		0.50	µg/L
5	Bromomethane	ND	U	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND		1.0	µg/L
6	Trichlorofluoromethane	ND		1.0	µg/L	41	1,2,3-Trichloropropane	ND		2.0	µg/L
7	1,1-Dichloroethene	ND		1.0	µg/L	42	Isopropylbenzene	ND		1.0	µg/L
8	Dichloromethane	ND		2.0	µg/L	43	Bromobenzene	ND		1.0	µg/L
9	trans-1,2-Dichloroethene	ND		1.0	µg/L	44	n-Propylbenzene	ND		1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND		0.50	µg/L	45	4-Chlorotoluene	ND		1.0	µg/L
11	1,1-Dichloroethane	ND		1.0	µg/L	46	2-Chlorotoluene	ND		1.0	µg/L
12	cis-1,2-Dichloroethene	ND		1.0	µg/L	47	1,3,5-Trimethylbenzene	ND		1.0	µg/L
13	Bromochloromethane	ND		1.0	µg/L	48	tert-Butylbenzene	ND		1.0	µg/L
14	Chloroform	ND		1.0	µg/L	49	1,2,4-Trimethylbenzene	ND		1.0	µg/L
15	2,2-Dichloropropane	ND		1.0	µg/L	50	sec-Butylbenzene	ND		1.0	µg/L
16	1,2-Dichloroethane	ND		1.0	µg/L	51	1,3-Dichlorobenzene	ND		1.0	µg/L
17	1,1,1-Trichloroethane	ND		1.0	µg/L	52	1,4-Dichlorobenzene	ND		1.0	µg/L
18	1,1-Dichloropropene	ND		1.0	µg/L	53	4-Isopropyltoluene	ND		1.0	µg/L
19	Carbon tetrachloride	ND		1.0	µg/L	54	1,2-Dichlorobenzene	ND		1.0	µg/L
20	Benzene	ND		0.50	µg/L	55	n-Butylbenzene	ND		1.0	µg/L
21	Dibromomethane	ND		1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND		5.0	µg/L
22	1,2-Dichloropropane	ND		1.0	µg/L	57	1,2,4-Trichlorobenzene	ND		2.0	µg/L
23	Trichloroethene	31		1.0	µg/L	58	Naphthalene	ND		2.0	µg/L
24	Bromodichloromethane	ND	U	1.0	µg/L	59	Hexachlorobutadiene	ND		2.0	µg/L
25	cis-1,3-Dichloropropene	ND		1.0	µg/L	60	1,2,3-Trichlorobenzene	ND		2.0	µg/L
26	trans-1,3-Dichloropropene	ND		1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	114			%REC
27	1,1,2-Trichloroethane	ND		1.0	µg/L	62	Surr: Toluene-d8	96			%REC
28	Toluene	ND		0.50	µg/L	63	Surr: 4-Bromofluorobenzene	96			%REC
29	1,3-Dichloropropane	ND		1.0	µg/L						
30	Dibromochloromethane	ND		1.0	µg/L						
31	1,2-Dibromoethane (EDB)	ND		2.0	µg/L						
32	Tetrachloroethene	ND		1.0	µg/L						
33	1,1,1,2-Tetrachloroethane	ND		1.0	µg/L						
34	Chlorobenzene	ND		1.0	µg/L						
35	Ethylbenzene	ND		0.50	µg/L						

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • Randy Gardner, Laboratory Manager • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

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Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-03A
Client I.D. Number: 1491-MW07

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND U	1.0	µg/L	36	m,p-Xylene	ND U	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND UJ	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND U	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	2.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
23	Trichloroethene	ND	1.0	µg/L	58	Naphthalene	ND	2.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	2.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	111		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	97		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	98		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

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Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-04A
Client I.D. Number: 1491-MW08

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND U	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L
4	Chloroethane	ND UJ	1.0	µg/L
5	Bromomethane	ND U	2.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L
21	Dibromomethane	ND	1.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L
23	Trichloroethene	ND	1.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L
27	1,1,2-Trichloroethane	ND	1.0	µg/L
28	Toluene	ND	0.50	µg/L
29	1,3-Dichloropropane	ND	1.0	µg/L
30	Dibromochloromethane	ND	1.0	µg/L
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L
32	Tetrachloroethene	ND	1.0	µg/L
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L
34	Chlorobenzene	ND	1.0	µg/L
35	Ethylbenzene	ND	0.50	µg/L
36	m,p-Xylene	ND U	0.50	µg/L
37	Bromoform	ND	1.0	µg/L
38	Styrene	ND	1.0	µg/L
39	o-Xylene	ND	0.50	µg/L
40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
41	1,2,3-Trichloropropane	ND	2.0	µg/L
42	Isopropylbenzene	ND	1.0	µg/L
43	Bromobenzene	ND	1.0	µg/L
44	n-Propylbenzene	ND	1.0	µg/L
45	4-Chlorotoluene	ND	1.0	µg/L
46	2-Chlorotoluene	ND	1.0	µg/L
47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
48	tert-Butylbenzene	ND	1.0	µg/L
49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
50	sec-Butylbenzene	ND	1.0	µg/L
51	1,3-Dichlorobenzene	ND	1.0	µg/L
52	1,4-Dichlorobenzene	ND	1.0	µg/L
53	4-Isopropyltoluene	ND	1.0	µg/L
54	1,2-Dichlorobenzene	ND	1.0	µg/L
55	n-Butylbenzene	ND	1.0	µg/L
56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
58	Naphthalene	ND	2.0	µg/L
59	Hexachlorobutadiene	ND	2.0	µg/L
60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
61	Surr: 1,2-Dichloroethane-d4	111		%REC
62	Surr: Toluene-d8	96		%REC
63	Surr: 4-Bromofluorobenzene	99		%REC

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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

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Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-05A
Client I.D. Number: 1491-MW09

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND U	1.0	µg/L	36	m,p-Xylene	ND U	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND UJ	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND U	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	2.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
23	Trichloroethene	ND	1.0	µg/L	58	Naphthalene	ND	2.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	2.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	110		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	93		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	96		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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2/3/06
Report Date

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Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-06A
Client I.D. Number: 1491-MW10

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND U	1.0	µg/L
2	Chloromethane	ND	2.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L
4	Chloroethane	ND UJ	1.0	µg/L
5	Bromomethane	ND U	2.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L
21	Dibromomethane	ND	1.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L
23	Trichloroethene	2.3	1.0	µg/L
24	Bromodichloromethane	ND U	1.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L
27	1,1,2-Trichloroethane	ND	1.0	µg/L
28	Toluene	ND	0.50	µg/L
29	1,3-Dichloropropane	ND	1.0	µg/L
30	Dibromochloromethane	ND	1.0	µg/L
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L
32	Tetrachloroethene	ND	1.0	µg/L
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L
34	Chlorobenzene	ND	1.0	µg/L
35	Ethylbenzene	ND	0.50	µg/L
36	m,p-Xylene	ND U	0.50	µg/L
37	Bromoform	ND	1.0	µg/L
38	Styrene	ND	1.0	µg/L
39	o-Xylene	ND	0.50	µg/L
40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
41	1,2,3-Trichloropropane	ND	2.0	µg/L
42	Isopropylbenzene	ND	1.0	µg/L
43	Bromobenzene	ND	1.0	µg/L
44	n-Propylbenzene	ND	1.0	µg/L
45	4-Chlorotoluene	ND	1.0	µg/L
46	2-Chlorotoluene	ND	1.0	µg/L
47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
48	tert-Butylbenzene	ND	1.0	µg/L
49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
50	sec-Butylbenzene	ND	1.0	µg/L
51	1,3-Dichlorobenzene	ND	1.0	µg/L
52	1,4-Dichlorobenzene	ND	1.0	µg/L
53	4-Isopropyltoluene	ND	1.0	µg/L
54	1,2-Dichlorobenzene	ND	1.0	µg/L
55	n-Butylbenzene	ND	1.0	µg/L
56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
58	Naphthalene	ND	2.0	µg/L
59	Hexachlorobutadiene	ND	2.0	µg/L
60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
61	Surr: 1,2-Dichloroethane-d4	109		%REC
62	Surr: Toluene-d8	93		%REC
63	Surr: 4-Bromofluorobenzene	97		%REC

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • Randy Gardner, Laboratory Manager • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

3/10/06

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-07A
Client I.D. Number: 1491-MW11

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND U	20	µg/L	36	m,p-Xylene	ND U	10	µg/L
2	Chloromethane	ND	40	µg/L	37	Bromoform	ND	20	µg/L
3	Vinyl chloride	ND	20	µg/L	38	Styrene	ND	20	µg/L
4	Chloroethane	ND UJ	20	µg/L	39	o-Xylene	ND	10	µg/L
5	Bromomethane	ND U	80	µg/L	40	1,1,2,2-Tetrachloroethane	ND	20	µg/L
6	Trichlorofluoromethane	ND	20	µg/L	41	1,2,3-Trichloropropane	ND	80	µg/L
7	1,1-Dichloroethene	ND	20	µg/L	42	Isopropylbenzene	ND	20	µg/L
8	Dichloromethane	ND	80	µg/L	43	Bromobenzene	ND	20	µg/L
9	trans-1,2-Dichloroethene	ND	20	µg/L	44	n-Propylbenzene	ND	20	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	10	µg/L	45	4-Chlorotoluene	ND	20	µg/L
11	1,1-Dichloroethane	ND	20	µg/L	46	2-Chlorotoluene	ND	20	µg/L
12	cis-1,2-Dichloroethene	ND	20	µg/L	47	1,3,5-Trimethylbenzene	ND	20	µg/L
13	Bromochloromethane	ND	20	µg/L	48	tert-Butylbenzene	ND	20	µg/L
14	Chloroform	ND	20	µg/L	49	1,2,4-Trimethylbenzene	ND	20	µg/L
15	2,2-Dichloropropane	ND	20	µg/L	50	sec-Butylbenzene	ND	20	µg/L
16	1,2-Dichloroethane	ND	20	µg/L	51	1,3-Dichlorobenzene	ND	20	µg/L
17	1,1,1-Trichloroethane	ND	20	µg/L	52	1,4-Dichlorobenzene	ND	20	µg/L
18	1,1-Dichloropropene	ND	20	µg/L	53	4-Isopropyltoluene	ND	20	µg/L
19	Carbon tetrachloride	ND	20	µg/L	54	1,2-Dichlorobenzene	ND	20	µg/L
20	Benzene	ND	10	µg/L	55	n-Butylbenzene	ND	20	µg/L
21	Dibromomethane	ND	20	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	120	µg/L
22	1,2-Dichloropropane	ND	20	µg/L	57	1,2,4-Trichlorobenzene	ND	80	µg/L
23	Trichloroethene	ND	20	µg/L	58	Naphthalene	ND	80	µg/L
24	Bromodichloromethane	ND	20	µg/L	59	Hexachlorobutadiene	ND	80	µg/L
25	cis-1,3-Dichloropropene	ND	20	µg/L	60	1,2,3-Trichlorobenzene	ND	80	µg/L
26	trans-1,3-Dichloropropene	ND	20	µg/L	61	Surr: 1,2-Dichloroethane-d4	109		%REC
27	1,1,2-Trichloroethane	ND	20	µg/L	62	Surr: Toluene-d8	97		%REC
28	Toluene	ND	10	µg/L	63	Surr: 4-Bromofluorobenzene	96		%REC
29	1,3-Dichloropropane	ND	20	µg/L					
30	Dibromochloromethane	ND	20	µg/L					
31	1,2-Dibromoethane (EDB)	ND	80	µg/L					
32	Tetrachloroethene	ND	20	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	20	µg/L					
34	Chlorobenzene	ND	20	µg/L					
35	Ethylbenzene	ND	10	µg/L					

Reporting Limits were increased due to sample foaming.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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

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Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-08A
Client I.D. Number: 1491-MW12

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration		Reporting Limit			Compound	Concentration		Reporting Limit	
1	Dichlorodifluoromethane	ND	U	2.0	µg/L	36	m,p-Xylene	ND	U	1.0	µg/L
2	Chloromethane	ND		4.0	µg/L	37	Bromoform	ND		2.0	µg/L
3	Vinyl chloride	ND		2.0	µg/L	38	Styrene	ND		2.0	µg/L
4	Chloroethane	ND	UJ	2.0	µg/L	39	o-Xylene	ND		1.0	µg/L
5	Bromomethane	ND	U	8.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND		2.0	µg/L
6	Trichlorofluoromethane	ND		2.0	µg/L	41	1,2,3-Trichloropropane	ND		8.0	µg/L
7	1,1-Dichloroethene	ND		2.0	µg/L	42	Isopropylbenzene	ND		2.0	µg/L
8	Dichloromethane	ND		8.0	µg/L	43	Bromobenzene	ND		2.0	µg/L
9	trans-1,2-Dichloroethene	ND		2.0	µg/L	44	n-Propylbenzene	ND		2.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND		1.0	µg/L	45	4-Chlorotoluene	ND		2.0	µg/L
11	1,1-Dichloroethane	ND		2.0	µg/L	46	2-Chlorotoluene	ND		2.0	µg/L
12	cis-1,2-Dichloroethene	ND		2.0	µg/L	47	1,3,5-Trimethylbenzene	ND		2.0	µg/L
13	Bromochloromethane	ND		2.0	µg/L	48	tert-Butylbenzene	ND		2.0	µg/L
14	Chloroform	ND		2.0	µg/L	49	1,2,4-Trimethylbenzene	ND		2.0	µg/L
15	2,2-Dichloropropane	ND		2.0	µg/L	50	sec-Butylbenzene	ND		2.0	µg/L
16	1,2-Dichloroethane	ND		2.0	µg/L	51	1,3-Dichlorobenzene	ND		2.0	µg/L
17	1,1,1-Trichloroethane	ND		2.0	µg/L	52	1,4-Dichlorobenzene	ND		2.0	µg/L
18	1,1-Dichloropropene	ND		2.0	µg/L	53	4-Isopropyltoluene	ND		2.0	µg/L
19	Carbon tetrachloride	ND		2.0	µg/L	54	1,2-Dichlorobenzene	ND		2.0	µg/L
20	Benzene	1.5		1.0	µg/L	55	n-Butylbenzene	ND		2.0	µg/L
21	Dibromomethane	ND	U	2.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND		12	µg/L
22	1,2-Dichloropropane	ND		2.0	µg/L	57	1,2,4-Trichlorobenzene	ND		8.0	µg/L
23	Trichloroethene	ND		2.0	µg/L	58	Naphthalene	ND		8.0	µg/L
24	Bromodichloromethane	ND		2.0	µg/L	59	Hexachlorobutadiene	ND		8.0	µg/L
25	cis-1,3-Dichloropropene	ND		2.0	µg/L	60	1,2,3-Trichlorobenzene	ND		8.0	µg/L
26	trans-1,3-Dichloropropene	ND		2.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	105			%REC
27	1,1,2-Trichloroethane	ND		2.0	µg/L	62	Surr: Toluene-d8	95			%REC
28	Toluene	ND		1.0	µg/L	63	Surr: 4-Bromofluorobenzene	93			%REC
29	1,3-Dichloropropane	ND		2.0	µg/L						
30	Dibromochloromethane	ND		2.0	µg/L						
31	1,2-Dibromoethane (EDB)	ND		8.0	µg/L						
32	Tetrachloroethene	ND		2.0	µg/L						
33	1,1,1,2-Tetrachloroethane	ND		2.0	µg/L						
34	Chlorobenzene	ND		2.0	µg/L						
35	Ethylbenzene	ND		1.0	µg/L						

Reporting Limits were increased due to sample foaming.

ND = Not Detected

Roger Scholl Randy Gardner Walter Hutchinson

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hutchinson, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

2/3/10/06

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-09A
Client I.D. Number: 1491-MW08Dup

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND U	1.0	µg/L	36	m,p-Xylene	ND U	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND UJ	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND U	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	2.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
23	Trichloroethene	ND	1.0	µg/L	58	Naphthalene	ND	2.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	2.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	107		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	93		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	96		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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

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Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-10A
Client I.D. Number: 1491-QCTB

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND U	1.0	µg/L	36	m,p-Xylene	ND U	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND UJ	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND U	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	2.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
23	Trichloroethene	ND	1.0	µg/L	58	Naphthalene	ND	2.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	2.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	104		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	95		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	99		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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

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Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-11A
Client I.D. Number: 1491-QCFB

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/26/06

Volatile Organics by GC/MS
EPA Method SW8260B

	Compound	Concentration	Reporting Limit			Compound	Concentration	Reporting Limit	
1	Dichlorodifluoromethane	ND U	1.0	µg/L	36	m,p-Xylene	ND U	0.50	µg/L
2	Chloromethane	ND	2.0	µg/L	37	Bromoform	ND	1.0	µg/L
3	Vinyl chloride	ND	1.0	µg/L	38	Styrene	ND	1.0	µg/L
4	Chloroethane	ND UJ	1.0	µg/L	39	o-Xylene	ND	0.50	µg/L
5	Bromomethane	ND U	2.0	µg/L	40	1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
6	Trichlorofluoromethane	ND	1.0	µg/L	41	1,2,3-Trichloropropane	ND	2.0	µg/L
7	1,1-Dichloroethene	ND	1.0	µg/L	42	Isopropylbenzene	ND	1.0	µg/L
8	Dichloromethane	ND	2.0	µg/L	43	Bromobenzene	ND	1.0	µg/L
9	trans-1,2-Dichloroethene	ND	1.0	µg/L	44	n-Propylbenzene	ND	1.0	µg/L
10	Methyl tert-butyl ether (MTBE)	ND	0.50	µg/L	45	4-Chlorotoluene	ND	1.0	µg/L
11	1,1-Dichloroethane	ND	1.0	µg/L	46	2-Chlorotoluene	ND	1.0	µg/L
12	cis-1,2-Dichloroethene	ND	1.0	µg/L	47	1,3,5-Trimethylbenzene	ND	1.0	µg/L
13	Bromochloromethane	ND	1.0	µg/L	48	tert-Butylbenzene	ND	1.0	µg/L
14	Chloroform	ND	1.0	µg/L	49	1,2,4-Trimethylbenzene	ND	1.0	µg/L
15	2,2-Dichloropropane	ND	1.0	µg/L	50	sec-Butylbenzene	ND	1.0	µg/L
16	1,2-Dichloroethane	ND	1.0	µg/L	51	1,3-Dichlorobenzene	ND	1.0	µg/L
17	1,1,1-Trichloroethane	ND	1.0	µg/L	52	1,4-Dichlorobenzene	ND	1.0	µg/L
18	1,1-Dichloropropene	ND	1.0	µg/L	53	4-Isopropyltoluene	ND	1.0	µg/L
19	Carbon tetrachloride	ND	1.0	µg/L	54	1,2-Dichlorobenzene	ND	1.0	µg/L
20	Benzene	ND	0.50	µg/L	55	n-Butylbenzene	ND	1.0	µg/L
21	Dibromomethane	ND	1.0	µg/L	56	1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
22	1,2-Dichloropropane	ND	1.0	µg/L	57	1,2,4-Trichlorobenzene	ND	2.0	µg/L
23	Trichloroethene	ND	1.0	µg/L	58	Naphthalene	ND	2.0	µg/L
24	Bromodichloromethane	ND	1.0	µg/L	59	Hexachlorobutadiene	ND	2.0	µg/L
25	cis-1,3-Dichloropropene	ND	1.0	µg/L	60	1,2,3-Trichlorobenzene	ND	2.0	µg/L
26	trans-1,3-Dichloropropene	ND	1.0	µg/L	61	Surr: 1,2-Dichloroethane-d4	104		%REC
27	1,1,2-Trichloroethane	ND	1.0	µg/L	62	Surr: Toluene-d8	96		%REC
28	Toluene	ND	0.50	µg/L	63	Surr: 4-Bromofluorobenzene	98		%REC
29	1,3-Dichloropropane	ND	1.0	µg/L					
30	Dibromochloromethane	ND	1.0	µg/L					
31	1,2-Dibromoethane (EDB)	ND	2.0	µg/L					
32	Tetrachloroethene	ND	1.0	µg/L					
33	1,1,1,2-Tetrachloroethane	ND	1.0	µg/L					
34	Chlorobenzene	ND	1.0	µg/L					
35	Ethylbenzene	ND	0.50	µg/L					

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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2/3/06
Report Date

3/10/06

LDC #: 14702G1

SDG #: BMI06012351

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 3/08/06

Page: 1 of 1

Reviewer: JVL

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: 1/20/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	% RSD, r²
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
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 = 4 9
XVII.	Field blanks	ND	TB = 10 FB = 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

Water

1	1491-MW05**	11	1491-QCFB	21		31	
2	1491-MW06	12	1491-MW05MS	22		32	
3	1491-MW07	13	1491-MW05MSD	23		33	
4	1491-MW08 D	14	MBLK MS10W0126A	24		34	
5	1491-MW09	15		25		35	
6	1491-MW10	16		26		36	
7	1491-MW11	17		27		37	
8	1491-MW12	18		28		38	
9	1491-MW08Dup D	19		29		39	
10	1491-QCTB	20		30		40	

LDC #: 14702 G1
SDG #: BMI 06012351

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
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 #: 14702G1
SDG #: BMT060123S1

VALIDATION FINDINGS CHECKLIST

Reviewer: JVL
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 #: 14702G1
SDG #: BMI 06012351

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: JR
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
	1/26/06	06012603	D	28.5		All + Blk	J/UJ/A

CONCAL.1S

LDC #: 14702 G1
SDG #: BMI 06012351

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: JM
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
				( )	( )	( )		
		Lab	reported	CCV is	DCS	( )	( )	All + Blk	None /P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 14702G1
SDG #: BMI 0601235J

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: JVC
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 (8 std)	Recalculated RRF (8 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	12/09/05	Methylene chloride (1st internal standard)	0.1995	0.1995	0.1938	0.1938	14.5	14.6
			~~Trichlorethene~~ CC (2nd internal standard)	3.550	3.550	3.416	3.416	6.6	6.3
			~~Toluene~~ AAA (3rd internal standard)	4.201	4.201	3.722	3.722	10.6	10.6
2			Methylene chloride (1st internal standard)						
			Trichlorethene (2nd internal standard)						
			Toluene (3rd internal standard)						
3			Methylene chloride (1st internal standard)						
			Trichlorethene (2nd internal standard)						
			Toluene (3rd internal standard)						
4			Methylene chloride (1st internal standard)						
			Trichlorethene (2nd internal standard)						
			Toluene (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 #: 14702 G1
SDG #: BMI 06012351

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: JVC
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	06012603	1/26/06	Methylene chloride (1st internal standard)	0.1938	0.183	0.183	5.6	5.7
			~~Trichlorethene~~ CC (2nd internal standard)	3.416	3.222	3.222	5.7	5.7
			~~Toluene~~ AAA (3rd internal standard)	3.722	4.238	4.238	13.9	13.9
2			Methylene chloride (1st internal standard)					
			Trichlorethene (2nd internal standard)					
			Toluene (3rd internal standard)					
3			Methylene chloride (1st internal standard)					
			Trichlorethene (2nd internal standard)					
			Toluene (3rd internal standard)					
4			Methylene chloride (1st internal standard)					
			Trichlorethene (2nd internal standard)					
			Toluene (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 #: 14702G1
SDG #: BMI 06012357

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: NG
2nd reviewer: ✓

METHOD: GC/MS VOA (EPA SW 846 Method 8260)

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	19.07	95	95	0
Bromofluorobenzene	↓	19.04	95	95	↓
1,2-Dichloroethane-d4	↓	21.54	108	108	↓
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					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 14702 G1
SDG #: BMI 060123S1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: NG
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 - MSDC | * 2/(MSC + MSDC) MSC = Matrix spike percent recovery MSDC = Matrix spike duplicate percent recovery

MS/MSD sample: 12/13

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	50	50	0	49.3	47.8	99	99	96	96	2.9	3.01
Trichloroethene				47.7	46.6	95	95	93	93	2.2	2.3
Benzene				54.5	54	109	109	108	108	1.0	1
Toluene				46.2	45.4	92	92	91	91	1.7	1.7
Chlorobenzene				51.4	51.4	103	103	103	103	0.1	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.

MSDCLC.1SB

LDC #: 14702 G1
SDG #: BMI 0601225 1

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: JVC
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 = Laboratry control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS ID: LCS MS 10W0126A

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	NA	9.76	NA	98	98		—		
Trichloroethene			9.53		95	95				
Benzene			10.7		107	107				
Toluene			9.43		94	94				
Chlorobenzene			9.99		100	100				

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 #: 14702G1
SDG #: BMI0601235I

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: JR
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?

$$\text{Concentration} = \frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$$

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. _____ , ND :

Conc. = ( ) ( ) ( ) / ( ) ( ) ( ) ( )

=

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Camp Pendleton, CTO 102

Collection Date: January 20, 2006

LDC Report Date: March 9, 2006

Matrix: Water

Parameters: Polynuclear Aromatic Hydrocarbons

Validation Level: EPA Level III & IV

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): BMI06012351

Sample Identification

1491-MW05
1491-MW06
1491-MW07
1491-MW08**
1491-MW09
1491-MW10
1491-MW11
1491-MW12
1491-MW08Dup
1491-MW08MS
1491-MW08MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Polynuclear Aromatic Hydrocarbons.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

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

Average relative response factors (RRF) for all 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% .

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.

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

XV. Overall Assessment

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

XVI. Field Duplicates

Samples 1491-MW08** and 1491-MW08Dup were identified as field duplicates. No polynuclear aromatic hydrocarbons were detected in any of the samples.

XVII. Field Blanks

No field blanks were identified in this SDG.

Camp Pendleton, CTO 102
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG BMI06012351

No Sample Data Qualified in this SDG

Camp Pendleton, CTO 102
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG BMI06012351

No Sample Data Qualified in this SDG

G2

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201
Job#: TO102-1491

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667

Alpha Analytical Number: BMI06012351-01A
Client I.D. Number: 1491-MW05

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND U	20 µg/L
2	Acenaphthylene	ND	20 µg/L
3	Acenaphthene	ND	20 µg/L
4	Fluorene	ND	20 µg/L
5	Phenanthrene	ND	20 µg/L
6	Anthracene	ND	20 µg/L
7	Fluoranthene	ND	20 µg/L
8	Pyrene	ND	20 µg/L
9	Benzo(a)anthracene	ND	20 µg/L
10	Chrysene	ND	20 µg/L
11	Benzo(b)fluoranthene	ND	20 µg/L
12	Benzo(k)fluoranthene	ND	20 µg/L
13	Benzo(a)pyrene	ND	20 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	20 µg/L
15	Dibenz(a,h)anthracene	ND	20 µg/L
16	Benzo(g,h,i)perylene	ND	20 µg/L
17	Surr: Nitrobenzene-d5	84	%REC
18	Surr: 2-Fluorobiphenyl	69	%REC
19	Surr: 4-Terphenyl-d14	80	%REC

Reporting Limits were increased due to sample matrix interferences.

ND = Not Detected

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2/3/06
Report Date

3/10/06

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Attn: Chris Zimmerman
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Alpha Analytical Number: BMI06012351-02A
Client I.D. Number: 1491-MW06

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND U	10 µg/L
2	Acenaphthylene	ND	10 µg/L
3	Acenaphthene	ND	10 µg/L
4	Fluorene	ND	10 µg/L
5	Phenanthrene	ND	10 µg/L
6	Anthracene	ND	10 µg/L
7	Fluoranthene	ND	10 µg/L
8	Pyrene	ND	10 µg/L
9	Benzo(a)anthracene	ND	10 µg/L
10	Chrysene	ND	10 µg/L
11	Benzo(b)fluoranthene	ND	10 µg/L
12	Benzo(k)fluoranthene	ND	10 µg/L
13	Benzo(a)pyrene	ND	10 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	10 µg/L
15	Dibenz(a,h)anthracene	ND	10 µg/L
16	Benzo(g,h,i)perylene	ND	10 µg/L
17	Surr: Nitrobenzene-d5	101	%REC
18	Surr: 2-Fluorobiphenyl	81	%REC
19	Surr: 4-Terphenyl-d14	92	%REC

ND = Not Detected

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2/10/06

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Alpha Analytical Number: BMI06012351-03A
Client I.D. Number: 1491-MW07

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND U	10 µg/L
2	Acenaphthylene	ND	10 µg/L
3	Acenaphthene	ND	10 µg/L
4	Fluorene	ND	10 µg/L
5	Phenanthrene	ND	10 µg/L
6	Anthracene	ND	10 µg/L
7	Fluoranthene	ND	10 µg/L
8	Pyrene	ND	10 µg/L
9	Benzo(a)anthracene	ND	10 µg/L
10	Chrysene	ND	10 µg/L
11	Benzo(b)fluoranthene	ND	10 µg/L
12	Benzo(k)fluoranthene	ND	10 µg/L
13	Benzo(a)pyrene	ND	10 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	10 µg/L
15	Dibenz(a,h)anthracene	ND	10 µg/L
16	Benzo(g,h,i)perylene	ND	10 µg/L
17	Surr: Nitrobenzene-d5	103	%REC
18	Surr: 2-Fluorobiphenyl	94	%REC
19	Surr: 4-Terphenyl-d14	96	%REC

ND = Not Detected

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Attn: Chris Zimmerman
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Alpha Analytical Number: BMI06012351-04A
Client I.D. Number: 1491-MW08

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	10 µg/L
2	Acenaphthylene	ND	10 µg/L
3	Acenaphthene	ND	10 µg/L
4	Fluorene	ND	10 µg/L
5	Phenanthrene	ND	10 µg/L
6	Anthracene	ND	10 µg/L
7	Fluoranthene	ND	10 µg/L
8	Pyrene	ND	10 µg/L
9	Benzo(a)anthracene	ND	10 µg/L
10	Chrysene	ND	10 µg/L
11	Benzo(b)fluoranthene	ND	10 µg/L
12	Benzo(k)fluoranthene	ND	10 µg/L
13	Benzo(a)pyrene	ND	10 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	10 µg/L
15	Dibenz(a,h)anthracene	ND	10 µg/L
16	Benzo(g,h,i)perylene	ND	10 µg/L
17	Surr: Nitrobenzene-d5	96	%REC
18	Surr: 2-Fluorobiphenyl	90	%REC
19	Surr: 4-Terphenyl-d14	92	%REC

ND = Not Detected

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Alpha Analytical Number: BMI06012351-05A
Client I.D. Number: 1491-MW09

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	10 µg/L
2	Acenaphthylene	ND	10 µg/L
3	Acenaphthene	ND	10 µg/L
4	Fluorene	ND	10 µg/L
5	Phenanthrene	ND	10 µg/L
6	Anthracene	ND	10 µg/L
7	Fluoranthene	ND	10 µg/L
8	Pyrene	ND	10 µg/L
9	Benzo(a)anthracene	ND	10 µg/L
10	Chrysene	ND	10 µg/L
11	Benzo(b)fluoranthene	ND	10 µg/L
12	Benzo(k)fluoranthene	ND	10 µg/L
13	Benzo(a)pyrene	ND	10 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	10 µg/L
15	Dibenz(a,h)anthracene	ND	10 µg/L
16	Benzo(g,h,i)perylene	ND	10 µg/L
17	Surr: Nitrobenzene-d5	105	%REC
18	Surr: 2-Fluorobiphenyl	97	%REC
19	Surr: 4-Terphenyl-d14	105	%REC

ND = Not Detected

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Alpha Analytical Number: BMI06012351-06A
Client I.D. Number: 1491-MW10

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	10 µg/L
2	Acenaphthylene	ND	10 µg/L
3	Acenaphthene	ND	10 µg/L
4	Fluorene	ND	10 µg/L
5	Phenanthrene	ND	10 µg/L
6	Anthracene	ND	10 µg/L
7	Fluoranthene	ND	10 µg/L
8	Pyrene	ND	10 µg/L
9	Benzo(a)anthracene	ND	10 µg/L
10	Chrysene	ND	10 µg/L
11	Benzo(b)fluoranthene	ND	10 µg/L
12	Benzo(k)fluoranthene	ND	10 µg/L
13	Benzo(a)pyrene	ND	10 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	10 µg/L
15	Dibenz(a,h)anthracene	ND	10 µg/L
16	Benzo(g,h,i)perylene	ND	10 µg/L
17	Surr: Nitrobenzene-d5	105	%REC
18	Surr: 2-Fluorobiphenyl	104	%REC
19	Surr: 4-Terphenyl-d14	101	%REC

ND = Not Detected

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2/3/06
Report Date

3/10/06

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Alpha Analytical Number: BMI06012351-07A
Client I.D. Number: 1491-MW11

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	200 µg/L
2	Acenaphthylene	ND	200 µg/L
3	Acenaphthene	ND	200 µg/L
4	Fluorene	ND	200 µg/L
5	Phenanthrene	ND	200 µg/L
6	Anthracene	ND	200 µg/L
7	Fluoranthene	ND	200 µg/L
8	Pyrene	ND	200 µg/L
9	Benzo(a)anthracene	ND	200 µg/L
10	Chrysene	ND	200 µg/L
11	Benzo(b)fluoranthene	ND	200 µg/L
12	Benzo(k)fluoranthene	ND	200 µg/L
13	Benzo(a)pyrene	ND	200 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	200 µg/L
15	Dibenz(a,h)anthracene	ND	200 µg/L
16	Benzo(g,h,i)perylene	ND	200 µg/L
17	Surr: Nitrobenzene-d5	76	%REC
18	Surr: 2-Fluorobiphenyl	95	%REC
19	Surr: 4-Terphenyl-d14	74	%REC

Reporting Limits were increased due to sample matrix interferences.

ND = Not Detected

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2/3/06
Report Date

2/3/10/06

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Alpha Analytical Number: BMI06012351-08A
Client I.D. Number: 1491-MW12

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	25 µg/L
2	Acenaphthylene	ND	25 µg/L
3	Acenaphthene	ND	25 µg/L
4	Fluorene	ND	25 µg/L
5	Phenanthrene	ND	25 µg/L
6	Anthracene	ND	25 µg/L
7	Fluoranthene	ND	25 µg/L
8	Pyrene	ND	25 µg/L
9	Benzo(a)anthracene	ND	25 µg/L
10	Chrysene	ND	25 µg/L
11	Benzo(b)fluoranthene	ND	25 µg/L
12	Benzo(k)fluoranthene	ND	25 µg/L
13	Benzo(a)pyrene	ND	25 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	25 µg/L
15	Dibenz(a,h)anthracene	ND	25 µg/L
16	Benzo(g,h,i)perylene	ND	25 µg/L
17	Surr: Nitrobenzene-d5	84	%REC
18	Surr: 2-Fluorobiphenyl	74	%REC
19	Surr: 4-Terphenyl-d14	82	%REC

Reporting Limits were increased due to sample matrix interferences.

ND = Not Detected

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2/3/06
Report Date

2/10/06

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ANALYTICAL REPORT

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Alpha Analytical Number: BMI06012351-09A
Client I.D. Number: 1491-MW08Dup

Sampled: 01/20/06
Received: 01/21/06
Analyzed: 01/31/06

Semivolatile Organics by GC/MS
EPA Method SW8270C

	Compound	Concentration	Reporting Limit
1	Naphthalene	ND	10 µg/L
2	Acenaphthylene	ND	10 µg/L
3	Acenaphthene	ND	10 µg/L
4	Fluorene	ND	10 µg/L
5	Phenanthrene	ND	10 µg/L
6	Anthracene	ND	10 µg/L
7	Fluoranthene	ND	10 µg/L
8	Pyrene	ND	10 µg/L
9	Benzo(a)anthracene	ND	10 µg/L
10	Chrysene	ND	10 µg/L
11	Benzo(b)fluoranthene	ND	10 µg/L
12	Benzo(k)fluoranthene	ND	10 µg/L
13	Benzo(a)pyrene	ND	10 µg/L
14	Indeno(1,2,3-cd)pyrene	ND	10 µg/L
15	Dibenz(a,h)anthracene	ND	10 µg/L
16	Benzo(g,h,i)perylene	ND	10 µg/L
17	Surr: Nitrobenzene-d5	93	%REC
18	Surr: 2-Fluorobiphenyl	72	%REC
19	Surr: 4-Terphenyl-d14	92	%REC

ND = Not Detected

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2/3/06
Report Date

3/10/06

LDC #: 14702G2

SDG #: BMI06012351

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 3/08/06

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270C)

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: 1/20/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	% RSD, r
IV.	Continuing calibration	A	
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 = 4, 9
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

Water

1	1491-MW05	11	1491-MW08MSD	21		31	
2	1491-MW06	12	MBLK 13983	22		32	
3	1491-MW07	13		23		33	
4	1491-MW08** D	14		24		34	
5	1491-MW09	15		25		35	
6	1491-MW10	16		26		36	
7	1491-MW11	17		27		37	
8	1491-MW12	18		28		38	
9	1491-MW08Dup D	19		29		39	
10	1491-MW08MS	20		30		40	

LDC #: 14702 G2
SDG #: BMT 0601235I

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: NG
2nd Reviewer: T

Method: Semivolatiles (EPA SW 846 Method 8270C)

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 DFTPP 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 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 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?			✓	
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 #: 14702 G2
SDG #: BMT 06 01235

VALIDATION FINDINGS CHECKLIST

Reviewer: JVL
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?	✓			
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 from 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 #: 14702 G2
SDG #: BMI 0601235J

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: JVC
2nd Reviewer: [illegible]

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, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (5 std)	Recalculated RRF (5 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	12/12/05	Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)	1.381	1.381	1.331	1.331	4.55	4.55
			Fluorene (3rd internal standard)	1.572	1.572	1.480	1.480	7.69	7.69
			~~Pentachlorophenol~~ Phenanthrene (4th internal standard)	1.605	1.605	1.509	1.509	6.66	6.66
			~~Bis(2-ethylhexyl)phthalate~~ Chrysene (5th internal standard)	1.278	1.278	1.254	1.254	2.62	2.61
			Benzo(a)pyrene (6th internal standard)	1.669	1.669	1.539	1.539	13.34	13.35
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.

INICLC.2S

LDC #: 14702G2
SDG #: BMI 06012357

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: JVL
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	06013103	1/31/06	Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)	1.331	1.382	1.382	3.8	3.8
			Fluorene (3rd internal standard)	1.480	1.568	1.568	5.9	5.9
			~~Pentachlorophenol~~ Phenanthrene (4th internal standard)	1.509	1.556	1.556	3.1	3.1
			~~Bis(2-ethylhexyl)phthalate~~ Chrysene (5th internal standard)	1.254	1.278	1.278	1.9	1.9
			Benzo(a)pyrene (6th internal standard)	1.539	1.614	1.614	4.9	4.9
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 #: 14702 G2
SDG #: BMI 0601237

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: JG
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: #4

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	5.0	4.80	96	96	0
2-Fluorobiphenyl	↓	4.52	90	90	↓
Terphenyl-d14	↓	4.61	92	92	↓
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 #: 14707G2
SDG #: BMI 0601735

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: JVC
2nd Reviewer: [illegible]

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 = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 10/11

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
Phenol											
2-Chlorophenol											
1,4-Dichlorobenzene											
N-Nitroso-di-n-propylamine											
1,2,4-Trichlorobenzene											
4-Chloro-3-methylphenol											
Acenaphthene	100	100	0	76.9	79.0	77	77	79	79	2.7	2.7
4-Nitrophenol											
2,4-Dinitrotoluene											
Pentachlorophenol											
Pyrene	100	100	0	74.1	76	74	74	76	76	2.5	2.5

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 #: 14702G2

SDG #: BMI060123S1

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: JVC

2nd Reviewer: [illegible]

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 = | LCS - LCSD | * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS 13983

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										
2-Chlorophenol										
1,4-Dichlorobenzene										
N-Nitroso-di-n-propylamine										
1,2,4-Trichlorobenzene										
4-Chloro-3-methylphenol										
Acenaphthene	100	NA	79.2	NA	79	79				
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol										
Pyrene	100	NA	77.3	NA	77	77				

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 #: 147026r
SDG #: BMI 06012357

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

LDC Report# 14702G4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Camp Pendleton, CTO 102
Collection Date:	January 20, 2006
LDC Report Date:	March 8, 2006
Matrix:	Water
Parameters:	Lead & Dissolved Manganese
Validation Level:	EPA Level III & IV
Laboratory:	Alpha Analytical, Inc.
Sample Delivery Group (SDG):	BMI06012351

Sample Identification

1491-MW05**
1491-MW06
1491-MW07
1491-MW08
1491-MW09
1491-MW10
1491-MW11
1491-MW12
1491-MW08Dup
1491-MW05MS
1491-MW05MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6020 for Lead & Dissolved Manganese.

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

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

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

III. Blanks

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

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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

VI. Duplicate Sample Analysis

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

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

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

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution was not performed for this SDG.

XI. Sample Result Verification

All sample result verifications met 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. Overall Assessment of Data

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

XIII. Field Duplicates

Samples 1491-MW08 and 1491-MW08Dup were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD
	1491-MW08	1491-MW08Dup	
Dissolved manganese	0.033	0.034	3

XIV. Field Blanks

No field blanks were identified in this SDG.

Camp Pendleton, CTO 102
Lead & Dissolved Manganese - Data Qualification Summary - SDG BMI06012351

No Sample Data Qualified in this SDG

Camp Pendleton, CTO 102
Lead & Dissolved Manganese - Laboratory Blank Data Qualification Summary - SDG BMI06012351

No Sample Data Qualified in this SDG

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Dissolved Metals by ICPMS
EPA Method SW6020

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**					
Lab ID :	BMI06012351-01A	Manganese (Mn), Dissolved	1.9	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW06**					
Lab ID :	BMI06012351-02A	Manganese (Mn), Dissolved	ND U	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW07**					
Lab ID :	BMI06012351-03A	Manganese (Mn), Dissolved	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW08**					
Lab ID :	BMI06012351-04A	Manganese (Mn), Dissolved	0.033	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW09**					
Lab ID :	BMI06012351-05A	Manganese (Mn), Dissolved	0.0085	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW10**					
Lab ID :	BMI06012351-06A	Manganese (Mn), Dissolved	0.60	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW11**					
Lab ID :	BMI06012351-07A	Manganese (Mn), Dissolved	2.8	0.020 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW12**					
Lab ID :	BMI06012351-08A	Manganese (Mn), Dissolved	4.1	0.010 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW08Dup**					
Lab ID :	BMI06012351-09A	Manganese (Mn), Dissolved	0.034	0.0050 mg/L	01/20/06	02/15/06

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/16/06
Report Date

3/10/06

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Metals by ICPMS
EPA Method SW6020

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**					
Lab ID :	BMI06012351-01A	Lead (Pb)	ND U	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW06**					
Lab ID :	BMI06012351-02A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW07**					
Lab ID :	BMI06012351-03A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW08**					
Lab ID :	BMI06012351-04A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW09**					
Lab ID :	BMI06012351-05A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW10**					
Lab ID :	BMI06012351-06A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW11**					
Lab ID :	BMI06012351-07A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW12**					
Lab ID :	BMI06012351-08A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06
Client ID :	**1491-MW08Dup**					
Lab ID :	BMI06012351-09A	Lead (Pb)	ND	0.0050 mg/L	01/20/06	02/15/06

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • Randy Gardner, Laboratory Manager • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 • info@alpha-analytical.com

2/16/06
Report Date

3/10/04

LDC #: 14702G4

SDG #: BMI06012351

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 3-7-06

Page: 1 of 1

Reviewer: MG

2nd Reviewer: MH

METHOD: Lead & Dissolved Manganese (EPA SW 846 Method 6020)

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: 1-20-06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	A	~~tc~~
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	A	Not reviewed for Level III validation.
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D = 4+9
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	1491-MW05 **	11	1491-MW05MSD	21		31	
2	1491-MW06	12	PBW	22		32	
3	1491-MW07	13		23		33	
4	1491-MW08	14		24		34	
5	1491-MW09	15		25		35	
6	1491-MW10	16		26		36	
7	1491-MW11	17		27		37	
8	1491-MW12	18		28		38	
9	1491-MW08Dup	19		29		39	
10	1491-MW05MS	20		30		40	

Notes:

LDC #: 14702G4
SDG #: BMI06012351

VALIDATION FINDINGS CHECKLIST

Reviewer: MG
2nd Reviewer: MH

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 #: 1470264
SDG #: BMI0601235 1

VALIDATION FINDINGS CHECKLIST

Reviewer: MG
2nd Reviewer: MM

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 #: 1470264
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MG
2nd reviewer: MH

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1 → 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⁻, ___ ___
QC 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⁻, ___ ___
		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	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⁻, ___ ___
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 #: 14702G4
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: MG
2nd reviewer: MH

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Qualifications
	4	9			
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese	0.033	0.034	3		
Mercury					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium					
Vanadium					
Zinc					
Cyanide					
Boron					
Molybdenum					
Strontium					
Silicon					

Notes:

FLDUP.4S2

LDC #: 14702G4
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MG
2nd Reviewer: MH

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)						
	GFAA (Initial calibration)						
	CVAA (Initial calibration)						
	ICP (Continuing calibration)						
	GFAA (Continuing calibration)						
	CVAA (Continuing calibration)						
1355 ICV	ICP/MS (Initial calibration)	Pb	47.97	50.00	96	not reported	Y
0946 CCV	ICP/MS (Continuing calibation)	Mn	81.73	80.00	102	102	↓

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 #: 147026G
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MG
2nd Reviewer: MM

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)
0136 ICSAB	ICP interference check	Mn	221.50 (µg/L)	200.00 (µg/L)	111	not reported	Y
1005 LCS	Laboratory control sample	Mn	0.04536 (mg/L)	0.05 (mg/L)	91	91	↓
1019 10	Matrix spike	Mn	(SSR-SR) -0.021 (mg/L)	0.05 (mg/L)	-42	-44	↓
1019/1024 10/11	Duplicate	Mn	1.8985 (mg/L)	1.9925 (mg/L)	4.8	4.9	↓
—	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 #: 14702G4
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MG
2nd reviewer: MM

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 #1, Mn 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: (Software has already applied a 5x dil factor.) from raw data:

Mn = (1919.500 µg/L)(1 mg/1000 µg) = 1.9195 mg/L

Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
1	Mn	1.9	1.9	Y

RECALC.4S2

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Camp Pendleton, CTO 102

Collection Date: January 20, 2006

LDC Report Date: March 7, 2006

Matrix: Water

Parameters: Methane

Validation Level: EPA Level III & IV

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): BMI06012351

Sample Identification

1491-MW05**
1491-MW06
1491-MW07
1491-MW08
1491-MW09
1491-MW10
1491-MW11
1491-MW12
1491-MW08Dup

**Indicates sample underwent EPA 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 Method RSK-175 for Methane.

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

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

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 30.0% .

b. Calibration Verification

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

III. Blanks

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

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were not required by the method.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) 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 EPA 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 EPA 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 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.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples 1491-MW08 and 1491-MW08Dup were identified as field duplicates. No methane was detected in any of the samples.

X. Field Blanks

No field blanks were identified in this SDG.

Camp Pendleton, CTO 102
Methane - Data Qualification Summary - SDG BMI06012351

No Sample Data Qualified in this SDG

Camp Pendleton, CTO 102
Methane - Laboratory Blank Data Qualification Summary - SDG BMI06012351

No Sample Data Qualified in this SDG

Alpha Analytical, Inc.

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

ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Dissolved Gases
Modified Method RSK-175 GC/FID

		Parameter	Concentration		Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**						
Lab ID :	BMI06012351-01A	Methane	0.20		0.010 mg/L	01/20/06	01/26/06
Client ID :	**1491-MW06**						
Lab ID :	BMI06012351-02A	Methane	ND	u	0.010 mg/L	01/20/06	01/26/06
Client ID :	**1491-MW07**						
Lab ID :	BMI06012351-03A	Methane	ND		0.010 mg/L	01/20/06	01/26/06
Client ID :	**1491-MW08**						
Lab ID :	BMI06012351-04A	Methane	ND		0.010 mg/L	01/20/06	01/26/06
Client ID :	**1491-MW09**						
Lab ID :	BMI06012351-05A	Methane	ND		0.010 mg/L	01/20/06	01/27/06
Client ID :	**1491-MW10**						
Lab ID :	BMI06012351-06A	Methane	ND		0.010 mg/L	01/20/06	01/27/06
Client ID :	**1491-MW11**						
Lab ID :	BMI06012351-07A	Methane	0.28		0.010 mg/L	01/20/06	01/27/06
Client ID :	**1491-MW12**						
Lab ID :	BMI06012351-08A	Methane	0.12		0.010 mg/L	01/20/06	01/27/06
Client ID :	**1491-MW08Dup**						
Lab ID :	BMI06012351-09A	Methane	ND	u	0.010 mg/L	01/20/06	01/27/06

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • Randy Gardner, Laboratory Manager • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / info@alpha-analytical.com

2/3/06
Report Date

3/10/06

LDC #: 14702G51

SDG #: BMI06012351

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 3/7/06

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Methane (Method RSK-175)

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: 1/20/06
IIa.	Initial calibration	A	% RSD ≤ 30
IIb.	Calibration verification	A	% D ≤ 30
III.	Blanks	A	
IVa.	Surrogate recovery	N	not ~~reported~~ Required
IVb.	Matrix spike/Matrix spike duplicates	A	1523 - MW01
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 = 4 + 9
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	1491-MW05 **	11	MBLK - 13975	21		31	
- 2	1491-MW06	12		22		32	
- 3	1491-MW07	13		23		33	
- 4	1491-MW08 D	14		24		34	
- 5	1491-MW09	15		25		35	
- 6	1491-MW10	16		26		36	
+ 7	1491-MW11	17		27		37	
+ 8	1491-MW12	18		28		38	
- 9	1491-MW08Dup D	19		29		39	
10		20		30		40	

Notes:

LDC #: 14702 G5 1
SDG #: BM1060123S

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: B
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?	✓			
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?		✓	N	
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 #: 14702 G51
SDG #: BM10601235

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer:
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 #: 14702G51
SDG #: BM1060235

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

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 ug/ml CF (0.53 std)	Recalculated ug/ml CF (0.53 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL-GC6	7/20/05	methane	3.7182×10^6	3.7182×10^6	3.291×10^6	3.291×10^6	12.27	12.27
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 #: 14702G5)
SDG #: BM10601235

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer:
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 %R	Recalculated %R
1	6A0126061 9	1/26/06	methane	2.66	2.84	2.84	106.88	106.88
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 #: 14702G51
SDG #: BM1060235

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: B
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 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: 1523 - MW01

Compound	Spike Added (mg/L)		Sample Conc. (mg/L)	Spike Sample Concentration (mg/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)											
Benzene (8021B)											
Methane (RSK-175)	1.06	1.06	0.027	1.14	1.23	105	105	114	114	8.2	7.6
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 #: 14702951
SDG #: BM1060123S

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 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: LCS - 13975

Compound	Spike Added (mg/L)		Sample Conc. (mg/L)	Spike Sample Concentration (mg/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)	0.532	NA	0	0.515	NA	108	108	NA			
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 #: 14702 GS1
SDG #: BM10601235 1

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 Methane

Concentration = 670414 / 3.291 x 10^6

= 0.20 mg/L

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments:

SAMPCALew.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Camp Pendleton, CTO 102

Collection Date: January 20, 2006

LDC Report Date: March 8, 2006

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III & IV

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): BMI06012351

Sample Identification

1491-MW05**
1491-MW06
1491-MW07
1491-MW08
1491-MW09
1491-MW10
1491-MW11
1491-MW12
1491-MW08Dup
1491-MW05DUP
1491-MW06MS
1491-MW06MSD

**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 Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Nitrate as Nitrogen, Nitrite as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, EPA Method 415.1 for Total Organic Carbon, and Standard Method 3500FE for Ferrous Iron.

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

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
1491-MW05** 1491-MW06 1491-MW07 1491-MW08 1491-MW09 1491-MW10 1491-MW11 1491-MW12 1491-MW08Dup 1491-MW06MS 1491-MW06MSD	Ferrous Iron	3 days	48 hours	J (all detects) UJ (all non-detects)	A

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

II. 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 method blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
14151-MW01MS/MSD (All samples in SDG BMI06012351)	Sulfate	-	-	3.4 (≤2)	J (all detects) UJ (all non-detects)	A
1523/MW01MS/MSD (1491-MW05** 1491-MW06 1491-MW07 1491-MW08 1491-MW09 1491-MW10 1491-MW12 1491-MW08Dup)	Total organic carbon	50 (56-137)	54 (56-137)	-	J (all detects) UJ (all non-detects)	A

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 with the following exceptions:

Sample	Analyte	Finding	Criteria	Flag	A or P
All samples in SDG BMI06012351	Alkalinity	No LCS analysis associated with these samples.	LCS analysis required.	None	P

Percent recoveries (%R) were within QC limits.

VII. Sample Result Verification

All sample result verifications were within validation criteria for samples on which a EPA Level IV review was performed with the following exceptions:

Sample	Analyte	Finding	Criteria	Flag	A or P
All samples in SDG BMI06012351	Total organic carbon	The sample concentrations were calculated without using the y-intercept while the CCV standards were calculated with the y-intercept.	Samples and standards should be calculated with the same calibration curve.	None	P

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 1491-MW08 and 1491-MW08Dup were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD
	1491-MW08	1491-MW08Dup	
Alkalinity	460	460	0
Total dissolved solids	2300	2300	0
Sulfate	600	600	0
Total organic carbon	5.2	5.3	2

X. Field Blanks

No field blanks were identified in this SDG.

Camp Pendleton, CTO 102
Wet Chemistry - Data Qualification Summary - SDG BMI06012351

SDG	Sample	Analyte	Flag	A or P	Reason
BMI06012351	1491-MW05** 1491-MW06 1491-MW07 1491-MW08 1491-MW09 1491-MW10 1491-MW11 1491-MW12 1491-MW08Dup	Ferrous Iron	J (all detects) UJ (all non-detects)	A	Technical holding times
BMI06012351	1491-MW05** 1491-MW06 1491-MW07 1491-MW08 1491-MW09 1491-MW10 1491-MW11 1491-MW12 1491-MW08Dup	Sulfate	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (RPD)
BMI06012351	1491-MW05** 1491-MW06 1491-MW07 1491-MW08 1491-MW09 1491-MW10 1491-MW12 1491-MW08Dup	Total organic carbon	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
BMI06012351	1491-MW05** 1491-MW06 1491-MW07 1491-MW08 1491-MW09 1491-MW10 1491-MW11 1491-MW12 1491-MW08Dup	Alkalinity	None	P	Laboratory control samples
BMI06012351	1491-MW05** 1491-MW06 1491-MW07 1491-MW08 1491-MW09 1491-MW10 1491-MW11 1491-MW12 1491-MW08Dup	Total organic carbon	None	P	Sample result verification

Camp Pendleton, CTO 102
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG BMI06012351

No Sample Data Qualified in this SDG

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Alkalinity
EPA Method 310.1

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**					
Lab ID :	BMI06012351-01A	Alkalinity, Total (As CaCO3 at pH 4.5)	970	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW06**					
Lab ID :	BMI06012351-02A	Alkalinity, Total (As CaCO3 at pH 4.5)	530	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW07**					
Lab ID :	BMI06012351-03A	Alkalinity, Total (As CaCO3 at pH 4.5)	360	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW08**					
Lab ID :	BMI06012351-04A	Alkalinity, Total (As CaCO3 at pH 4.5)	460	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW09**					
Lab ID :	BMI06012351-05A	Alkalinity, Total (As CaCO3 at pH 4.5)	710	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW10**					
Lab ID :	BMI06012351-06A	Alkalinity, Total (As CaCO3 at pH 4.5)	520	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW11**					
Lab ID :	BMI06012351-07A	Alkalinity, Total (As CaCO3 at pH 4.5)	730	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW12**					
Lab ID :	BMI06012351-08A	Alkalinity, Total (As CaCO3 at pH 4.5)	1,000	1.0 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW08Dup**					
Lab ID :	BMI06012351-09A	Alkalinity, Total (As CaCO3 at pH 4.5)	460	1.0 mg/L	01/20/06	02/03/06

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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2/3/06
Report Date

3/10/06

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Anions by IC
EPA Method 300.0 / 9056

	Parameter	Concentration		Reporting Limit	Date / Time Sampled	Date / Time Analyzed
Client ID :	Nitrite (NO2) - N	ND	U	0.25 mg/L	01/20/06 10:00	01/21/06 21:24
1491-MW05	Nitrate (NO3) - N	ND	↓	0.25 mg/L	01/20/06 10:00	01/21/06 21:24
Lab ID :	Sulfate (SO4)	100	J	1.3 mg/L	01/20/06 10:00	01/23/06 22:55
BMI06012351-01A						
Client ID :	Nitrite (NO2) - N	ND	U	0.25 mg/L	01/20/06 14:25	01/21/06 21:42
1491-MW06	Nitrate (NO3) - N	15	*	0.63 mg/L	01/20/06 14:25	01/24/06 23:07
Lab ID :	Sulfate (SO4)	550	J	5.0 mg/L	01/20/06 14:25	01/23/06 23:50
BMI06012351-02A						
Client ID :	Nitrite (NO2) - N	ND	U	0.25 mg/L	01/20/06 11:26	01/21/06 22:38
1491-MW07	Nitrate (NO3) - N	0.88		0.25 mg/L	01/20/06 11:26	01/21/06 22:38
Lab ID :	Sulfate (SO4)	370	J	5.0 mg/L	01/20/06 11:26	01/24/06 00:09
BMI06012351-03A						
Client ID :	Nitrite (NO2) - N	ND	U	0.25 mg/L	01/20/06 12:35	01/21/06 22:57
1491-MW08	Nitrate (NO3) - N	ND	↓	0.25 mg/L	01/20/06 12:35	01/21/06 22:57
Lab ID :	Sulfate (SO4)	600	J	13 mg/L	01/20/06 12:35	01/24/06 00:27
BMI06012351-04A						
Client ID :	Nitrite (NO2) - N	ND	U	0.25 mg/L	01/20/06 13:30	01/21/06 23:34
1491-MW09	Nitrate (NO3) - N	10		0.25 mg/L	01/20/06 13:30	01/21/06 23:34
Lab ID :	Sulfate (SO4)	210	J	2.5 mg/L	01/20/06 13:30	01/24/06 00:46
BMI06012351-05A						
Client ID :	Nitrite (NO2) - N	ND	U	0.25 mg/L	01/20/06 11:15	01/21/06 23:52
1491-MW10	Nitrate (NO3) - N	10	*	0.63 mg/L	01/20/06 11:15	01/24/06 23:26
Lab ID :	Sulfate (SO4)	650	J	13 mg/L	01/20/06 11:15	01/24/06 01:04
BMI06012351-06A						
Client ID :	Nitrite (NO2) - N	ND	U	0.25 mg/L	01/20/06 10:10	01/22/06 00:11
1491-MW11	Nitrate (NO3) - N	ND	↓	0.25 mg/L	01/20/06 10:10	01/22/06 00:11
Lab ID :	Sulfate (SO4)	200	J	2.5 mg/L	01/20/06 10:10	01/24/06 01:23
BMI06012351-07A						
Client ID :	Nitrite (NO2) - N	ND	U	0.25 mg/L	01/20/06 12:25	01/22/06 00:29
1491-MW12	Nitrate (NO3) - N	ND	↓	0.25 mg/L	01/20/06 12:25	01/22/06 00:29
Lab ID :	Sulfate (SO4)	47	J	1.3 mg/L	01/20/06 12:25	01/24/06 01:41
BMI06012351-08A						
Client ID :	Nitrite (NO2) - N	ND	U	0.25 mg/L	01/20/06 12:35	01/21/06 23:15
1491-MW08Dup	Nitrate (NO3) - N	ND	↓	0.25 mg/L	01/20/06 12:35	01/21/06 23:15
Lab ID :	Sulfate (SO4)	600	J	13 mg/L	01/20/06 12:35	01/24/06 02:00
BMI06012351-09A						

3/10/06

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Total Dissolved Solids (TDS)
EPA Method 160.1 / SM 2540 C

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**					
Lab ID :	BMI06012351-01A	Solids, Total Dissolved (TDS)	2,200	10 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW06**					
Lab ID :	BMI06012351-02A	Solids, Total Dissolved (TDS)	3,900	25 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW07**					
Lab ID :	BMI06012351-03A	Solids, Total Dissolved (TDS)	3,100	25 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW08**					
Lab ID :	BMI06012351-04A	Solids, Total Dissolved (TDS)	2,300	10 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW09**					
Lab ID :	BMI06012351-05A	Solids, Total Dissolved (TDS)	1,700	10 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW10**					
Lab ID :	BMI06012351-06A	Solids, Total Dissolved (TDS)	4,300	25 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW11**					
Lab ID :	BMI06012351-07A	Solids, Total Dissolved (TDS)	1,800	10 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW12**					
Lab ID :	BMI06012351-08A	Solids, Total Dissolved (TDS)	2,100	10 mg/L	01/20/06	01/30/06
Client ID :	**1491-MW08Dup**					
Lab ID :	BMI06012351-09A	Solids, Total Dissolved (TDS)	2,300	10 mg/L	01/20/06	01/30/06

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2/3/06
Report Date

3/10/06

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102: 1491

Iron by Spectrophotometer
SM3500-Fe D

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**					
Lab ID :	BMI06012351-01A	Iron, Ferrous (+2)	2.3 J	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW06**					
Lab ID :	BMI06012351-02A	Iron, Ferrous (+2)	ND UJ	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW07**					
Lab ID :	BMI06012351-03A	Iron, Ferrous (+2)	ND	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW08**					
Lab ID :	BMI06012351-04A	Iron, Ferrous (+2)	ND	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW09**					
Lab ID :	BMI06012351-05A	Iron, Ferrous (+2)	ND	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW10**					
Lab ID :	BMI06012351-06A	Iron, Ferrous (+2)	ND	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW11**					
Lab ID :	BMI06012351-07A	Iron, Ferrous (+2)	0.40 J	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW12**					
Lab ID :	BMI06012351-08A	Iron, Ferrous (+2)	ND UJ	0.050 mg/L	01/20/06	01/23/06
Client ID :	**1491-MW08Dup**					
Lab ID :	BMI06012351-09A	Iron, Ferrous (+2)	ND	0.050 mg/L	01/20/06	01/23/06

ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

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2/3/06
Report Date

3/10/06

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ANALYTICAL REPORT

Battelle Memorial Institute
505 King Avenue
Columbus, OH 43201

Attn: Chris Zimmerman
Phone: (614) 424-3779
Fax: (614) 424-3667
Date Received : 01/21/06

Job#: TO102-1491

Total Organic Carbon as NonPurgeable Organic Carbon
EPA Method SW9060/415.1/SM-5310C

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID :	**1491-MW05**					
Lab ID :	BMI06012351-01A	Total Organic Carbon	34 J	4.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW06**					
Lab ID :	BMI06012351-02A	Total Organic Carbon	5.3	1.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW07**					
Lab ID :	BMI06012351-03A	Total Organic Carbon	3.4	1.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW08**					
Lab ID :	BMI06012351-04A	Total Organic Carbon	5.2	1.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW09**					
Lab ID :	BMI06012351-05A	Total Organic Carbon	6.4	1.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW10**					
Lab ID :	BMI06012351-06A	Total Organic Carbon	6.0	1.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW11**					
Lab ID :	BMI06012351-07A	Total Organic Carbon	230	20 mg/L	01/20/06	02/03/06
Client ID :	**1491-MW12**					
Lab ID :	BMI06012351-08A	Total Organic Carbon	37 J	4.0 mg/L	01/20/06	01/24/06
Client ID :	**1491-MW08Dup**					
Lab ID :	BMI06012351-09A	Total Organic Carbon	5.3	1.0 mg/L	01/20/06	01/24/06

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2/6/06
Report Date

MM 3/13/06

LDC #: 14702G6

SDG #: BMI06012351

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 3-7-06

Page: 1 of 1

Reviewer: MG

2nd Reviewer: [illegible]

METHOD: (Analyte) Alkalinity (EPA Method 310.1), Nitrate-N, Nitrite-N, Sulfate (EPA Method 300.0), TDS (EPA Method 160.1), Ferrous Iron (SM3500FE), TOC (EPA Method 415.1)

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: 1-20-06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	SW	MS/MSD (SDG: BMI06011952, BMI06012350)
V	Duplicates	A	DUP
VI.	Laboratory control samples	SW	LCS
VII.	Sample result verification	SW	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D = 4 + 9
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	1491-MW05 **	11	1491-MW06MS	21		31	
2	1491-MW06	12	1491-MW06MSD	22		32	
3	1491-MW07	13	PBW1	23		33	
4	1491-MW08	14	PBW2	24		34	
5	1491-MW09	15		25		35	
6	1491-MW10	16		26		36	
7	1491-MW11	17		27		37	
8	1491-MW12	18		28		38	
9	1491-MW08Dup	19		29		39	
10	1491-MW05DUP	20		30		40	

Notes:

LDC #: 1470266
SDG #: BMI06012351

VALIDATION FINDINGS CHECKLIST

Reviewer: MG
2nd Reviewer: MM

Method: Inorganics (EPA Method see cover)

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 #: 1470266
SDG #: BMI06012351

VALIDATION FINDINGS CHECKLIST

Reviewer: MG
2nd Reviewer: MM

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 #: 14702G6
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer: MM

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-9	W	pH (TDS) Cl F (NO3) (NO2) (SO4) PO4 (ALK) CN- NH3 TKN (TOC) CR6+ ClO4 Br (Ferrous Iron)
QC 10	↓	pH (TDS) Cl F NO3 NO2 SO4 PO4 (ALK) CN- NH3 TKN TOC CR6+ ClO4 Br
↓ 11, 12	↓	pH TDS Cl F (NO3) (NO2) SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br (Ferrous Iron)
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 Br

Comments:

LDC #: 1470266
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: MG
2nd reviewer: MH

All circled dates have exceeded the technical holding time.
Y (N) N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	SM3500-Fe					
Parameters:	Ferrous Iron					
Technical holding time:	48 hr					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1	1-20-06	1-23-06	(3 days)				J/UJ/A
2	↓	↓	↓				↓
3							
4							
5							
6							
7							
8							
9							
11							
12	↓	↓	↓				↓
							No
2, 6	(* Method 300.0 analysis for NO_3-N was performed on acid preserved samples)						No Qual.

HT.6 * Criteria : Anion analysis by 300.0 should be performed on unpreserved samples per the method.

No Qual because NO_3-N was N.D.

LDC #: 1470266
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: MG
2nd Reviewer: HH

METHOD: Inorganics, EPA Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
1	14151-MW01 MS/MSD	water	SO_4			3.4 (≤2)	all	J/UJ/A
~~2~~	~~1523-MW01 MS/MSD~~		~~TOC~~		~~46 (56-137)~~	~~15.8 (≤15)~~	~~1→6, 8, 9~~	
2	1523-MW01 MS/MSD	water	TOC	50 (56-137)	54 (56-137)		1→6, 8, 9	J/UJ/A

Comments:

MSD.6

LDC #: 1470266
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: MG
2nd Reviewer: MY

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 Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

(Y) N N/A Were all LCS percent recoveries (%R) within the control limits of 80-120% (85-115% for Method 300.0)?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	LCS ID	Matrix	Analyte	%R (limits)	Associated Samples	Qualifications
1	No LCS	water	Alk		all	None / P

Comments: a pH buffer was used in place of a true LCS

LDC #: 14702G6
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MG
2nd Reviewer: MM

METHOD: Inorganics, Method see cover

#	Sample ID	Analyte	Lab Reporting Limit (units)	RDL (units)	Finding	Qualifications
1	all	TOC	(Sample concentrations were	based on a		None / P
			different calibration curve	than the		
			one used on	CCV std's.		
			Criteria: *	The same calibration		
			curve should	be used for	all samples,	
			QC samples and	standards	in an	
			analytical	batch.		

Comments: * The y intercept was used to calculate the CCV std's. but the intercept was not used to calculate sample concentrations.

ABVCRDL6

LDC #: 14702G6
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: MG
2nd reviewer: MM

METHOD: Inorganics, Method See cover

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		RPD (Limit)	Difference (Limit)	Qualifier
	4	9			
Alk	460.	460.	0		
TDS	2300.	2300.	0		
SO4	600.	600.	0		
TOC	5.2	5.3	2		

Analyte	Concentration ( )		RPD (Limit)	Difference (Limit)	Qualifier

Analyte	Concentration ( )		RPD (Limit)	Difference (Limit)	Qualifier

Analyte	Concentration ( )		RPD (Limit)	Difference (Limit)	Qualifier

LDC #: 1470266
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: MG
2nd Reviewer: MH

METHOD: Inorganics, Method see cover

The correlation coefficient (r) for the calibration of Ferrous Fe was recalculated. Calibration date: 1-23-06

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)	Abs (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration	Ferrous Fe	Blank	—	—	r=0.99958	r=0.99944	Y
Calibration verification		Standard 1	0.025 (mg/L)	0.015			
		Standard 2	0.05 ( )	0.019			
		Standard 3	0.25 ( )	0.115			
		Standard 4	0.5 ( )	0.249			
		Standard 5	1.0 ( )	0.489			
		Standard 6	2.0 ( )	0.910			
		Standard 7	3.0 (↓)	1.355			
Calibration verification	SO_4	1817 CCV	0.2324 (mg/L)	0.250 (mg/L)	93	93	
Calibration verification	NO_3-N	2010 CCV	0.1247 (mg/L)	0.125 (mg/L)	100	100	
Calibration verification	Toc	CCV	5.0038 (mg/L)	5 (mg/L)	100.1	100.1	↓

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 #: 14702G6
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MG
2nd Reviewer: MH

METHOD: Inorganics, Method see cover

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	TDS	208.0 (mg/L)	200 (mg/L)	104	104	Y
11	Matrix spike sample	NO_2-N	(SSR-SR) 9.1959 (mg/L)	10 (mg/L)	92	92	↓
10	Duplicate sample	Alk	973. (mg/L)	964. (mg/L)	1	not reported	↓

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 #: 1470266
SDG #: BMI06012351

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MG
2nd reviewer: MM

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 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 #1, TDS reported with a positive detect were recalculated and verified using the following equation:

Concentration =

Recalculation:

$$\frac{(50.5032\ g - 50.2827\ g)(1000\ mg/g)}{0.100\ L} = 2205\ mg/L$$

#	Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
1	1	Alk	970	970	Y
		TDS	2200	2200	↓
		Ferrous Fe	2.3	2.3	↓
		SO_4	100.	100.	↓
		TOC	34	32	↓

Note:

RECALC.6

APPENDIX E

CHAIN-OF-CUSTODY DOCUMENTATION

Billing Information:
Name Gerald Tompkins
Address 505 King Avenue
City, State, Zip Columbus, OH 43201
Phone Number 614-424-4849 Fax 614-424-3667

LABORATORY
Name Alpha Analytical Inc.
Address 255 Glendale Ave, Suite 21
Sparks, NV 89431
Phone (775) 355 1044

Page # 1 of 4

Client Name **Battelle Memorial Institute**
Address **505 King Avenue**
City, State, Zip **Columbus, OH 43201**
P.O. # 190907
D.O. TO 102
PWS #
DWR #
Phone # 614 424 3779
Fax # 614 424 3667
Report Attention Chris Zimmerman
Sampled by LS/GH

DATA REPORT
NEDTS FORMAT ☐
NIRIS ☒
EDF FORMAT ☒

Time Sampled	Date Sampled	Matrix* See Key Below	Office Use Only Lab ID Number	Field Point / Sample Description	Total and type of containers **See below	TPH/E	TPH/P	NO_2, NO_3, SO_4	Pb, Mn^{+2}, Fe^{+2}	TDS, AlK	TOC	VOC* see below	Other:	Other:	REMARKS
				1491-MW04	5			X	X	X					4°C
1000	1-20	AQ	BMI0600123551-01	1491-MW05	5			X	X	X					
1425	1-20	AQ	-02	1491-MW06	5			X	X	X					
1126	1-20	AQ	-03	1491-MW07	5			X	X	X					
1235	1-20	AQ	-04	1491-MW08	5			X	X	X					
1330	1-20	AQ	-05	1491-MW09	5			X	X	X					
1115	1-20	AQ	-06	1491-MW10	5			X	X	X					
1010	1-20	AQ	-07	1491-MW11	5			X	X	X					
1225	1-20	AQ	-08	1491-MW12	5			X	X	X					
1235	1-20	AQ	-09	1491-MW08 DUP	5			X	X	X					

ADDITIONAL INSTRUCTIONS: **Specific VOC Requirements (please specify)** Metals field filtered

Data Validation is required for 1491-MW04, Data to be forwarded to LDC, Submit report in pdf format by email or CD-ROM

	Signature	Print Name	Company	Date	Time
Relinquished by	Greg Headington	Greg Headington	Battelle	20 JAN 06	1545
Received by	Ina Dickinson	Ina Dickinson	Alpha	1/23/06	940
Relinquished by					
Received by					
Relinquished by					
Received by					

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

Billing Information:
Name Gerald Tompkins
Address 505 King Avenue
City, State, Zip Columbus, OH 43201
Phone Number 614-424-4849 Fax 614-424-3667

LABORATORY
Name Alpha Analytical Inc.
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Page # 2 of 4

Client Name **Battelle Memorial Institute**	P.O. # 190907	D.O. T0102	
Address **505 King Avenue**	PWS #	DWR #	
City, State, Zip **Columbus, OH 43201**	Phone # 614 424 3779	Fax # 614 424 3667	
Sampled by SL/GH	Report Attention Chris Zimmerman		

Analyses Required

DATA REPORT: NEDTS FORMAT ☐ NIRIS ☒ EDF FORMAT ☒

Time Sampled	Date Sampled	Matrix* See Key Below	Office Use Only / Lab ID Number	Field Point / Sample Description	Total and type of containers **See below	TPH/E Diesel, Motor Oil	TPH/P	NO_2, NO_3, SO_4	Pb, Mn^{+2}, Fe^{+2}	TDS, AlK	TOC	VOC* see below	Other: CH4	Other:	REMARKS
—	1-20	AQ	-10	1491-QLTB	1V							X			
0945	1-20	AQ	-11	1491-QCFB	3V							X			
1425	1-20	AQ	-12	1491-QCEB	3V	X									
1000	1-20	AQ	BMI06012351-01	1491-MW05	9V	X						X	X		
1425	1-20	AQ	-02	1491-MW06	9V	X						X	X		
1126	1-20	AQ	-03	1491-MW07	9V	X						X	X		
1235	1-20	AQ	-04	1491-MW08	9V	X						X	X		
1235	1-20	AQ	-09 ~~-05~~	1491-MW08 DUP	9V	X						X	X		
1330	1-20	AQ	-05 ~~-06~~	1491-MW09	9V	X						X	X		
1115	1-20	AQ	-06 ~~-07~~	1491-MW10	9V	X						X	X		
1010	1-20	AQ	-07 ~~-08~~	1491-MW11	9V	X						X	X		
1225	1-20	AQ	-08	1491-MW12	9V	X						X	X		

ADDITIONAL INSTRUCTIONS: **Specific VOC Requirements (please specify)** * see attached VOC List

Data Validation is required for 1491-MW05, Data to be forwarded to LDC. Submit report in pdf by email or CD-Rom.

	Signature	Print Name	Company	Date	Time
Relinquished by	Dex Healy	Greg Headington	Battelle	23 JAN 06	0645
Received by	Tasha Pascal	Tasha Pascal	Alpha	1/24/06	12:30
Relinquished by					
Received by					
Relinquished by					
Received by					

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

Billing Information:
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LABORATORY
Name Alpha Analytical INC
Address 255 Glendale Ave
SPARKS, NV
Phone 775 355 1044

Client Name **Battelle Memorial Institute**	P.O. # 190907	D.O. TO 102	
Address **505 King Avenue**	PWS #	DWR #	
City, State, Zip **Columbus, OH 43201**	Phone # 614 424 3779	Fax # 614 424 3667	
	Report Attention Chris Zimmerman		

Sampled by SL / GH

Analyses Required

DATA REPORT: NEDTS FORMAT ☐ NIRIS ☒ EDF FORMAT ☒

Time Sampled	Date Sampled	Matrix* See Key Below	Office Use Only Lab ID Number	Field Point / Sample Description	Total and type of containers **See below	TPH/E	TPH/P	NO_2, NO_3, SO_4	Pb, Mn^{+2}, Fe^{+2}	TDS, AlK	TOC	VOC* see below	Other: PNA's	Other:	REMARKS
1000	1-20	AQ	-01	1491-MW05	3						X		X		
1425	1-20	AQ	-02	1491-MW06	3						X		X		
1126	1-20	AQ	-03	1491-MW07	3						X		X		
1235	1-20	AQ	-04	1491-MW08	3						X		X		
1235	1-20	AQ	-09	1491-MW08 DUP	3						X		X		
1235	1-20	AQ	-04	1491-MW08-MS	1								X		

ADDITIONAL INSTRUCTIONS: **Specific VOC Requirements (please specify)**

Data Validation required for 1491-MW05 & DATA to be forwarded to LDC. Submit report in pdf format by email or CD-Rom

	Signature	Print Name	Company	Date	Time
Relinquished by	Greg Henderson	Greg Henderson	Battelle	23 JAN 06	0630
Received by	Tasha Pascal	Tasha Pascal	Alpha	1/24/06	12:30
Relinquished by					
Received by					
Relinquished by					
Received by					

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

Billing Information:

Name Gerald Tompkins
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LABORATORY

Name Alpha Analytical
Address 255 Glendale Ave
SPARKS, NV 89431
Phone 775 355 1044

Client Name **Battelle Memorial Institute**	P.O. # 190907	D.O. T0102	
Address **505 King Avenue**	PWS #	DWR #	
City, State, Zip **Columbus, OH 43201**	Phone # 614 424 3779	Fax # 614 424 3667	
Sampled by SL/GH	Report Attention Chris Zimmerman		

DATA REPORT
NEDTS FORMAT ☐
NIRIS ☒
EDF FORMAT ☒

Analyses Required

Time Sampled	Date Sampled	Matrix* See Key Below	Office Use Only / Lab ID Number	Sample Description	Total and type of containers **See below	TPH/E	TPH/P	NO_2, NO_3, SO_4	Pb, Mn^{+2}, Fe^{+2}	TDS, AIK	TOC	VOC* see below	Other: PNA's	Other:	REMARKS
1235	1-20	AQ	-04	1491-MW08-MSD	1								X		
1330	1-20	AQ	-05	1491-MW09	3						X		X		
1115	1-20	AQ	-06	1491-MW10	3						X		X		
1010	1-20	AQ	-07	1491-MW11	3						X		X		
1225	1-20	AQ	-08	1491-MW12	3						X		X		

ADDITIONAL INSTRUCTIONS: **Specific VOC Requirements (please specify)**

Data Validation required for 1491-MW05, Data to be forwarded to LDC, Report data in pdf format by email or CD-ROM

	Signature	Print Name	Company	Date	Time
Relinquished by	Greg Headington	Greg Headington	Battelle	23JAN06	0638
Received by	Tasha Pascal	Tasha Pascal	Alpha	1/24/06	12:30
Relinquished by					
Received by					
Relinquished by					
Received by					

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

Billing Information:

Name Gerald Tompkins
Address 505 King Avenue
City, State, Zip Columbus, OH 43201
Phone Number 614-424-4849 Fax 614-424-3667

LABORATORY

Name ALPHA ANALYTICAL
Address 255 GLENDALE SPARKS, NV
Phone 775-355-1044

Page # 1 of 1

Client Name **Battelle Memorial Institute**	P.O. # 190907	D.O. T0107	
Address **505 King Avenue**	PWS #	DWR #	
City, State, Zip **Columbus, OH 43201**	Phone # 614 424 3779	Fax # 614 424 3667	
Sampled by SL	Report Attention Chris Zimmerman		

DATA REPORT: NEDTS FORMAT ☐ NIRIS ☒ EDF FORMAT ☐

Analyses Required

Time Sampled	Date Sampled	Matrix* See Key Below	Office Use Only / Lab ID Number	Sample Description	Total and type of containers **See below	TPH/E	TPH/P	NO_2, NO_3, SO_4	Pb, Mn^{+2}, Fe^{+2}	TDS, AIK	TOC	VOC* see below	Other: PNAs	Other:	REMARKS
1035	1-26	AQ		1491-MW06	3								X		TEMP BLANK ENCLOSED

ADDITIONAL INSTRUCTIONS: Specific VOC Requirements (please specify)

Signature	Print Name	Company	Date	Time
Relinquished by SJL	SCOTT LOWE	BATTELLE	1-26-06	1115
Received by				
Relinquished by				
Received by				
Relinquished by				
Received by				

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

AMENDED

CHAIN-OF-CUSTODY RECORD

CA

Billing Information :
Battelle
505 King Avenue

Columbus, OH 43201

Client:
Battelle Memorial Institute
505 King Avenue

Columbus, OH 43201

Report Attention : Chris Zimmerman
CC Report :

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

Chris Zimmerman
TEL : (614) 424-3779 x
FAX : (614) 424-3667
EMail : zimmerct@battelle.org

Job : TO102-1491
PO : 190907

Client's COC # : none

WorkOrder : BMI06012351

Report Due By : 5:00 PM On : 06-Feb-06

EDD Required : **Yes**

Sampled by : LS/GH

Cooler Temp : **4 °C**

Date Printed: **27-Jan-06**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles ORG	SUB	TAT	PWS #	3500FE_2OS_W	ALKALINITY	ANIONS(A)_W	ANIONS(B)_W	BNA_W	METALS_AQ	METALS_DS	METHANE_W	Sample Remarks
								Requested Tests								
BMI06012351-01A	1491-MW05	AQ	01/20/06 10:00	17	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2
BMI06012351-02A	1491-MW06	AQ	01/20/06 14:25	15	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2. PNA bottles received broken- client will provide additional volume as soon as possible. 1/27/06 additional sample volume received w/ sample date of 1/26/06 @ 10:35 a.m. for PNA.
BMI06012351-03A	1491-MW07	AQ	01/20/06 11:26	17	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2
BMI06012351-04A	1491-MW08	AQ	01/20/06 12:35	19	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2
BMI06012351-05A	1491-MW09	AQ	01/20/06 13:30	17	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2
BMI06012351-06A	1491-MW10	AQ	01/20/06 11:15	17	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2
BMI06012351-07A	1491-MW11	AQ	01/20/06 10:10	17	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2

Comments: No security seals. Frozen ice. Level IV QC required. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Saturday delivery. Samples kept cold and secure @ 4° until log-in. Some anions analyzed on Sat. to meet hold time. : Metals field filtered. Per revised COC, no sample collected for 1491-MW04, and the new data validation sample is1491-MW05. Amended 1/24/06 10:56 additional sample volume received for all samples added to this WO per Roger. See WO info. TMP

	Signature	Print Name	Company	Date/Time
Logged in by:	Tasha Pascal	Tasha Pascal	Alpha Analytical, Inc.	1/27/06 1:50

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

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

AMENDED

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TEL : (614) 424-3779 x
FAX : (614) 424-3667
EMail : zimmerct@battelle.org

Job : TO102-1491
PO : 190907

Client's COC # : none

WorkOrder : BMI06012351

Report Due By : 5:00 PM On : 06-Feb-06

EDD Required : **Yes**

Sampled by : LS/GH

Cooler Temp : **4 °C**

Date Printed: **27-Jan-06**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles ORG	SUB	TAT	PWS #	TDS ✓	TOC_W ✓	TPH/E_W ✓	VOC_W ✓				Sample Remarks
BMI06012351-01A	1491-MW05	AQ	01/20/06 10:00	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C				TOC pH=2
BMI06012351-02A	1491-MW06	AQ	01/20/06 14:25	15	0	10		X	TOC	TPH/E_C	8260/MTBE_C				TOC pH=2. PNA bottles received broken- client will provide additional volume as soon as possible. 1/27/06 additional sample volume received w/ sample date of 1/26/06 @ 10:35 a.m. for PNA.
BMI06012351-03A	1491-MW07	AQ	01/20/06 11:26	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C				TOC pH=2
BMI06012351-04A	1491-MW08	AQ	01/20/06 12:35	19	0	10		X	TOC	TPH/E_C	8260/MTBE_C				TOC pH=2
BMI06012351-05A	1491-MW09	AQ	01/20/06 13:30	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C				TOC pH=2
BMI06012351-06A	1491-MW10	AQ	01/20/06 11:15	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C				TOC pH=2
BMI06012351-07A	1491-MW11	AQ	01/20/06 10:10	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C				TOC pH=2

Comments: No security seals. Frozen ice. Level IV QC required. Samples should be used as the control spike sample if possible (I.E.. MS/MSD). Saturday delivery. Samples kept cold and secure @ 4° until log-in. Some anions analyzed on Sat. to meet hold time. : Metals field filtered. Per revised COC, no sample collected for 1491-MW04, and the new data validation sample is1491-MW05. Amended 1/24/06 10:56 additional sample volume received for all samples added to this WO per Roger. See WO info. TMP

	Signature	Print Name	Company	Date/Time
Logged in by:	Tasha Pascal	Tasha Pascal	Alpha Analytical, Inc.	1/27/06 1:50

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EMail : zimmerct@battelle.org

Job : TO102-1491
PO : 190907

Client's COC # : none

WorkOrder : BMI06012351

Report Due By : 5:00 PM On : 06-Feb-06

EDD Required : **Yes**

Sampled by : LS/GH

Cooler Temp : 4 °C

Date Printed: **27-Jan-06**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles ORG	SUB	TAT	PWS #	Requested Tests TDS	TOC_W	TPH/E_W	VOC_W			Sample Remarks
BMI06012351-08A	1491-MW12	AQ	01/20/06 12:25	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C			TOC pH=2
BMI06012351-09A	1491-MW08Dup	AQ	01/20/06 12:35	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C			TOC pH=2
BMI06012351-10A	1491-QCTB	AQ	01/20/06 00:00	1	0	10					8260/MTBE_C			Reno Trip Blank 12/13/05
BMI06012351-11A	1491-QCFB	AQ	01/20/06 09:45	3	0	10					8260/MTBE_C			
BMI06012351-12A	1491-QCEB	AQ	01/20/06 14:25	3	0	10				TPH/E_C				

Comments: No security seals. Frozen ice. Level IV QC required. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Saturday delivery. Samples kept cold and secure @ 4° until log-in. Some anions analyzed on Sat. to meet hold time. : Metals field filtered. Per revised COC, no sample collected for 1491-MW04, and the new data validation sample is1491-MW05. Amended 1/24/06 10:56 additional sample volume received for all samples added to this WO per Roger. See WO info. TMP

	Signature	Print Name	Company	Date/Time
Logged in by:	Tasha Pascal	Tasha Pascal	Alpha Analytical, Inc.	1/27/06 1:50

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Report Attention : Chris Zimmerman
CC Report :

CHAIN-OF-CUSTODY RECORD

AMENDED CA

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FAX : (614) 424-3667
EMail : zimmerct@battelle.org

WorkOrder : BMI06012351

Report Due By : 5:00 PM On : 06-Feb-06

EDD Required : **Yes**

Sampled by : LS/GH

Job : TO102: 1491
PO : 190907

Client's COC # : none

Cooler Temp : 4 °C

Date Printed: **24-Jan-06**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles ORG	SUB	TAT	PWS #	Requested Tests 3500FE_2OS_W	ALKALINITY	ANIONS(A)_W	ANIONS(B)_W	BNA_W	METALS_AQ	METALS_DS	METHANE_W	Sample Remarks
BMI06012351-01A	1491-MW05	AQ	01/20/06 10:00	17	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2
BMI06012351-02A	1491-MW06	AQ	01/20/06 14:25	15	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2. PNA bottles received broken- client will provide additional volume as soon as possible.
BMI06012351-03A	1491-MW07	AQ	01/20/06 11:26	17	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2
BMI06012351-04A	1491-MW08	AQ	01/20/06 12:35	19	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2
BMI06012351-05A	1491-MW09	AQ	01/20/06 13:30	17	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2
BMI06012351-06A	1491-MW10	AQ	01/20/06 11:15	17	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2
BMI06012351-07A	1491-MW11	AQ	01/20/06 10:10	17	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2
BMI06012351-08A	1491-MW12	AQ	01/20/06 12:25	17	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2
BMI06012351-09A	1491-MW08Dup	AQ	01/20/06 12:35	17	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	PNA/PAH	Pb	Dissolved Mn	CH4	TOC pH=2

Comments: No security seals. Frozen ice. Level IV QC required. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Saturday delivery. Samples kept cold and secure @ 4° until log-in. Some anions analyzed on Sat. to meet hold time. : Metals field filtered. Per revised COC, no sample collected for 1491-MW04, and the new data validation sample is1491-MW05. Amended 1/24/06 10:56 additional sample volume received for all samples added to this WO per Roger. See WO info. TMP

	Signature	Print Name	Company	Date/Time
Logged in by:	Tasha Pascal	Tasha Pascal	Alpha Analytical, Inc.	1/24/06 12:30

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

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

Billing Information :
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CHAIN-OF-CUSTODY RECORD

AMENDED CA

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WorkOrder : BMI06012351

Report Due By : 5:00 PM On : 06-Feb-06

EDD Required : **Yes**

Sampled by : LS/GH

Report Attention : Chris Zimmerman
CC Report :

Job : TO102: 1491
PO : 190907

Client's COC # : none

Cooler Temp : 4 °C

Date Printed: **24-Jan-06**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles ORG	SUB	TAT	PWS #	Requested Tests TDS	TOC_W	TPH/E_W	VOC_W					Sample Remarks
BMI06012351-01A	1491-MW05	AQ	01/20/06 10:00	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C					TOC pH=2
BMI06012351-02A	1491-MW06	AQ	01/20/06 14:25	15	0	10		X	TOC	TPH/E_C	8260/MTBE_C					TOC pH=2. PNA bottles received broken- client will provide additional volume as soon as possible.
BMI06012351-03A	1491-MW07	AQ	01/20/06 11:26	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C					TOC pH=2
BMI06012351-04A	1491-MW08	AQ	01/20/06 12:35	19	0	10		X		TPH/E_C	8260/MTBE_C					TOC pH=2
BMI06012351-05A	1491-MW09	AQ	01/20/06 13:30	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C					TOC pH=2
BMI06012351-06A	1491-MW10	AQ	01/20/06 11:15	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C					TOC pH=2
BMI06012351-07A	1491-MW11	AQ	01/20/06 10:10	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C					TOC pH=2
BMI06012351-08A	1491-MW12	AQ	01/20/06 12:25	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C					TOC pH=2
BMI06012351-09A	1491-MW08Dup	AQ	01/20/06 12:35	17	0	10		X	TOC	TPH/E_C	8260/MTBE_C					TOC pH=2

Comments: No security seals. Frozen ice. Level IV QC required. Samples should be used as the control spike sample if possible (I.E.. MS/MSD). Saturday delivery. Samples kept cold and secure @ 4° until log-in. Some anions analyzed on Sat. to meet hold time. : Metals field filtered. Per revised COC, no sample collected for 1491-MW04, and the new data validation sample is1491-MW05. Amended 1/24/06 10:56 additional sample volume received for all samples added to this WO per Roger. See WO info. TMP

	Signature	Print Name	Company	Date/Time
Logged in by:	Tasha Pascal	Tasha Pascal	Alpha Analytical, Inc.	1/24/06 12:30

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Report Due By : 5:00 PM On : 06-Feb-06

EDD Required : **Yes**

Sampled by : LS/GH

Job : TO102: 1491
PO : 190907

Client's COC # : none

Cooler Temp : 4 °C

Date Printed: **24-Jan-06**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles ORG	SUB	TAT	PWS #	Requested Tests TDS	TOC_W	TPH/E_W	VOC_W					Sample Remarks
BMI06012351-10A	1491-QCTB	AQ	01/20/06 00:00	1	0	10					8260/MTBE_C					Reno Trip Blank 12/13/05
BMI06012351-11A	1491-QCFB	AQ	01/20/06 09:45	3	0	10					8260/MTBE_C					
BMI06012351-12A	1491-QCEB	AQ	01/20/06 14:25	3	0	10				TPH/E_C						

Comments: No security seals. Frozen ice. Level IV QC required. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Saturday delivery. Samples kept cold and secure @ 4° until log-in. Some anions analyzed on Sat. to meet hold time. : Metals field filtered. Per revised COC, no sample collected for 1491-MW04, and the new data validation sample is1491-MW05. Amended 1/24/06 10:56 additional sample volume received for all samples added to this WO per Roger. See WO info. TMP

	Signature	Print Name	Company	Date/Time
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Job : TO102: 1491
PO : 190907

Client's COC # : none

CA

WorkOrder : BMI06012351

Report Due By : 5:00 PM On : 06-Feb-06

EDD Required : **Yes**

Sampled by : LS/GH

Cooler Temp : 4 °C

Date Printed: **23-Jan-06**

QC Level : DS3 = DOD QC Required : Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles ORG	SUB	TAT	PWS #	Requested Tests 3500FE_2OS_W	ALKALINITY	ANIONS(A)_W	ANIONS(B)_W	METALS_AQ	METALS_DS	TDS		Sample Remarks
BMI06012351-01A	1491-MW05	AQ	01/20/06 10:00	5	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	Pb	Dissolved Mn	X		
BMI06012351-02A	1491-MW06	AQ	01/20/06 14:25	5	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	Pb	Dissolved Mn	X		
BMI06012351-03A	1491-MW07	AQ	01/20/06 11:26	5	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	Pb	Dissolved Mn	X		
BMI06012351-04A	1491-MW08	AQ	01/20/06 12:35	5	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	Pb	Dissolved Mn	X		
BMI06012351-05A	1491-MW09	AQ	01/20/06 13:30	5	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	Pb	Dissolved Mn	X		
BMI06012351-06A	1491-MW10	AQ	01/20/06 11:15	5	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	Pb	Dissolved Mn	X		
BMI06012351-07A	1491-MW11	AQ	01/20/06 10:10	5	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	Pb	Dissolved Mn	X		
BMI06012351-08A	1491-MW12	AQ	01/20/06 12:25	5	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	Pb	Dissolved Mn	X		
BMI06012351-09A	1491-MW08Dup	AQ	01/20/06 12:35	5	0	10		FE+2	Alk	NO2, NO3, SO4	NO2, NO3, SO4	Pb	Dissolved Mn	X		

Comments: No security seals. Frozen ice. Level IV QC required. Samples should be used as the control spike sample if possible (I.E.: MS/MSD). Saturday delivery. Samples kept cold and secure @ 4° until log-in. Some anions analyzed on Sat. to meet hold time. : Metals field filtered. Per revised COC, no sample collected for 1491-MW04, and the new data validation sample is1491-MW05.

	Signature	Print Name	Company	Date/Time
Logged in by:	Tara Dickenson	Tara Dickinson	Alpha Analytical, Inc.	1/23/06 9:40

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

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

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ENVIRONMENTAL RESTORATION

505 King Ave.
Columbus, Ohio 43201

Columbus Fax: 614-424-3667
Camp Pendleton Fax: 760-385-4613
Verification: 614-424-7427 or 614-424-4356

Date: 21 / JAN / 06

Total Pages: 2 **(including cover sheet)**

Send To
Name: SAMPLE RECEIVING
Company Name: ALPHA ANALYTICAL
Fax Number : 775 355 0406
Telephone Number: 775 355 1044

From
Name: GREG Heacington
Telephone Number: (760)-385-4641

Comments: Please note the revised attached COC FOR site 1491, page 1 of 4.

* Place a line thru MW04 (NO SAmple collected)

Under additional Instructions please correct the data validation sample to 1491-MW05 as noted on the revised attached copy of COC. Question call (614) 374-2722, my cellular.
THANKS

Greg Heacington
21/JAN06

APPENDIX F

WASTE MANIFEST

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CA2170023533 | Manifest Document No. 25884 | 2. Page 1 of 1

3. Generator's Name and Mailing Address
USMC AC/S ENVIRO. SEC.
PO Box 555008
CAMP PENDLETON, CA

4. Generator's Phone (760) 725-~~4321~~ 4375 CONTACT: MARGO WILLIAMS

5. Transporter 1 Company Name: EPK ENVIRONMENTAL SERVICES, INC.
6. US EPA ID Number: CAR000011205
A. Transporter's Phone: 619-722-6781

7. Transporter 2 Company Name
8. US EPA ID Number
B. Transporter's Phone

9. Designated Facility Name and Site Address
DOME ROCK INDUSTRIES, INC.
3125 W. DOME ROCK ROAD
QUARTZSITE, AZ 85346
10. US EPA ID Number: AZR000035915
C. Facility's Phone: 928-927-7688

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. NON-HAZARDOUS WASTE LIQUID	001	TT	00050	G
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
11A. 4321PW370 (PURGE WATER) ~~PW~~ 4321PW370
SITE: 1413,1523,14151,1491
MAIL: BATTELLE-3990 OLD TOWN AVE., STE. C205, SAN DIEGO, CA 92110
ATTN.: SCOTT LOWE

E. Handling Codes for Wastes Listed Above
11a. 01

15. Special Handling Instructions and Additional Information
ALWAYS WEAR APPROPRIATE P.P.E. AND USE SAFE HANDLING METHODS.
24 HOUR EMERGENCY NUMBER 1-800-424-9300 *CHEMTREC*

EK# (760) 725-4321

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.
Printed/Typed Name: GERALD O. TUCKER | Signature | Month 02 Day 17 Year 06

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Brian Denning | Signature | Month 02 Day 17 Year 06

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: JERRY R. JARRETT | Signature | Month 02 Day 20 Year 06

GENERATOR
TRANSPORTER
FACILITY

ORIGINAL - RETURN TO GENERATOR

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CA217003533
Manifest Document No. 23116
2. Page 1 of 1

3. Generator's Name and Mailing Address
USMC AC/S ENVIRO. SEC.
PO BOX 555008
CAMP PENDLETON, CA

4. Generator's Phone (760) 725-~~4321~~ 4375 CONTACT: MARGO WILLIAMS

5. Transporter 1 Company Name: EFR ENVIRONMENTAL SERVICES, INC.
6. US EPA ID Number: CAR000011205
A. Transporter's Phone: 619-722-5781

7. Transporter 2 Company Name
8. US EPA ID Number
B. Transporter's Phone

9. Designated Facility Name and Site Address
DOME ROCK INDUSTRIES, INC.
3125 W. DOME ROCK ROAD
QUARTZSITE, AZ 85346
10. US EPA ID Number: AZR000035915
C. Facility's Phone: 928-927-7688

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. NON-HAZARDOUS WASTE SOLID	003	DM	015.00	P
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
IIA. 432150283 (SOIL)
SITE: 1491

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
ALWAYS WEAR APPROPRIATE P.P.E. AND USE SAFE HANDLING METHODS.
24 HOUR EMERGENCY NUMBER 1-800-424-9300 *CHEMTREC*

EIC # (760) 725-4321

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
GERALD O. TUCKER	[signature]	02	17	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Octavio Quintero	[signature]	02	17	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR
TRANSPORTER
FACILITY