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RESOURCES

October 2011 Sampling Report

Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

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1.0 Introduction

This report summarizes the methods and results of a field sampling program performed in October 2011 at the Carroll and Dubies Superfund Site (Site), Town of Deerpark, Orange County, New York. The field work followed the August 2005 Supplemental Sampling Work Plan (Cardinal Resources LLC [Cardinal Resources], 2005) approved by the United States Environmental Protection Agency (U.S. EPA), and incorporated the recommendations of the *November 2006 Sampling Report* (Cardinal Resources, 2007). The October 2011 sampling and analysis event included 14 wells comprising the revised monitoring well network: MW-1, MW-4, OW-2, OW-5, OW-6, OW-8, OW-10R, OW-13R, OW-18, OW-19, OW-21, OW-22, OW-25, and OW-24, which was re-instituted according to recommendations from the U.S. EPA's second five-year review. The purpose of this sampling program is to document volatile organic compound (VOC) concentrations in the outwash aquifer at the site.

1.1 Site Setting

The three-acre Site is located in the Town of Deerpark in Orange County, New York, which is approximately 3,000 feet northeast of the City of Port Jervis, New York (Figure 1). The Site is situated on the northwestern flank of the Neversink Valley. Gold Creek lies approximately 1,500 feet to the east, and the Neversink River is located approximately 2,000 feet beyond Gold Creek.

The Site is underlain by sand and gravel deposits of glacial and glaciofluvial origin. Groundwater monitoring wells on the Site have been completed in the outwash unit, found above a low-permeability till zone that functions as an aquitard. The outwash unit consists of fine to coarse sand with fine to coarse gravel. The direction of groundwater flow is generally toward the southeast.

1.2 Land and Resource Use

The immediate surrounding area includes undeveloped woodlands to the north; undeveloped woodlands and a sand and gravel quarry pit to the northeast; the closed City of Port Jervis landfill, the Orange County Transfer Station, and a concrete products company to the south; and a sparsely vegetated, shale bedrock hillside to the west. In 2004, the City of Port Jervis began a small sand and gravel operation on land it owns, immediately to the southeast of the former lagoons, in the vicinity of OW-5 and OW-6.

1.3 History of Waste Disposal and Contamination

In 1971, the three-acre Carroll and Dubies Site began operating as a disposal facility consisting of a series of lagoons. The majority of wastes disposed in the lagoons were septic waste, municipal sewage sludge, and solid waste. The Site also received liquid industrial wastes from approximately 1971 to 1979.

Over time, waste constituents in the lagoons leached into groundwater and affected the outwash aquifer. VOCs were of particular concern because of their dispersion in the aquifer and relative risk. Benzene, vinyl chloride, and other VOCs were found through a series of investigations to exceed Applicable or Relevant and Appropriate Requirements (ARARs) in Site wells.

1.4 Overview of Remedies

The remedies selected for the Site were defined by two operable units (OU), the waste lagoons themselves, and the impacted groundwater. Remedies were selected and executed to remove wastes from the lagoons, restore the Site to a safe and stable condition, and promote and track improvements in groundwater quality.

1.4.1 OU-1 Remedy

The goals of the OU-1 remedy conducted in 1999 were to prevent further leaching of contaminants into groundwater, and to reduce the risks to potential future workers at the Site who could come in contact with lagoon wastes. The steps in this process were:

- Excavation of all wastes from Lagoons 1, 2, 3, 4, 6, 7, and 8, along with surrounding soils that exceeded specified levels for indicator chemicals.
- Appropriate management of all excavated wastes and soils.
- Placement of imported clean fill in the excavations, followed by grading for drainage control and vegetation.

1.4.2 OU-2 Remedy

The goals of the ongoing OU-2 remedy, which was initiated in 1999, have been to use natural attenuation to reduce or eliminate the risks associated with the ingestion of Site groundwater for future Site workers and to protect Gold Creek from Site-related impacts. The steps in the program are:

- Execution of a groundwater monitoring program in accordance with Work Plans and other documents prepared for the project and approved by the U.S. EPA.
- With each sampling round, a report is prepared for U.S. EPA that documents the progress made in achieving the remedial goals.

1.5 Overview of 2006 Groundwater Monitoring Program

A supplemental sampling program was initiated in February 2006 in response to the five-year review. Part of the program was to install two new monitoring wells, OW-24 and OW-25, east and south of OW-2, OW-5, and OW-6 (Figure 2), to determine the extent of the chlorinated VOC plume in the vicinity of OW-2, OW-5, and OW-6. Two existing monitoring wells that were not part of the ongoing groundwater monitoring network, OW-17 and OW-23, downgradient and to the west of OW-2, OW-5, and OW-6, were also redeveloped and sampled.

Groundwater was sampled three more times in 2006: in May, August, and November. The purpose of quarterly sampling of the wells in the vicinity of the chlorinated VOC plume was to evaluate trends through an entire hydrologic cycle. In all four sampling rounds, the results for the chlorinated VOC plume have been consistent. Tetrachloroethene (PCE) and trichloroethene (TCE) and their degradation products (chloroethane, 1,2-dichloroethene, and vinyl chloride) were nondetectable in OW-24 and OW-25. In OW-17 and OW-23, chlorinated VOCs were occasionally detected at low, estimated concentrations below the reporting limit, and below state and federal groundwater criteria. Chlorinated VOC impacts at OW-2, OW-5, and OW-6 remain localized. For additional information on the February, May, August, and November 2006 sampling events, refer to the respective quarterly reports (Cardinal Resources, April 2006; July 2006; November 2006; and January 2007).

1.6 Resumption of Annual Monitoring Program

In June 2007, the annual groundwater monitoring program resumed, and continued in 2008, 2009, and 2010.

1.7 Modified Sampling Frequency

In 2011, a program was initiated to cover the entire hydrologic cycle over the next five-year period through sampling every five quarters (every 15 months). This enhancement

to the sampling program was described in a letter to the U.S. EPA dated November 2, 2010. Based on this rotation, the next sampling round will be in January 2013.

2.0 Groundwater Sample Collection

This section describes methods used to collect groundwater samples for analysis. The results of the groundwater sampling and analysis program are provided in Section 4.0.

2.1 Groundwater Elevations

Before sampling began, groundwater elevations for all site wells were determined from measured depths to water from the reference point elevations. The depth to groundwater was measured using an electronic water-level meter and recorded in a monitoring well sampling form.

2.2 Wells and Equipment

Dedicated low-flow bladder pumps were used to purge and sample the entire 2011 monitoring well network, with the exception of wells OW-13R, OW-22, OW-24, and OW-25. These wells were sampled using a downhole bladder pump that was decontaminated initially and after sampling each well by:

- Washing with low phosphate detergent and tap water
- Rinsing with tap water
- Rinsing with deionized water
- Air drying

Clean disposable tubing and a clean disposable bladder were used for each well sampled with the reusable bladder pump.

2.3 Well Purging and Sampling

All wells were purged using low-flow techniques (between 100 and 200 milliliters per minute [mL/min]). During purging of each monitoring well, temperature, dissolved oxygen (DO), reduction/oxidation (redox) potential, specific conductance (conductivity), pH, and turbidity were monitored and recorded on field forms in average intervals of 5 minutes.

The groundwater field parameters were measured with a YSI Model 556 MPS-10 multi-parameter unit equipped with a flow-through cell, and a Hanna Turbidity Meter Model HI98703. All equipment was calibrated prior to sampling activities. The goal was to obtain three consecutive readings of the field parameters within the following ranges:

- ±1.0 degree centigrade (°C) for temperature
- ±10 percent (%) or ±0.3 milligrams per liter (mg/L) for DO (whichever is greater)
- ±10 millivolts (mV) for redox potential
- ±3% for conductivity
- ±0.1 for pH
- ±10% or ±2 nephelometric turbidity units (NTUs) for turbidity (whichever is greater)

The final stabilized readings prior to sample collection for each of the monitoring wells are provided in Table 1. Groundwater purged from the monitoring wells was generally clear and contained little suspended sediment. Purged water from OW-8, OW-13R, and OW-22, had reddish-brown particles, possibly iron oxide. When purging was complete, groundwater samples were collected directly from the pump tubing. Samples were placed immediately on ice for overnight shipment to TestAmerica Laboratories, North Canton, Ohio.

3.0 Collection of Surface Water and Sediment Samples

As part of the ongoing evaluation of conditions in Gold Creek, surface water and sediment samples were collected from two locations along Gold Creek, SED-1/SW-1 (downstream) and SED-2/SW-2 (upstream) (Figure 2). The results from the Gold Creek sampling program are provided in Section 5.0.

3.1 Surface Water Sampling

Surface water samples from SW-1 and SW-2 were collected from Gold Creek at the established locations that have been sampled throughout the OU-2 monitoring period. The survey stakes at SW-2 and SW-3 were missing, so the surface water elevation could only be measured at SW-1. Because there is adequate history of the relationship between groundwater and surface water evaluations from more than 10 years of monitoring, reinstallation and surveying of the surface water gauging points at these locations is not planned.

Samples were collected for VOCs at each location directly into the VOC sample vials. The sample bottles were labeled appropriately, placed in a cooler with ice, and sent to the laboratory for analysis.

3.2 Sediment Sampling

Two sediment samples were collected from the established locations coinciding with SW-1 and SW-2 (Figure 2), and were designated SED-1 and SED-2. The samples were collected using a stainless-steel trowel from approximately the upper six inches of sediment at the edge of the creek. The stainless-steel trowel was decontaminated between sediment sampling locations.

4.0 Groundwater Results

This section describes the results of the October 2011 sampling event and presents a discussion of site-wide groundwater conditions.

4.1 Groundwater Elevations

The groundwater elevations for this sampling round are presented in Table 2. Associated groundwater elevation contours are shown in Figure 2.

The groundwater elevations in the wells were on the average about 3.05 feet higher than observed in July 2010; the direction of groundwater flow and gradient were about the same. Groundwater on site flows toward the southeast and Gold Creek. The groundwater gradient across the former lagoon site was approximately 0.11. This gradient transitions to a lower gradient, at about the location of the towpath. From the towpath to Gold Creek, the gradient is very shallow, approximately 0.002. The steeper gradient on the western side of the site is due to the depth to bedrock along the valley wall. As the depth to bedrock increases towards the valley floor, the thickness of the alluvial fill increases and the groundwater gradient flattens.

4.2 Summary of Groundwater Quality Results

VOCs detected in groundwater analysis in the October 2011 sampling event are presented in Table 3. Laboratory analytical reports, including marked Form Is from the data validation process, are included in Appendix A in hard copy. An electronic copy of the entire data package is also provided. Historical data of detected organic compounds have been combined with the most recent data and are presented in Table B-1 in Appendix B. In tables and discussion, the qualifier "J" with a reported concentration means an estimated result, with the analyses positively identified but the numerical value an approximate concentration. The qualifier “U” means that the analysis was not detected above the reported quantitation limit.

A variety of monitored natural attenuation (MNA) field and laboratory parameters were analyzed in groundwater (Table 4). These parameters are general indicators of geochemical conditions conducive to degradation of chlorinated and other VOCs. Patterns of MNA indicators by area were discussed in detail in the *Supporting Documentation for Five-Year Review* (Cardinal Resources, March 2005), along with an evaluation of how those patterns may relate to contaminant distribution within the groundwater plume.

Nine VOCs were detected in various wells during this sampling event, six of which exceeded regulatory limits. Regulatory exceedances of VOCs in groundwater are reported in Table 5 and plotted in Figure 3.

VOC concentrations in monitoring wells in the October 2011 sampling generally followed similar trends as compared to the 2010 results, and within ranges previously observed. In the remainder of this section, specific groundwater trends and conditions are discussed in greater detail, including:

- Concentration trends for chlorinated VOCs
- Concentration trends for benzene
- Achievement of regulatory limits in monitoring wells
- MNA trends

4.3 Trends for Chlorinated VOCs

Chlorinated VOCs, mainly 1,2-dichloroethene, trichloroethene, and tetrachloroethene, are the predominant constituents on the eastern side of the site, particularly in OW-2, OW-5, and OW-6 (Figure 3), but are detectable in other locations mostly in estimated concentrations less than reporting limits.

Compared to OW-2 and OW-6, groundwater on the western side (OW-18, OW-19, OW-21, OW-22) is generally higher in methane or total organic carbon (TOC), has lower redox (is more reduced), and is more amenable to reductive dechlorination. In these wells, chlorinated VOCs in general showed a downward trend over time once OU-1 actions were complete. For example, while the concentration of chlorinated VOCs was higher in OW-13/OW-13R in 1999-2000 compared to OW-5 (Figure 4), favorable geo-chemical conditions resulted in a rapid and smooth decline. Chlorinated VOCs have not exceeded criteria at this location since 2004, and were not detected in 2011. In OW-5, conditions for degradation have been somewhat less favorable and the decline has been slower and more variable (Figure 4). However, in 2007 and 2008, only 1,2-dichloroethene exceeded criteria, and in 2009, 2010, and 2011, no chlorinated VOCs exceeded criteria in this well.

In OW-2, OW-5, and OW-6, the decline in chlorinated VOC concentrations has been retarded by unfavorable geochemical conditions. Concentrations appeared to peak in the years following OU-1 actions, but since then began to decline gradually (Figure 5).

There are variations in concentrations from year to year, but the overall trends are downward.

4.4 Benzene Concentration Trends

As was described in detail in the *Supporting Documentation for Five-Year Review* (Cardinal Resources, 2005), different VOCs have predominated in different areas downgradient of the former lagoons. Benzene has predominated in several monitoring wells in the southwestern areas of the Site, with historically the highest concentrations observed in MW-4, OW-10R, and OW-13R. In 2011, maximum concentration was measured in groundwater at OW-22, at 5.3 micrograms per liter (ug/L), compared to the federal Maximum Contaminant Level (MCL) of 5 ug/L. Benzene was below the MCL of 5 ug/L in October 2011 in MW-4, OW-10R, OW-13R, OW-18, OW-19, and OW-21, although not below the New York State Standard or Guidance Value (SGV) of 1 ug/L.

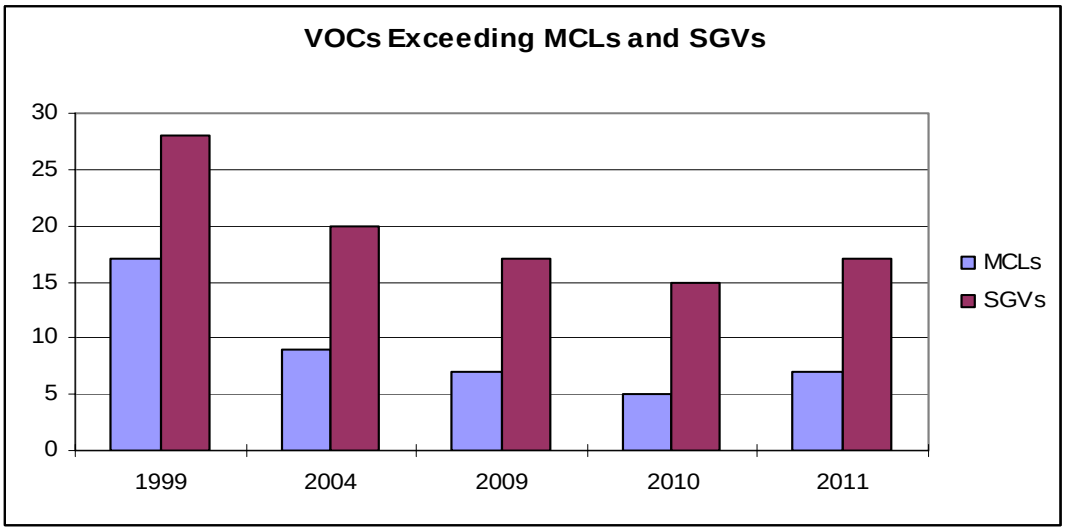
Benzene has exhibited an overall downward trend in individual wells with historically high concentrations, OW-10R, OW-13R, and OW-22, illustrated in Figure 6. There has also been a flattening and mass decline of the benzene plume along the groundwater flow path, illustrated in Figure 7. This depiction shows how the benzene concentration has declined 2 to 3 orders of magnitude since 2000 in OW-10R and OW-13/OW-13R, closest to the source area. The decline in the benzene concentration in the former source area around OW-13R reflects both degradation and dispersion of benzene within the plume to the south and west toward OW-22.

Not only do historic trends show declining benzene concentrations, but in the period from 2006 to 2011, even with variable concentrations, overall benzene concentration trends continue to be downward (Figure 8). Figure 9 depicts benzene concentrations in groundwater in October 2011.

4.5 Achievement of MCLs and SGVs

Since completion of OU-1 remediation in 1999, some, but not all, of the MCLs and state groundwater SGVs had been met in groundwater wells downgradient of the former lagoons. Table 5 summarizes these findings through the current sampling round. Wells consistently monitored from 1999 through 2011 are shown in this table for comparison purposes so that the same wells are compared each time. In 2011, 7 MCLs were exceeded within the monitoring network, and 17 SGVs were exceeded.

The overall trend since 1999 indicates that there has been substantial improvement in groundwater quality relative to MCLs and SGVs:



4.6 Monitored Natural Attenuation Trends

A variety of MNA field and laboratory parameters have been analyzed over time in groundwater (Table 4). These parameters are general indicators of geochemical conditions conducive to degradation of chlorinated and other VOCs. Patterns of MNA indicators by area were discussed in the *Supporting Documentation for Five-Year Review* (Cardinal Resources, 2005), along with an evaluation of how those patterns may relate to contaminant distribution within the groundwater plume. The patterns seen in October 2011 are consistent with the observations presented previously, with the areas predicted to be most amenable to degradation in monitoring wells to the south and west (OW-10R, OW-18, OW-19, OW-21, OW-22). In these wells,

- Methane concentrations of 50 ug/L or greater were observed;
- Relatively high TOC, 2 mg/L or greater, was found; and
- Low DO or redox potential indicating reduced conditions were found.

Table 6 illustrates the variability of conditions conducive to, or indicative of, natural attenuation of chlorinated VOCs across the site. This weighting and scoring table is adapted from the U.S. EPA's technical protocol for natural attenuation of chlorinated aliphatic hydrocarbons (U.S. EPA, 1997). It shows higher scores for OW-10R and OW-13R, located close to the former lagoons on the western side of the Site, and low scores for OW-2 and OW-25, on the eastern side of the site.

5.0 Gold Creek Sampling Results

Refer to Section 3.0 for a description of the methods for surface water and sediment sample collection along the creek. Table 7 provides the results for VOCs detected in surface water and sediment samples collected from two locations along Gold Creek (Figure 2).

The results are arranged in the table from the sampling location furthest downstream (SED-1/SW-1) to the furthest upstream (SED-2/SW-2). These are the established sampling locations that have been used throughout the OU-2 monitoring program.

5.1 Surface Water Results

VOCs were not detected in surface water samples (Table 7). Historic SW-1 and SW-2 sample results are provided in Appendix B, Table B-2.

5.2 Sediment Results

Methylene chloride was reported in the downgradient sediment samples SED-2, at and estimated concentration (13 J micrograms per kilogram [ug/kg]) close to the reporting limit (12 ug/kg) during this sampling round (Table 7). This concentration is well below the guidance value for freshwater sediments (National Oceanic and Atmospheric Administration, 2008; NYSDEC Division of Water, 2004).

5.3 Discussion

The results for the two sampling locations along Gold Creek are consistent with past observations for SED-1/SW-1 and SED-2/SW-2. VOCs were not detected in surface water. Based on the low detection of acetone in upstream sample SED-2 that does not exceed the sediment guidance value (Table 7), there is no evidence that ecological conditions in Gold Creek are being adversely affected by the Site.

6.0 Data Quality Review

Data quality review was performed on the analytical data packages to assure that quality and usability requirements were met.

6.1 Introduction

A Tier II data quality review of the sample data package was completed using U.S. EPA guidelines. The Tier II data evaluation consisted of a review of data package completeness and a quality control (QC) review, as summarized in the QC forms provided by the laboratory, covering:

- Signed transmittal page
- Data package narrative
- Sample transmittal documentation
- Standard VOC QC forms for:
  - System monitoring compound (surrogate recovery)
  - Matrix spike/matrix spike duplicate (MS/MSD) recovery
  - Laboratory check samples
  - Method blank summary
  - Instrument performance check
  - Internal standard summary and retention time (RT) summary
  - Initial calibration data
  - Continuing calibration data
- Form Is and raw data for field samples, blanks, laboratory control samples, MS/MSDs
- Copies of logbook pages documenting sample preparation, extract transfer, instruments, and sample tracking
- Holding times
- Form Is and raw data for field and QC samples
- Field duplicates and field, trip, and decontamination blanks.

Checklists documenting the review of three laboratory sample delivery groups (SDGs) are provided in Appendix C.

6.2 Results of Data Review

The hand-marked, qualified Form Is are provided in Appendix A with the laboratory reports. Results in Tables 3, 7, B-1, B-2, and B-3 reflect the qualified data. The data qualifiers used as a result of the data review are:

- U - The analyses were analyzed for, but were not detected above the reported sample quantitation limit.
- J - The analyses were positively identified; the associated numerical value is the approximate concentration of the analyses in the sample.
- UJ - The analyses were not detected above the reported quantitation limit, but the reported quantitation limit is approximate.

The data packages were complete and appropriately organized, and all relevant supporting information was provided.

6.2.1 Field QC Samples

The field QC samples for VOC analyses were one surface water duplicate (SW-1); one sediment duplicate (SED-1); one groundwater duplicate (OW-13R); three MS/MSD pairs (SW-2 MS/MSD, SED-2 MS/MSD, OW-5 MS/MSD); one decontamination blank for the pump (pump rinsate); three field blanks; and three trip blanks. A field blank was collected for each of the three sampling days, and a trip blank was included with each sample cooler.

6.2.2 Data Quality and Usability

Although there were some qualifications as estimated or nondetectable values that resulted from the data quality review process, the analytical results are usable and of acceptable quality; no results have been rejected.

7.0 Summary and Conclusions

The results of the 2011 sampling program for the Carroll and Dubies Site show:

- Groundwater elevations were higher on average by more than 3 feet, compared to the July 2010 groundwater elevations.
- Some of the monitoring wells continue to exceed MCLs and SGVs. The number of exceedances has been about the same over the past five years. Even so, it is evident that attenuation is occurring at a reasonable rate by looking at concentrations in monitoring wells that exceed MCLs and SGVs. For example, in 2009 the average benzene concentration in wells that exceeded was 6.2 ug/L; in 2010, it was 5.0 ug/L; and in 2011, it was 2.7 ug/L.
- VOCs continued to be nondetectable at the eastern boundary of the site at OW-8 and OW-25.
- The highest detection of benzene was 5.3 ug/L at OW-22, compared to 17 ug/L at OW-13R in 2010.
- Chlorinated VOCs in OW-2, OW-5, and OW-6 are similar to 2010, slightly lower in OW-5 and slightly higher in OW-2 and OW-6.
- Surface water and sediment samples from Gold Creek were nondetectable except for one estimated detection of methylene chloride in sediment, possibly a laboratory artifact.

These results confirm the validity of the U.S. EPA's conclusions in the Protectiveness Statement contained in its 2010 Five-Year Review Report:

> *"The implemented remedial actions at all OUs at the Carroll and Dubies Sewage Disposal Site are protective of human health and the environment. There are no exposure pathways that could result in unacceptable risks and none are expected as long as the institutional controls, which are in place, and the natural attenuation remedy selected in the decision documents for the Site continue to be properly monitored and maintained."*

The next sampling program is planned for January 2013.

8.0 References

Cardinal Resources LLC, July 2007, *June 2007, July 2010 Sampling Report, Carroll and Dubies Superfund Site, Town of Deerpark, Orange County, New York,* Prepared for Kolmar Laboratories, Inc. and Wickhen Products, Inc.

Cardinal Resources LLC, January 2007, *November 2006 Sampling Report, Carroll and Dubies Superfund Site, Town of Deerpark, Orange County, New York.*

Cardinal Resources LLC, November 2006, *August 2006 Sampling Report, Carroll and Dubies Superfund Site, Town of Deerpark, Orange County, New York.*

Cardinal Resources LLC, July 2006, *May 2006 Sampling Report, Carroll and Dubies Superfund Site, Town of Deerpark, Orange County, New York.*

Cardinal Resources LLC, April 2006, *February 2006 Sampling Report, Carroll and Dubies Superfund Site, Town of Deerpark, Orange County, New York.*

Cardinal Resources, Inc., August 2005, *Supplemental Sampling Work Plan, Carroll and Dubies Superfund Site,* Prepared for Kolmar Laboratories, Inc. and Wickhen Products, Inc.

Cardinal Resources, Inc., March 2005, *Supporting Documentation for Five-Year Review, Carroll and Dubies Superfund Site,* Prepared for Kolmar Laboratories, Inc. and Wickhen Products, Inc.

New York State Department of Environmental Conservation (NYSDEC), Division of Water, November 2004, *Technical & Operational Guidance Series (TOGS) 5.1.9, In-Water and Riparian Management of Sediment and Dredge Material,* Bureau of Water Assessment and Management, Albany, New York.

National Oceanic and Atmospheric Administration (NOAA), November 2008, *Screening Quick Reference Tables (SQuiRTs),* Assessment and Restoration Division (ARD), Office of Response and Restoration.

United States Environmental Protection Agency, 2005, *Five-Year Review Report, Carroll and Dubies Superfund Site, Town of Deerpark, Orange County, New York,* Prepared by U.S. EPA Region 2, New York, New York.

United States Environmental Protection Agency, 1997, Proceedings of the Symposium on Natural Attenuation of Chlorinated Organics in Groundwater, EPA/540/R-97/504, Office of Research and Development, Washington, DC.

Tables

Table 1
Groundwater Field Stabilization Parameters
October 2011
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Well ID	Date	Temperature (°C)	Dissolved Oxygen (mg/L)	Redox (mV)	Specific Conductance (uS/cm)	pH (standard units)	Turbidity (NTUs)
MW-1	10/05/11	13.48	1.00	117.00	232	6.29	0.45
MW-4	10/04/11	12.17	0.63	-62.3	525	6.46	0.61
OW-2	10/04/11	12.92	6.60	117.5	142	5.93	2.63
OW-5	10/05/11	16.04	3.34	117.8	306	6.38	0.21
OW-6	10/05/11	13.63	7.40	141.2	236	5.90	0.76
OW-8	10/05/11	11.27	0.69	18.8	135	6.33	9.12
OW-10R	10/04/11	13.12	0.43	-18.7	389	6.29	0.85
OW-13R	10/05/11	15.89	0.23	154.7	475	5.63	4.72
OW-18	10/06/11	14.35	0.30	-44.5	598	6.29	1.04
OW-19	10/06/11	14.79	1.80	-54.9	851	6.32	2.53
OW-21	10/04/11	13.67	4.31	3.3	476	6.32	0.32
OW-22	10/04/11	12.21	0.58	-62	691	6.23	0.52
OW-24	10/06/11	13.05	5.46	126.0	271	7.04	0.78
OW-25	10/06/11	12.73	8.85	191.6	100	5.85	30.70

Notes:
mg/L = milligrams per liter
mV = milliVolts
uS/cm = microSiemens per centimeter
NTU = nephelometric turbidity units

Table 2
Groundwater and Surface Water Elevation Data[1]
October 2011
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Well No.	Top of Casing Elevation or Staff Gauge[2]	Screened Interval	Depth to Groundwater or Surface Water	Groundwater or Surface Water Elevation
MW-1	469.39	28.5 - 43.5	30.00	439.39
MW-4	470.13	35.3 - 50.3	36.05	434.08
OW-2	472.33	30.0 - 47.0	38.27	434.06
OW-3	472.70	30.0 - 46.5	39.08	433.62
OW-4	473.33	26.5 - 27.5	33.97	439.36
OW-5	459.85	25.5 - 45.5	26.11	433.74
OW-6	464.40	31.4 - 51.4	30.65	433.75
OW-8	464.63	34.6 - 54.6	30.69	433.94
OW-9	472.91	25.3 - 35.3	26.88	446.03
OW-10R	469.27	29.0 - 39.0	26.14	443.13
OW-13R	457.69	25.0 - 35.0	23.97	433.72
OW-15	472.05	22.0 - 32.0	10.90	461.15
OW-16	453.90	18.0 - 28.0	20.59	433.31
OW-17	447.18	11.0 - 21.0	14.53	432.65
OW-18	444.57	11.0 - 21.0	11.82	432.75
OW-19	438.69	5.0 - 15.0	6.24	432.45
OW-21	467.46	37.1 - 47.1	33.90	433.56
OW-22	467.10	38.0 - 48.0	33.45	433.65
OW-23	444.73	29.0 - 39.0	12.09	432.64
OW-24	446.77	14.4 - 24.4	14.55	432.22
OW-25	452.47	20.0 - 30.0	19.61	432.86
SW-1[3]	432.01	-	0.36	428.10
SW-2	432.01	-	N/A	NA
SW-3	437.44	-	N/A	NA

Notes:
[1]Data reported in feet; elevations relative - mean sea level; 1988 National Geodetic Vertical Datum.
[2]Top of casing and gauge staff elevations surveyed by Maser Consulting P.A.
[3]Water elevation measured from top of surveyed staff gauge.
NA = not applicable
SW-2 and SW-3 surface water elevations were not measured because staff gauges were missing.

Table 3
Summary of Detected TCL Volatile Organic Compounds in Groundwater (ug/L)
October 2011
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Compound	NYSDEC	U.S. EPA	MW-1	MW-4	OW-2	OW-5	OW-6	OW-8	OW-10R	OW-13R	OW-13R DUP
	SGV	MCL	10/13/11	10/13/11	10/13/11	10/13/11	10/13/11	10/13/11	10/13/11	10/13/11	10/13/11
Benzene	1 (S)	5	1.0 U	1.1	2.5 U	1.0 U	1.7 U	1.0 U	2.4	1.0 UJ	1.3 J
Chlorobenzene	5 (S)*	100	1.0 U	1.0 U	2.5 U	1.0 U	1.7 U	1.0 U	5.1	1.0 U	1.0 U
Chloroethane	5 (S)*	NE	1.0 U	1.0 U	2.5 U	1.0 U	1.7 U	1.0 U	1.0 U	1.0 U	1.0 U
Cis 1,2-Dichloroethene	5 (S)*	70	1.0 U	1.0 U	98	1.0 U	40	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	5 (S)*	1,000	1.0 U	1.0 U	2.5 U	1.0 U	1.7 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	3 (S)	75	1.0 U	1.0 U	2.5 U	1.0 U	1.7 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	5 (S)*	5	1.0 U	1.0 U	110	1.4	52	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	5 (S)*	5	1.0 U	1.0 U	15	1.0 U	11	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride	2 (S)	2	1.0 U	1.0 U	2.5 U	1.0 U	1.7 U	1.0 U	1.0 U	1.0 U	1.0 U

Compound	NYSDEC	U.S. EPA	OW-18	OW-19	OW-21	OW-22	OW-24	OW-25
	SGV	MCL	07/22/10	07/22/10	07/20/10	07/20/10	07/22/10	07/22/10
Benzene	1 (S)	5	3.7	3.0	2.2	5.3	1.0 U	1.0 U
Chlorobenzene	5 (S)*	100	8.7	8.4	1.0 U	18	1.0 U	1.0 U
Chloroethane	5 (S)*	NE	1.0 U	1.4	1.0 U	1.0 U	1.0 U	1.0 U
Cis 1,2-Dichloroethene	5 (S)*	70	1.0 U	1.6	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	5 (S)*	1,000	1.0 U	1.2	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	3 (S)	75	1.6	1.0 U	1.0 U	1.6	1.0 U	1.0 U
Tetrachloroethene	5 (S)*	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	5 (S)*	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride	2 (S)	2	1.5	3.3	1.0 U	1.0 U	1.0 U	1.0 U

Notes:
TCL = Target Compound List
NYSDEC SGV = New York State Department of Environmental Conservation Standards (S) and Guidance (G) Values (V) for groundwater.
U.S. EPA MCL = United States Environmental Protection Agency Maximum Contaminant Level for drinking/groundwater.
U = The analyte was analyzed for, but was not detected above the reported quantitation limit.
UJ = Nondetectable at the reporting limit, but the reporting limit is approximate.
* = The principal organic contaminant (POC) standard for groundwater of 5 ug/L applies to this substance.
NE = Not established; no criteria specified
Red = **Concentrations detected at or above regulatory limit**
Blue = **Analyte detected at less than regulatory limit, or analyte detected but no regulatory criteria specified**

Table 4
Natural Attenuation Parameters
October 2011
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Well ID	Date	Alkalinity (mg/L)	Chloride (mg/L)	Dissolved Oxygen (mg/L)	Ethane (ug/L)	Ethene (ug/L)	Ferrous Iron (mg/L)*	Methane (ug/L)	Nitrate as N (mg/L)	Redox (mV)	Sulfate (mg/L)	Sulfide (mg/L)	TOC (mg/L)
MW-1	10/13/11	97	3.2	1.00	ND	ND	0.0	6.8	0.15	117.00	14.0	ND	1.3
MW-4	10/13/11	191	61.0	0.63	ND	ND	1.0	97	0.19	-62.3	39.0	ND	1.5
OW-2	10/13/11	50	2.0	6.60	ND	ND	0.0	ND	0.98	117.5	15.0	ND	ND
OW-5	10/13/11	120	3.3	3.34	ND	ND	0.2	ND	0.88	117.8	22.0	2.8 J	ND
OW-6	10/13/11	54	4.0	7.40	ND	ND	0.5	ND	0.42	141.2	28.0	ND	2.2
OW-8	10/13/11	43	2.1	0.69	ND	ND	3.2	0.7	ND	18.8	17.0	ND	ND
OW-10R	10/13/11	190	1.6	0.43	ND	ND	3.4	2,200	ND	-18.7	34.0	ND	2.7
OW-13R	10/13/11	250	1.3	0.23	ND	ND	0.4	ND	0.95	154.7	33.0	ND	4.4
OW-13R Dup	10/13/11	230	1.4	0.23	ND	ND	0.4	0.5 J	0.86 J-	154.7	34.0	ND	3.8
OW-18	10/13/11	280	24.0	0.30	ND	ND	NA	1,000	ND	-44.5	8.6	ND	10.0
OW-19	10/13/11	290	110.0	1.80	ND	ND	3.4	1,800	ND	-54.9	13.0	ND	12.0
OW-21	10/13/11	250	5.1	4.31	ND	ND	5.6	1400	ND	3.3	25.0	ND	4.5
OW-22	10/13/11	390	22.0	0.58	ND	ND	4.6	3,600	ND	-62	ND	ND	14.0
OW-24	10/13/11	120	3.5	5.46	ND	ND	0.2	ND	0.33	126	16	ND	ND
OW-25	10/13/11	31	1.5	8.85	ND	ND	0.4	ND	1.20	191.6	9.3	10.0	ND

Notes:
mg/L = milligrams per liter
ug/L = micrograms per liter
*Ferrous iron was measured in the field (Hach kit).
mV = milliVolts
TOC = total organic carbon
ND = not detected
J = Estimated, based on data quality review.
UJ = Qualified as nondetectable at the reporting limit but the reporting limit is estimated, based on data quality review.
J- = Qualified as estimated low, for analysis outside of holding time.
NA = not analyzed

Table 5
MCL and SGV Exceedances - 1999, 2004, and 2006 through 2011
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Well	Compound	MCL ug/L	SGV ug/L	1999 Exceedance		2004 Exceedance		Feb 2006 Exceedance		Aug 2006 Exceedance		Jun 2007 Exceedance		Jul 2008 Exceedance		Jul 2009 Exceedance		Jul 2010 Exceedance		Oct 2011 Exceedance	
				MCL	SGV	MCL	SGV	MCL	SGV	MCL	SGV	MCL	SGV	MCL	SGV	MCL	SGV	MCL	SGV	MCL	SGV
MW-4	Benzene	5	1	X	X		X		X	X	X	X	X		X		X		X		X
	1,2-Dichloroethene (1,2-DCE)	70	5		X																
OW-2	Benzene	5	1				X														
	Tetrachloroethene (PCE)	5	5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Trichloroethene (TCE)	5	5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	1,2-Dichloroethene (1,2-DCE)	70	5	X	X	X	X	X	X	X	X		X		X		X		X	X	X
OW-5	Tetrachloroethene (PCE)	5	5	X	X	X	X			X	X										
	Trichloroethene (TCE)	5	5	X	X																
	1,2-Dichloroethene (1,2-DCE)	70	5		X		X		X		X		X		X						
OW-6	Tetrachloroethene (PCE)	5	5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Trichloroethene (TCE)	5	5			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	1,2-Dichloroethene (1,2-DCE)	70	5		X		X		X		X		X		X		X		X		X
OW-10R[(1)]	Benzene	5	1	X	X	X	X		X	X	X		X	X	X		X		X		X
	Chlorobenzene	100	5		X																X
	Methylene chloride	5	5	X	X																
	Toluene	1,000	5		X																

Table 5
MCL and SGV Exceedances - 1999, 2004, and 2006 through 2011
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Well	Compound	MCL ug/L	SGV ug/L	1999 Exceedance		2004 Exceedance		Feb 2006 Exceedance		Aug 2006 Exceedance		Jun 2007 Exceedance		Jul 2008 Exceedance		Jul 2009 Exceedance		Jul 2010 Exceedance		Oct 2011 Exceedance	
				MCL	SGV	MCL	SGV	MCL	SGV	MCL	SGV	MCL	SGV	MCL	SGV	MCL	SGV	MCL	SGV	MCL	SGV
OW-13 / OW-13R[2,3]	Benzene	5	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
	1,2-Dichloroethene (1,2-DCE)	70	5		X																
	Methylene chloride	5	5	X	X																
	Toluene	1,000	5		X																
	Vinyl chloride	2	2	X	X	X	X														
OW-18	Benzene	5	1		X		X	X	X		X		X		X		X		X		X
	Chlorobenzene	100	5				X		X		X		X		X		X		X		X
	Xylenes (total)	10,000	5						X												
OW-19	Benzene	5	1	X	X		X		X		X		X		X		X		X		X
	Chlorobenzene	100	5		X		X		X		X		X		X		X		X		X
	Chloroethane	NA	5		X																
	Vinyl chloride	2	2	X	X			X	X	X	X					X	X			X	X
OW-21	Benzene	5	1	X	X		X		X		X		X		X		X		X		X
OW-22	Benzene	5	1	X	X		X	X	X		X		X		X	X	X		X	X	X
	Chlorobenzene	100	5		X		X		X		X						X				X
	Vinyl chloride	2	2	X	X																
Total				17	28	9	20	9	19	10	19	6	16	6	16	7	17	5	15	7	17

Notes:

[1]OW-10 was replaced with OW-10R in 2000. OW-10 was abandoned because it was within the OU1 construction area.

[2]OW-13R was installed in February 2006 to replace OW-13.

[3]Results for OW-13R/OW-13R Dup were (1.0 UJ ug/L/1.3J ug/L), therefore average is 0.7 ug/L, less than SQV.

Table 6
Weighting and Scoring of Natural Attenuation Parameters
October 2011
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Analyte	Concentration Indicating Conditions for Reductive Dechlorination	Ranking Value	OW-2	OW-10R	OW-13R	OW-25
Dissolved Oxygen	<0.5 mg/L	3	-	3	3	-
Dissolved Oxygen	>1 mg/L	-3	-3	-	-	-3
Nitrate	<1 mg/L	2	2	2	2	-
Iron (II)	>1 mg/L	3	-	3	-	-
Sulfate	<20 mg/L	2	2	-	-	2
Oxidation Reduction Potential (ORP)	<50 mV	1	-	1	-	-
	<-100 mV	2	-	-	-	-
Temperature	>20°C	1	-	-	-	-
Total Organic Carbon	>20 mg/L	1	-	-	-	-
Alkalinity	>2x background (MW-1)	1	-	-	1	-
Chloride	>2x background (MW-1)	2	-	-	-	-
BTEX	>0.1 mg/L	2	-	2	-	-
1,2-Dichloroethene	Detected	2	2	-	-	-
Vinyl Chloride	Detected	2	-	-	-	-
Chloroethane	Detected	2	-	-	-	-
1,1-Dichloroethene	Detected	2	-	-	-	-
1,1-Dichloroethane	Detected	2	-	-	-	-
Methane	Detected	2	-	2	-	-
Ethane	Detected	2	-	-	-	-
Ethene	Detected	2	-	-	-	-
Total Score			**3**	**13**	**6**	**-1**

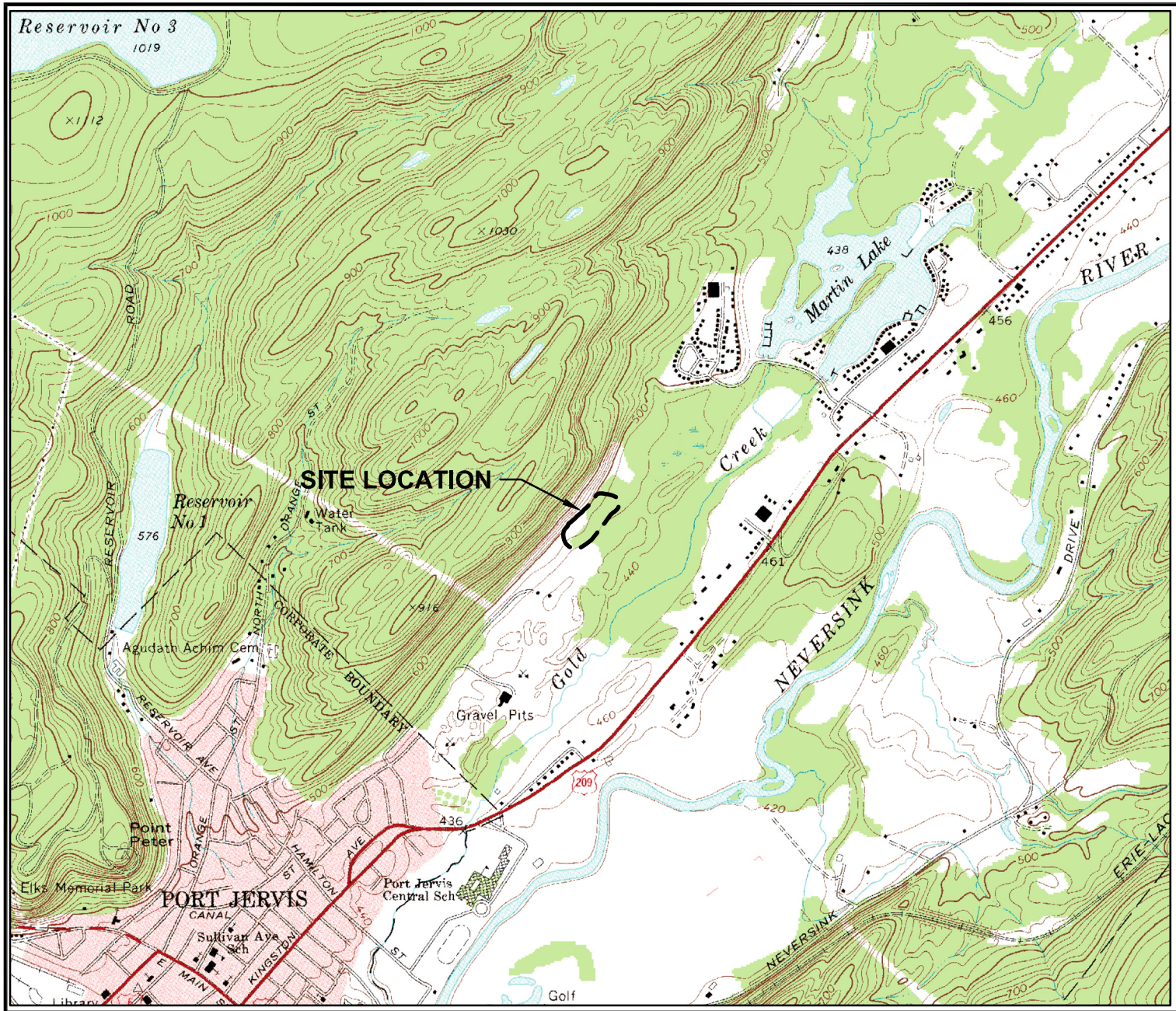
Source: U.S. EPA, 1997.

Table 7
Detected Volatile Organic Compounds
Surface Water and Sediment Sampling Locations in Gold Creek
October 2011
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Location	Surface Water Value	Sediment Guidance Value	SED-1 / SW-1 (Downstream)				SED-2 / SW-2 (Upstream)	
Sample			SED-1	SED-1 DUP	SW-1	SW-1 DUP	SED-2	SW-2
Constituent	ug/L	ug/kg	ug/kg	ug/kg	ug/L	ug/L	ug/kg	ug/L
Methylene Chloride	5[(1)]	3,900[(2)]	8.6 U	8.1 U	1.0 U	1.0 U	**13 J**	1.0 U

Notes:
[(1)]6 NYCRR Part 703 - Water Source Health Standard
[(2)]National Oceanic and Atmospheric Administration, 2008, Screening Quick Reference Tables, Dutch Intervention Guidance Values.
J = Estimated result; less than the reporting limit.
U = The analyte was analyzed for but not detected above the quantitation limit.
Blue = **Detected constituents**

Figures



2,000' 0 2,000'

SCALE IN FEET

LEGEND:

APPROXIMATE SITE BOUNDARY

SOURCE:
USGS TOPOGRAPHIC QUADRANGLE MAP
PORT JERVIS NORTH, NEW YORK, DATED 1991.

CARDINAL RESOURCES

CARROLL AND DUBIES SUPERFUND SITE
TOWN OF DEERPARK, ORANGE COUNTY, NEW YORK

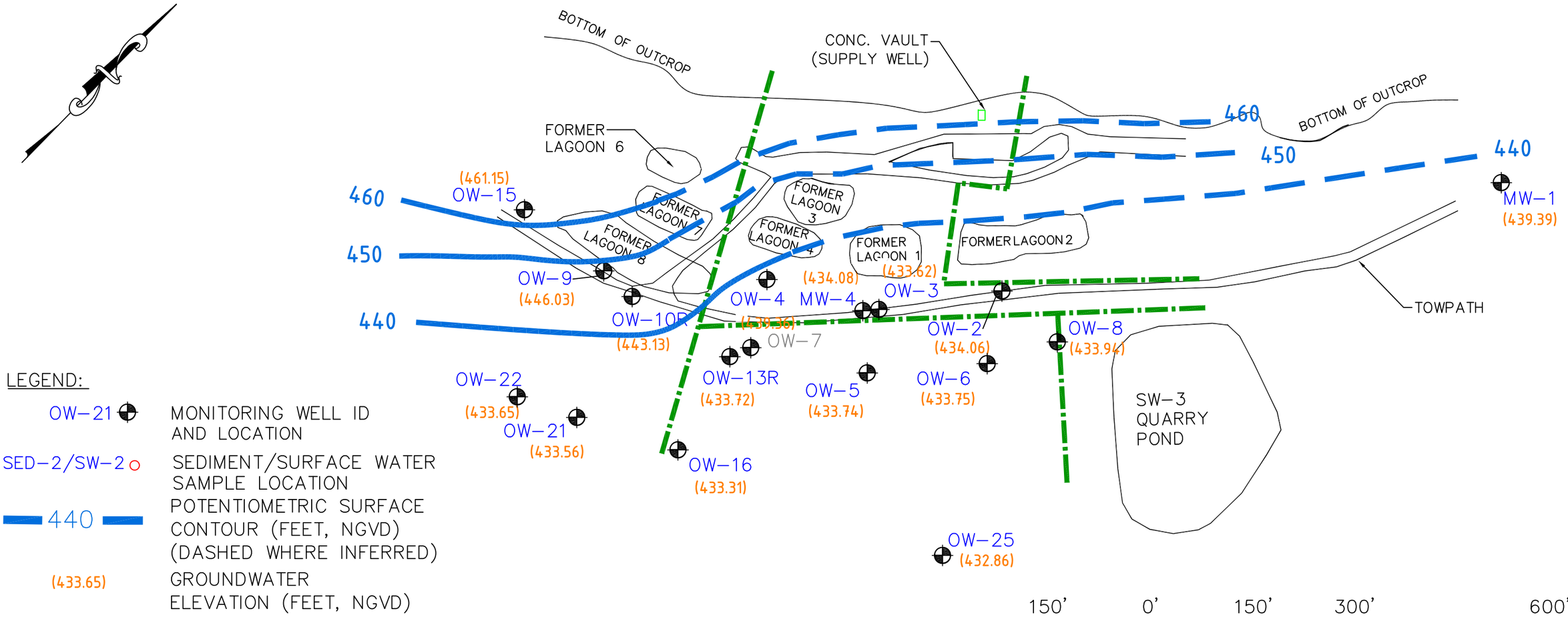
105-0035

NO	DRWN	DATE	REVISION	CHKD	DATE	APPVD	DATE
1							
0	ECM						

FIGURE 1

SITE LOCATION MAP

CADD FILE	9005	SCALE	AS NOTED	CURRENT DATE:	03-07-2005
DRAWING NO.	105-0035-0300-01			REVISION	0



LEGEND:

- OW-21 — MONITORING WELL ID AND LOCATION
- SED-2/SW-2 — SEDIMENT/SURFACE WATER SAMPLE LOCATION
- 440 — POTENTIOMETRIC SURFACE CONTOUR (FEET, NGVD) (DASHED WHERE INFERRED)
- (433.65) — GROUNDWATER ELEVATION (FEET, NGVD)

SCALE 1"=150'

INFORMATION OF FACT:

1. THE MONITORING/RECOVERY WELLS AND LIMITED SITE LOCATION OF PHYSICAL FEATURES SHOWN HEREON ARE BASED ON A FIELD SURVEY MADE FOR PROPER ORIENTATION WITH A FULL PLAN BEING PREPARED BY SHIELD ENVIRONMENTAL ASSOCIATES, INC.
2. THE HORIZONTAL POSITION OF THE HEREIN SURVEYED "CARROLL AND DUBIES" SUPERFUND SITE IS BASED ON NEW YORK GEODETIC CONTROL MONUMENTS PID # LY2611 (LAUREL) AND PID # AB3870 (DIANNE).

   ADJUSTED TO NAD 1983 WITHIN THE NEW YORK STATE PLANE COORDINATE SYSTEM.

NOTE: THE OUTLINES OF THE FORMER LAGOONS ARE BASED ON THE ACTUAL EXCAVATION.

SOURCES: MASTER CONSULTING P.A. MONITORING WELL LOCATION PLAN. INDEXN). SU0009, MARCH 3, 19999.

NO	DRWN	DATE	REVISION	CHKD	DATE	APPVD	DATE

CARROLL AND DUBIES SUPERFUND SITE
TOWN OF DEERPARK, ORANGE COUNTY, NEW YORK
104-0012

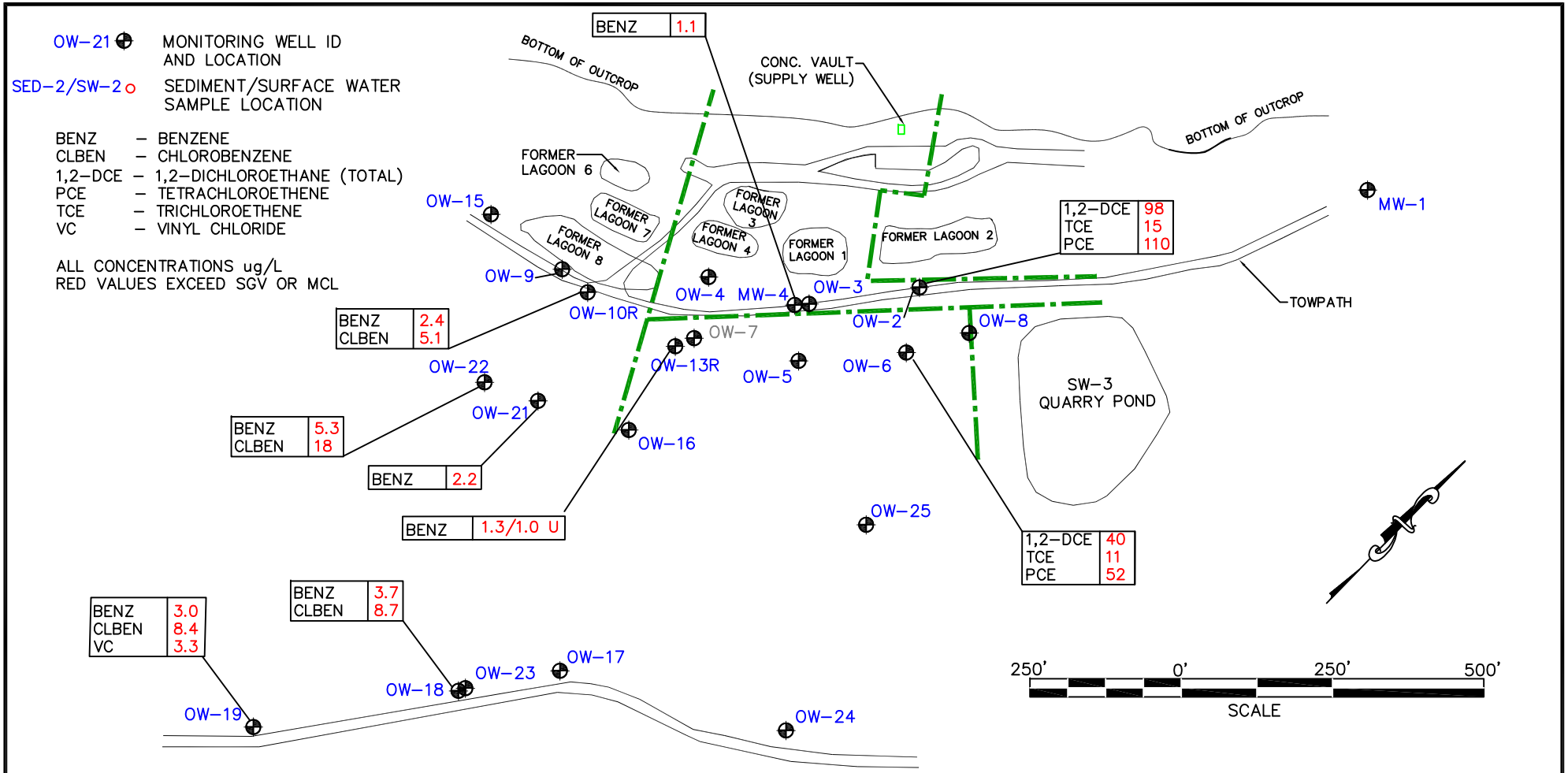
CURRENT DATE 11-10-2011 | LK

FIGURE 2
GROUNDWATER CONTOUR MAP
OCTOBER 2011

DRAWING NO. 104-0012-0300-09 OCTOBER | SCALE AS NOTED

CARDINAL

REVISION



INFORMATION OF FACT:

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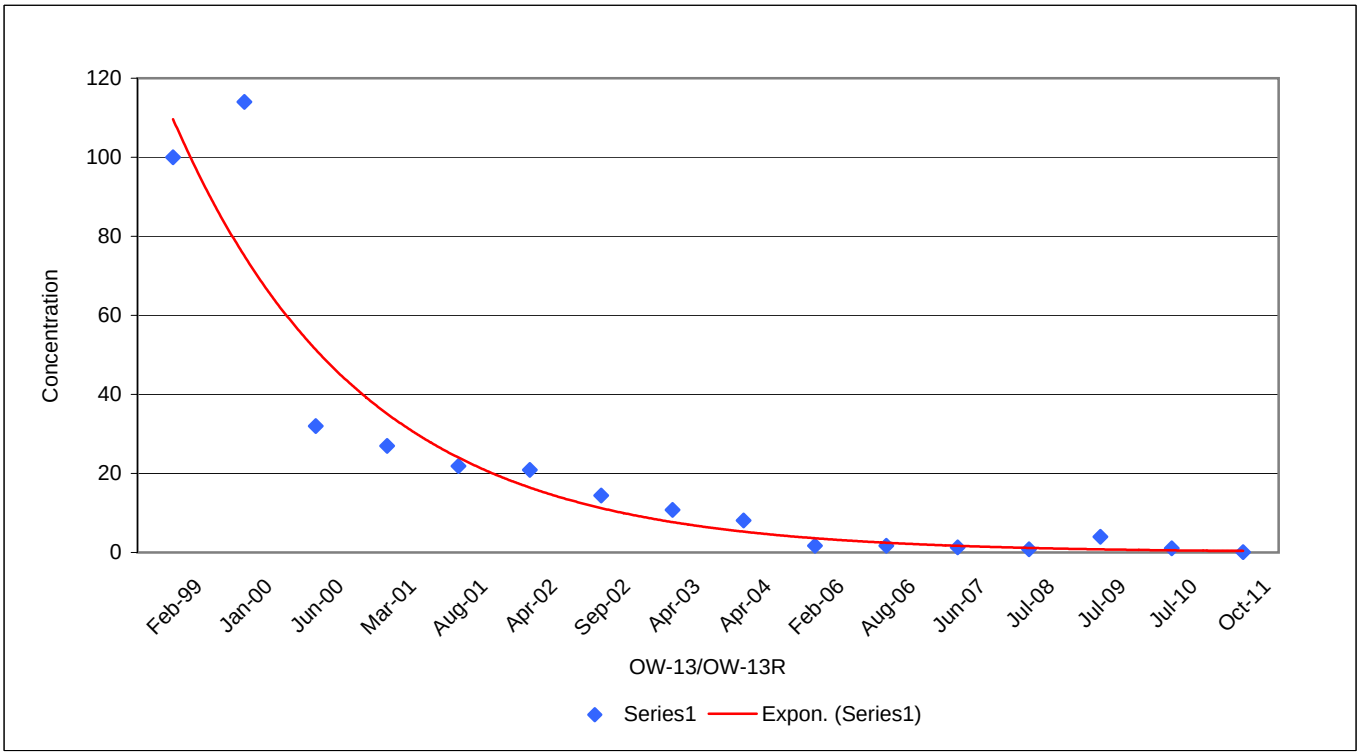
CARROLL AND DUBIES SUPERFUND SITE
TOWN OF DEERPARK, ORANGE COUNTY, NEW YORK
104-0012

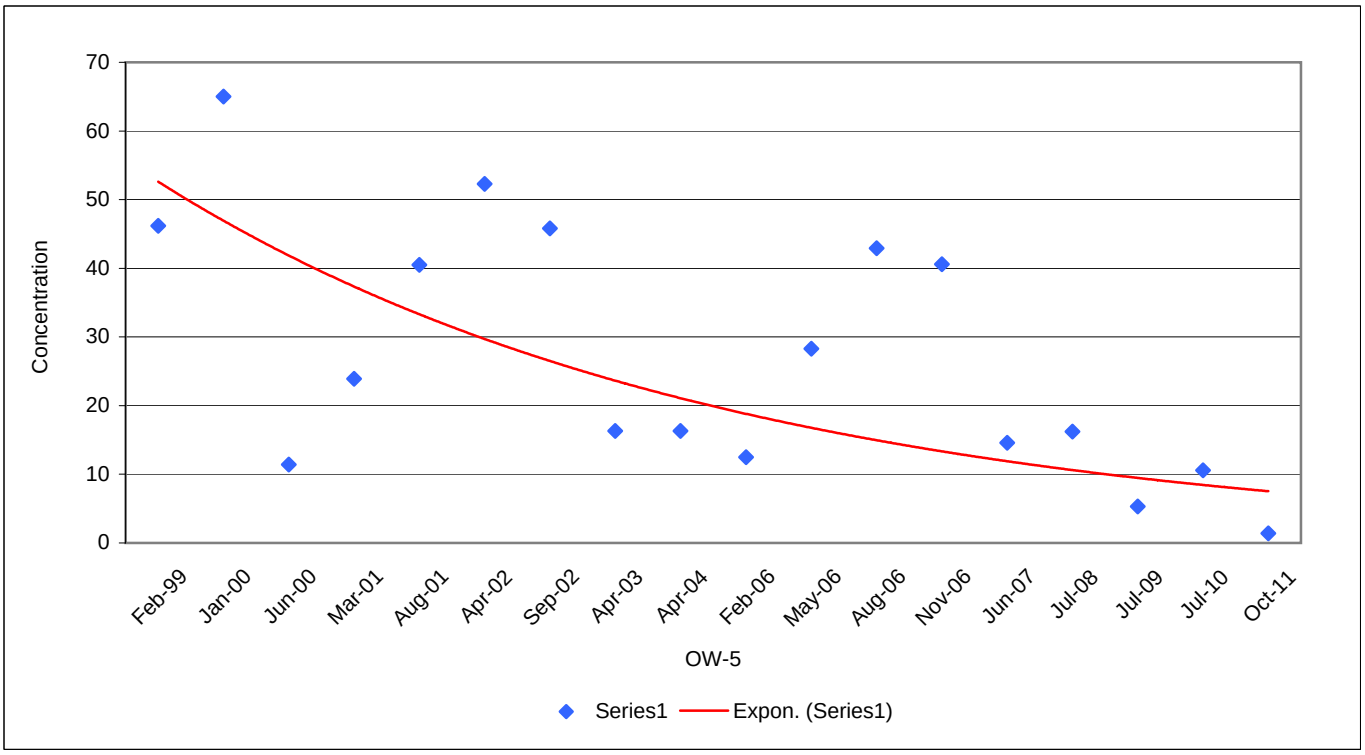
FIGURE 3
VOLATILE ORGANIC COMPOUND EXCEEDANCES IN GROUNDWATER
OCTOBER 2011

CARDINAL

CURRENT DATE	11–03–2011	LK		DRAWING NO.	104–0012–0300–09 OCTOBER 11	SCALE	AS NOTED	REVISION	

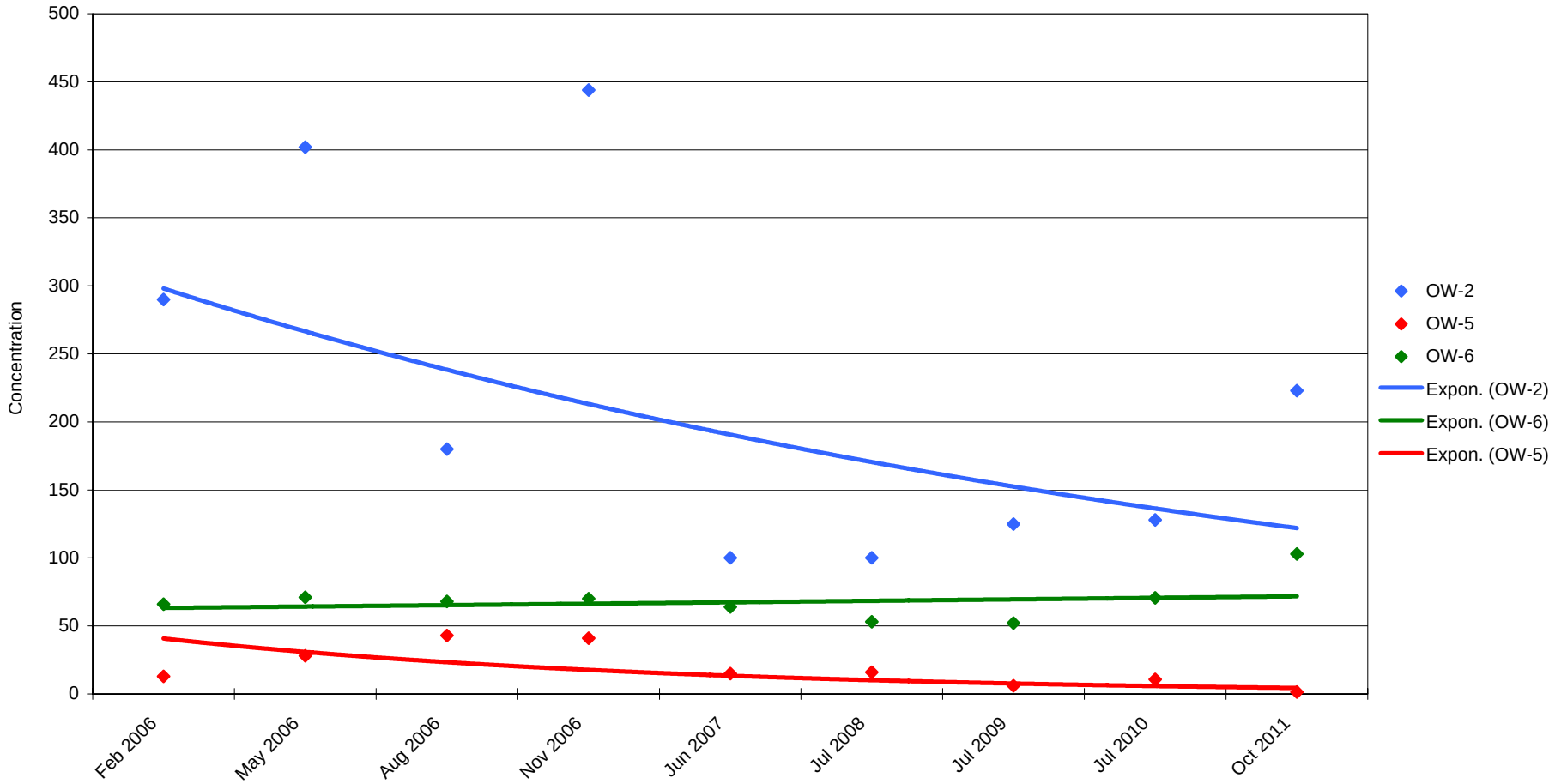
Figure 4
Chlorinated VOC[(1)] Trends in OW-5 and OW-13/13R
Pre-Excavation to October 2011





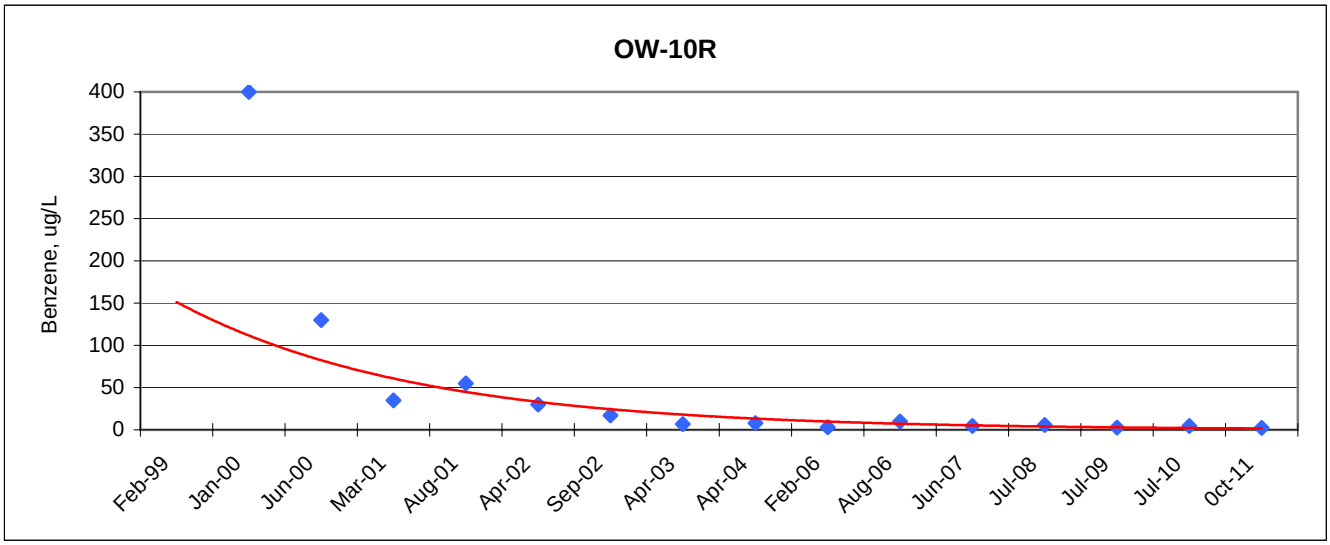
[(1)]Sum of 1,2-dichloroethene, trichloroethene, and tetrachloroethene.

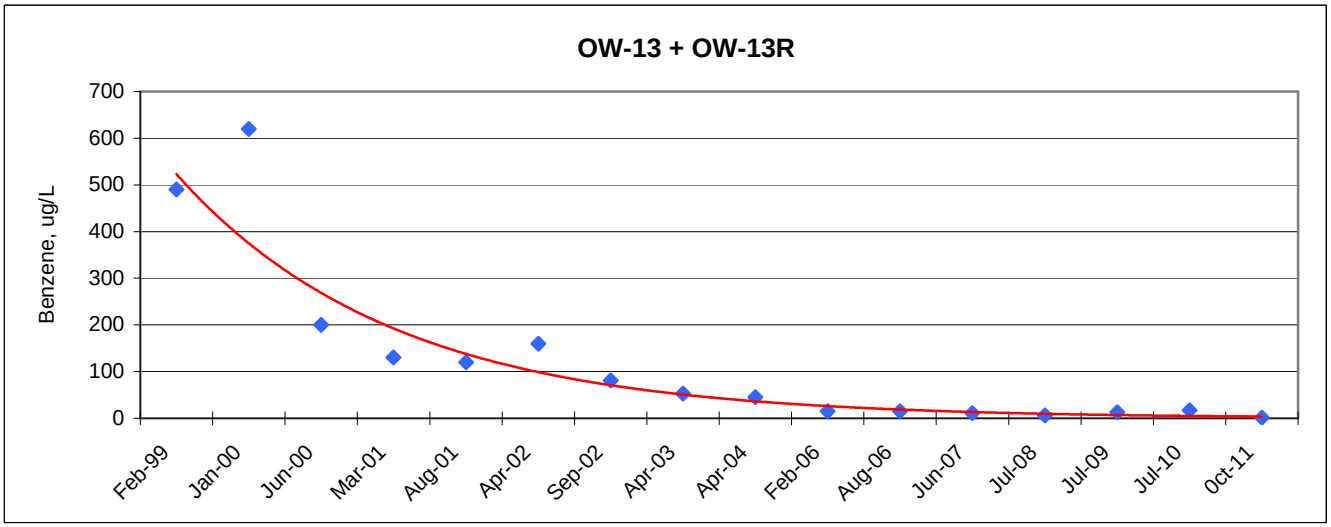
Figure 5
Chlorinated VOC[(1)] Trends in OW-2, OW-5, and OW-6
2006 - 2011

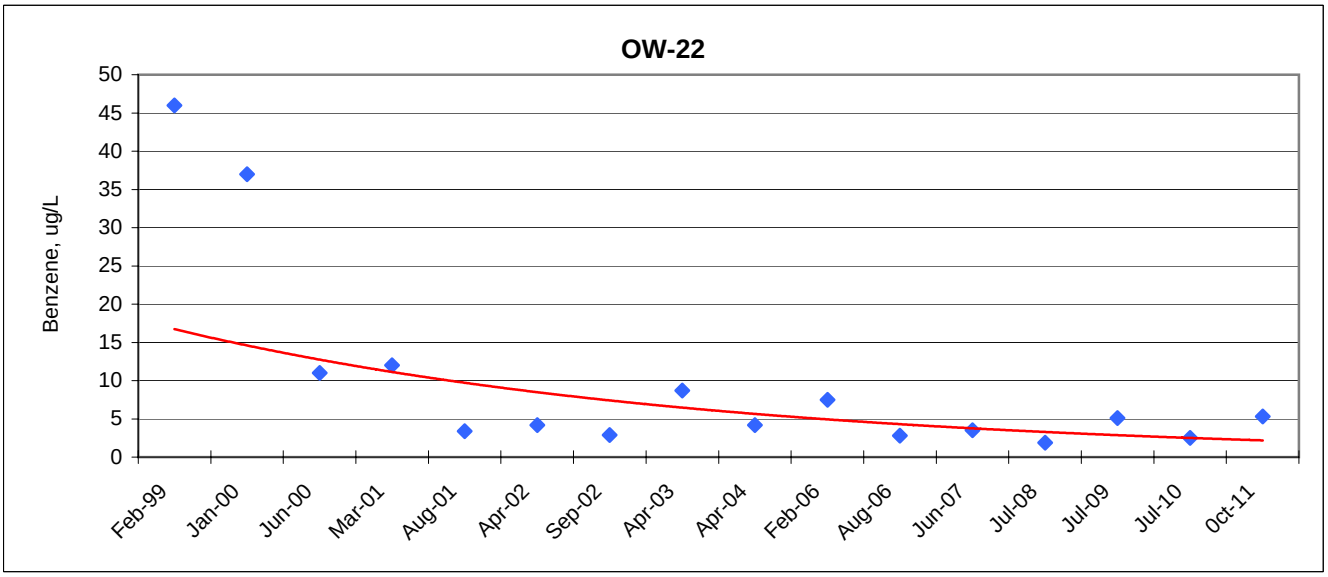


[(1)]Sum of 1,2-dichloroethene, trichloroethene, and tetrachloroethene.

Figure 6
Benzene Concentration Trends in Selected Monitoring Wells
Pre-Excavation to October 2011

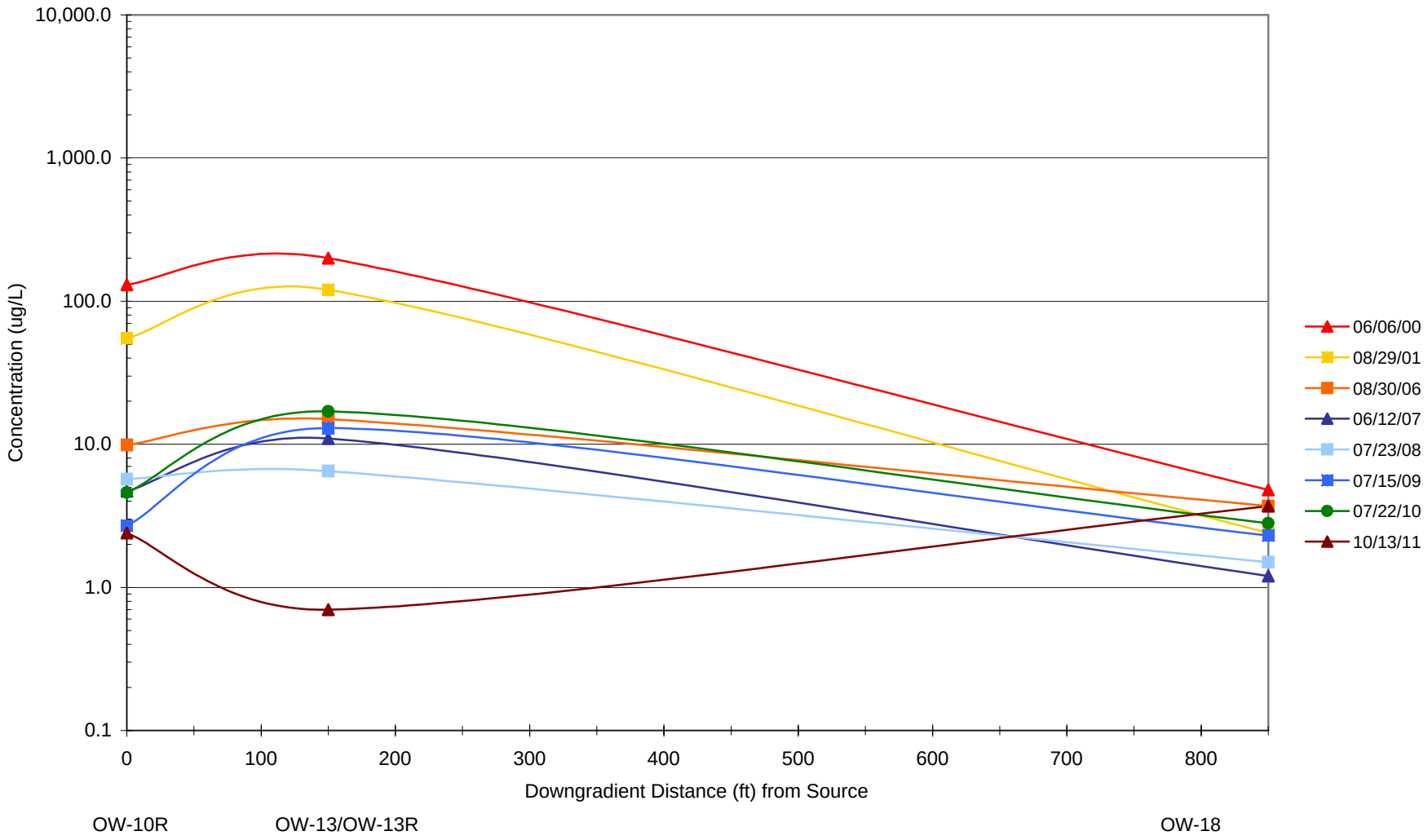






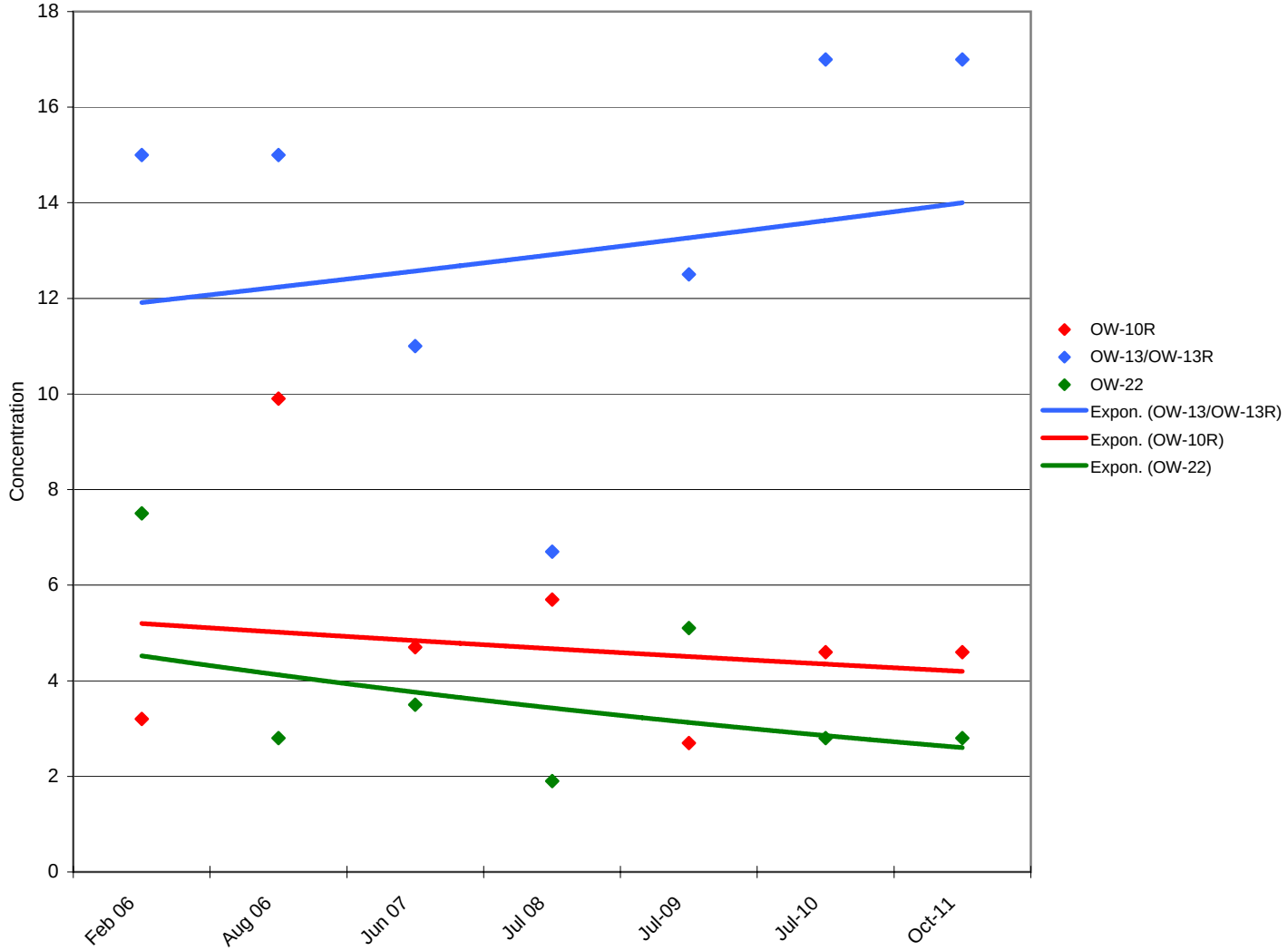
Note: OW-10R, OW-13R, and OW-22 were not sampled during the May and November 2006 sampling rounds.

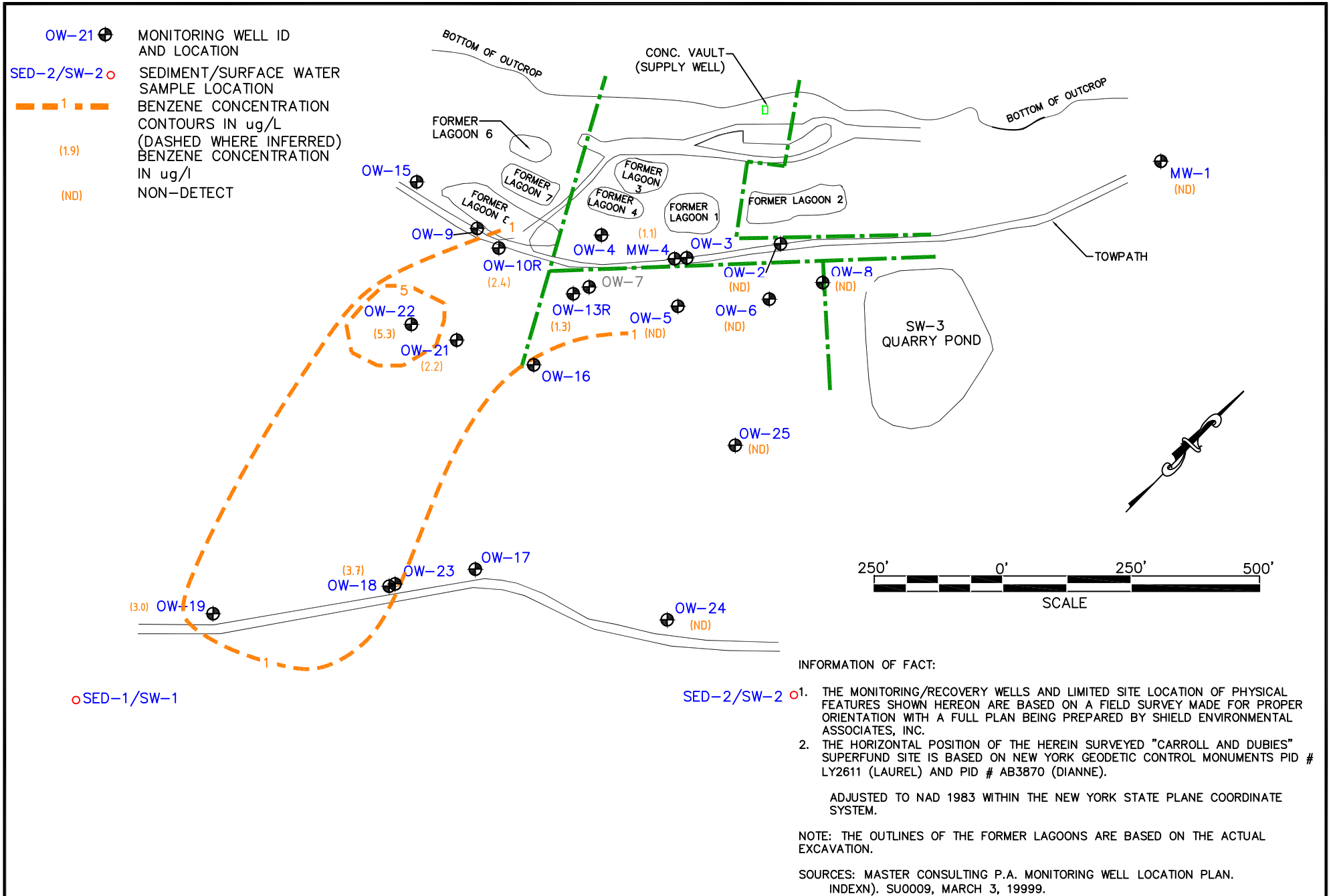
Figure 7
Benzene Concentration Trends Based on Distance from Source



Note: OW-10R, OW-13R, and OW-18 were not sampled in the May and November 2006 sampling rounds.

Figure 8
Benzene Trends in OW-10R, OW-13R, and OW-22
2006 - 2011





INFORMATION OF FACT:

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2. THE HORIZONTAL POSITION OF THE HEREIN SURVEYED "CARROLL AND DUBIES" SUPERFUND SITE IS BASED ON NEW YORK GEODETIC CONTROL MONUMENTS PID # LY2611 (LAUREL) AND PID # AB3870 (DIANNE).

   ADJUSTED TO NAD 1983 WITHIN THE NEW YORK STATE PLANE COORDINATE SYSTEM.

NOTE: THE OUTLINES OF THE FORMER LAGOONS ARE BASED ON THE ACTUAL EXCAVATION.

SOURCES: MASTER CONSULTING P.A. MONITORING WELL LOCATION PLAN. INDEXN). SU0009, MARCH 3, 19999.

CARROLL AND DUBIES SUPERFUND SITE
TOWN OF DEERPARK, ORANGE COUNTY, NEW YORK
104-0012

FIGURE 9
BENZENE CONCENTRATIONS IN GROUNDWATER
OCTOBER 2011

CARDINAL

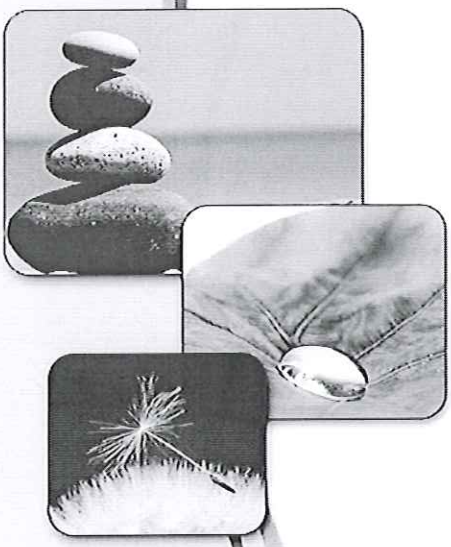
CURRENT DATE	11–03–2011	LK		DRAWING NO.	104–0012–0300–09 OCTOBER 11	SCALE	AS NOTED	REVISION	

Appendix A

Laboratory Reports with Marked Form Is from Data Review

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica North Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-4528-1
Client Project/Site: C & D GW Sampling

For:
Cardinal Resources
1505 E Carson Street
Suite #200
Pittsburgh, Pennsylvania 15203

Attn: Barbara Jones

Authorized for release by:
11/01/2011 11:54:03 AM

Nathan Pietras
Project Manager II
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Table of Contents

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-4528-1

Laboratory: TestAmerica North Canton

Narrative

CASE NARRATIVE

Client: Cardinal Resources

Project: C & D GW Sampling

Report Number: 240-4528-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica North Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 10/05/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 1.6 C.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Samples OW22 (240-4528-1), OW21 (240-4528-2), FB1 (240-4528-3), OW2 (240-4528-4), OW10R (240-4528-5), MW4 (240-4528-6) and TB1 (240-4528-7) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 10/12/2011, 10/13/2011 and 10/14/2011.

Methylene Chloride was detected in method blank MB 240-18911/5 at a level exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged. Refer to the QC report for details.

Sample OW2 (240-4528-4)[2.5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the VOCs analyses.

All other quality control parameters were within the acceptance limits.

DISSOLVED GASES

Job ID: 240-4528-1 (Continued)

Laboratory: TestAmerica North Canton (Continued)

Samples OW22 (240-4528-1), OW21 (240-4528-2), OW2 (240-4528-4), OW10R (240-4528-5) and MW4 (240-4528-6) were analyzed for dissolved gases in accordance with RSK_175. The samples were analyzed on 10/13/2011 and 10/14/2011.

The presence of the '4' qualifier in the data indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Refer to the QC report for details.

Samples OW22 (240-4528-1)[10X] and OW10R (240-4528-5)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the dissolved gases analyses.

All other quality control parameters were within the acceptance limits.

ANIONS

Samples OW22 (240-4528-1), OW21 (240-4528-2), OW2 (240-4528-4), OW10R (240-4528-5) and MW4 (240-4528-6) were analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 10/05/2011.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

ALKALINITY

Samples OW22 (240-4528-1), OW21 (240-4528-2), OW2 (240-4528-4), OW10R (240-4528-5) and MW4 (240-4528-6) were analyzed for alkalinity in accordance with EPA Method 310.1. The samples were analyzed on 10/10/2011.

No difficulties were encountered during the alkalinity analyses.

All quality control parameters were within the acceptance limits.

CHLORIDE

Samples OW22 (240-4528-1), OW21 (240-4528-2), OW2 (240-4528-4), OW10R (240-4528-5) and MW4 (240-4528-6) were analyzed for chloride in accordance with EPA Method 325.2. The samples were analyzed on 10/11/2011.

Sample MW4 (240-4528-6)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the chloride analyses.

All quality control parameters were within the acceptance limits.

SULFATE

Samples OW22 (240-4528-1), OW21 (240-4528-2), OW2 (240-4528-4), OW10R (240-4528-5) and MW4 (240-4528-6) were analyzed for sulfate in accordance with EPA method 375.4. The samples were analyzed on 10/06/2011.

Samples OW21 (240-4528-2)[2X], OW10R (240-4528-5)[5X] and MW4 (240-4528-6)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the sulfate analyses.

All other quality control parameters were within the acceptance limits.

SULFIDE

Samples OW22 (240-4528-1), OW21 (240-4528-2), OW2 (240-4528-4), OW10R (240-4528-5) and MW4 (240-4528-6) were analyzed for sulfide in accordance with EPA Method 376.1. The samples were analyzed on 10/11/2011.

Job ID: 240-4528-1 (Continued)

Laboratory: TestAmerica North Canton (Continued)

Sulfide failed the recovery criteria high for the MS/MSD of sample 240-4593-4 in batch 240-18638.

Refer to the QC report for details.

No other difficulties were encountered during the sulfide analyses.

All other quality control parameters were within the acceptance limits.

TOTAL ORGANIC CARBON

Samples OW22 (240-4528-1), OW21 (240-4528-2), OW2 (240-4528-4), OW10R (240-4528-5) and MW4 (240-4528-6) were analyzed for total organic carbon in accordance with EPA Method 415.1. The samples were analyzed on 10/12/2011.

No difficulties were encountered during the TOC analyses.

All quality control parameters were within the acceptance limits.

Method Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL NC
RSK-175	Dissolved Gases (GC)	RSK	TAL NC
300.0	Anions, Ion Chromatography	MCAWW	TAL NC
310.1	Alkalinity	MCAWW	TAL NC
325.2	Chloride	MCAWW	TAL NC
375.4	Sulfate	MCAWW	TAL NC
376.1	Sulfide	MCAWW	TAL NC
415.1	TOC	MCAWW	TAL NC

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-4528-1	OW22	Water	10/04/11 10:45	10/05/11 09:30
240-4528-2	OW21	Water	10/04/11 11:45	10/05/11 09:30
240-4528-3	FB1	Water	10/04/11 11:30	10/05/11 09:30
240-4528-4	OW2	Water	10/04/11 12:45	10/05/11 09:30
240-4528-5	OW10R	Water	10/04/11 09:25	10/05/11 09:30
240-4528-6	MW4	Water	10/04/11 14:10	10/05/11 09:30
240-4528-7	TB1	Water	10/04/11 00:00	10/05/11 09:30

Detection Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: OW22

Lab Sample ID: 240-4528-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	5.3		1.0		ug/L	1		8260B	Total/NA
Chlorobenzene	18		1.0		ug/L	1		8260B	Total/NA
1,4-Dichlorobenzene	1.6		1.0		ug/L	1		8260B	Total/NA
Methane	3600		5.0		ug/L	10		RSK-175	Total/NA
Alkalinity	390		5.0		mg/L	1		310.1	Total/NA
Chloride	22		1.0		mg/L	1		325.2	Total/NA
Total Organic Carbon	14		1.0		mg/L	1		415.1	Total/NA

Client Sample ID: OW21

Lab Sample ID: 240-4528-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	2.2		1.0		ug/L	1		8260B	Total/NA
Methane	1400		0.50		ug/L	1		RSK-175	Total/NA
Alkalinity	250		5.0		mg/L	1		310.1	Total/NA
Chloride	5.1		1.0		mg/L	1		325.2	Total/NA
Sulfate	25		10		mg/L	2		375.4	Total/NA
Total Organic Carbon	4.5		1.0		mg/L	1		415.1	Total/NA

Client Sample ID: FB1

Lab Sample ID: 240-4528-3

No Detections

Client Sample ID: OW2

Lab Sample ID: 240-4528-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	110		2.5		ug/L	2.5		8260B	Total/NA
Trichloroethene	15		2.5		ug/L	2.5		8260B	Total/NA
cis-1,2-Dichloroethene	98		2.5		ug/L	2.5		8260B	Total/NA
Nitrate as N	0.98		0.10		mg/L	1		300.0	Total/NA
Alkalinity	50		5.0		mg/L	1		310.1	Total/NA
Chloride	2.0		1.0		mg/L	1		325.2	Total/NA
Sulfate	15		5.0		mg/L	1		375.4	Total/NA

Client Sample ID: OW10R

Lab Sample ID: 240-4528-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	2.4		1.0		ug/L	1		8260B	Total/NA
Chlorobenzene	5.1		1.0		ug/L	1		8260B	Total/NA
Methane	2200		2.5		ug/L	5		RSK-175	Total/NA
Alkalinity	190		5.0		mg/L	1		310.1	Total/NA
Chloride	1.6		1.0		mg/L	1		325.2	Total/NA
Sulfate	34		25		mg/L	5		375.4	Total/NA
Total Organic Carbon	2.7		1.0		mg/L	1		415.1	Total/NA

Client Sample ID: MW4

Lab Sample ID: 240-4528-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.1		1.0		ug/L	1		8260B	Total/NA
Methane	97		0.50		ug/L	1		RSK-175	Total/NA
Nitrate as N	0.19		0.10		mg/L	1		300.0	Total/NA
Alkalinity	190		5.0		mg/L	1		310.1	Total/NA
Chloride	61		5.0		mg/L	5		325.2	Total/NA
Sulfate	39		10		mg/L	2		375.4	Total/NA
Total Organic Carbon	1.5		1.0		mg/L	1		415.1	Total/NA

Detection Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: TB1

Lab Sample ID: 240-4528-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	1.9	B	1.0		ug/L	1		8260B	Total/NA

1.9U
BNJ
1/2/2012

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: OW22
Date Collected: 10/04/11 10:45
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/12/11 23:09	1
Benzene	**5.3**		1.0		ug/L			10/12/11 23:09	1
Dichlorobromomethane	ND		1.0		ug/L			10/12/11 23:09	1
Bromoform	ND		1.0		ug/L			10/12/11 23:09	1
Bromomethane	ND		1.0		ug/L			10/12/11 23:09	1
2-Butanone (MEK)	ND		10		ug/L			10/12/11 23:09	1
Carbon disulfide	ND		1.0		ug/L			10/12/11 23:09	1
Carbon tetrachloride	ND		1.0		ug/L			10/12/11 23:09	1
Chlorobenzene	**18**		1.0		ug/L			10/12/11 23:09	1
Chloroethane	ND		1.0		ug/L			10/12/11 23:09	1
Chloroform	ND		1.0		ug/L			10/12/11 23:09	1
Chloromethane	ND		1.0		ug/L			10/12/11 23:09	1
1,1-Dichloroethane	ND		1.0		ug/L			10/12/11 23:09	1
1,2-Dichloroethane	ND		1.0		ug/L			10/12/11 23:09	1
1,1-Dichloroethene	ND		1.0		ug/L			10/12/11 23:09	1
1,2-Dichloropropane	ND		1.0		ug/L			10/12/11 23:09	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/12/11 23:09	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/12/11 23:09	1
Ethylbenzene	ND		1.0		ug/L			10/12/11 23:09	1
2-Hexanone	ND		10		ug/L			10/12/11 23:09	1
Methylene Chloride	ND		1.0		ug/L			10/12/11 23:09	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/12/11 23:09	1
Styrene	ND		1.0		ug/L			10/12/11 23:09	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/12/11 23:09	1
Tetrachloroethene	ND		1.0		ug/L			10/12/11 23:09	1
Toluene	ND		1.0		ug/L			10/12/11 23:09	1
Trichloroethene	ND		1.0		ug/L			10/12/11 23:09	1
Vinyl chloride	ND		1.0		ug/L			10/12/11 23:09	1
Xylenes, Total	ND		2.0		ug/L			10/12/11 23:09	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/12/11 23:09	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/12/11 23:09	1
Cyclohexane	ND		1.0		ug/L			10/12/11 23:09	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/12/11 23:09	1
Ethylene Dibromide	ND		1.0		ug/L			10/12/11 23:09	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/12/11 23:09	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/12/11 23:09	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/12/11 23:09	1
Isopropylbenzene	ND		1.0		ug/L			10/12/11 23:09	1
Methyl acetate	ND		10		ug/L			10/12/11 23:09	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/12/11 23:09	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/12/11 23:09	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/12/11 23:09	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/12/11 23:09	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/12/11 23:09	1
1,4-Dichlorobenzene	**1.6**		1.0		ug/L			10/12/11 23:09	1
Trichlorofluoromethane	ND		1.0		ug/L			10/12/11 23:09	1
Chlorodibromomethane	ND		1.0		ug/L			10/12/11 23:09	1
Methylcyclohexane	ND		1.0		ug/L			10/12/11 23:09	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: OW22

Date Collected: 10/04/11 10:45
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-1
Matrix: Water

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*63 - 129*		*10/12/11 23:09*	*1*
4-Bromofluorobenzene (Surr)	*85*		*66 - 117*		*10/12/11 23:09*	*1*
Toluene-d8 (Surr)	*93*		*74 - 115*		*10/12/11 23:09*	*1*
Dibromofluoromethane (Surr)	*86*		*75 - 121*		*10/12/11 23:09*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**3600**		5.0		ug/L			10/13/11 12:31	10
Ethane	ND		5.0		ug/L			10/13/11 12:31	10
Ethylene	ND		5.0		ug/L			10/13/11 12:31	10

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*99*		*10 - 168*		*10/13/11 12:31*	*10*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.10		mg/L			10/05/11 19:49	1
Alkalinity	**390**		5.0		mg/L			10/10/11 11:26	1
Chloride	**22**		1.0		mg/L			10/11/11 10:54	1
Sulfate	ND		5.0		mg/L			10/06/11 13:32	1
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	**14**		1.0		mg/L			10/12/11 12:42	1

Client Sample ID: OW21

Date Collected: 10/04/11 11:45
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/12/11 23:33	1
Benzene	**2.2**		1.0		ug/L			10/12/11 23:33	1
Dichlorobromomethane	ND		1.0		ug/L			10/12/11 23:33	1
Bromoform	ND		1.0		ug/L			10/12/11 23:33	1
Bromomethane	ND		1.0		ug/L			10/12/11 23:33	1
2-Butanone (MEK)	ND		10		ug/L			10/12/11 23:33	1
Carbon disulfide	ND		1.0		ug/L			10/12/11 23:33	1
Carbon tetrachloride	ND		1.0		ug/L			10/12/11 23:33	1
Chlorobenzene	ND		1.0		ug/L			10/12/11 23:33	1
Chloroethane	ND		1.0		ug/L			10/12/11 23:33	1
Chloroform	ND		1.0		ug/L			10/12/11 23:33	1
Chloromethane	ND		1.0		ug/L			10/12/11 23:33	1
1,1-Dichloroethane	ND		1.0		ug/L			10/12/11 23:33	1
1,2-Dichloroethane	ND		1.0		ug/L			10/12/11 23:33	1
1,1-Dichloroethene	ND		1.0		ug/L			10/12/11 23:33	1
1,2-Dichloropropane	ND		1.0		ug/L			10/12/11 23:33	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/12/11 23:33	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/12/11 23:33	1
Ethylbenzene	ND		1.0		ug/L			10/12/11 23:33	1
2-Hexanone	ND		10		ug/L			10/12/11 23:33	1
Methylene Chloride	ND		1.0		ug/L			10/12/11 23:33	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/12/11 23:33	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: OW21
Date Collected: 10/04/11 11:45
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		1.0		ug/L			10/12/11 23:33	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/12/11 23:33	1
Tetrachloroethene	ND		1.0		ug/L			10/12/11 23:33	1
Toluene	ND		1.0		ug/L			10/12/11 23:33	1
Trichloroethene	ND		1.0		ug/L			10/12/11 23:33	1
Vinyl chloride	ND		1.0		ug/L			10/12/11 23:33	1
Xylenes, Total	ND		2.0		ug/L			10/12/11 23:33	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/12/11 23:33	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/12/11 23:33	1
Cyclohexane	ND		1.0		ug/L			10/12/11 23:33	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/12/11 23:33	1
Ethylene Dibromide	ND		1.0		ug/L			10/12/11 23:33	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/12/11 23:33	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/12/11 23:33	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/12/11 23:33	1
Isopropylbenzene	ND		1.0		ug/L			10/12/11 23:33	1
Methyl acetate	ND		10		ug/L			10/12/11 23:33	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/12/11 23:33	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/12/11 23:33	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/12/11 23:33	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/12/11 23:33	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/12/11 23:33	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/12/11 23:33	1
Trichlorofluoromethane	ND		1.0		ug/L			10/12/11 23:33	1
Chlorodibromomethane	ND		1.0		ug/L			10/12/11 23:33	1
Methylcyclohexane	ND		1.0		ug/L			10/12/11 23:33	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*63 - 129*		*10/12/11 23:33*	*1*
4-Bromofluorobenzene (Surr)	*85*		*66 - 117*		*10/12/11 23:33*	*1*
Toluene-d8 (Surr)	*92*		*74 - 115*		*10/12/11 23:33*	*1*
Dibromofluoromethane (Surr)	*86*		*75 - 121*		*10/12/11 23:33*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**1400**		0.50		ug/L			10/13/11 20:56	1
Ethane	ND		0.50		ug/L			10/13/11 20:56	1
Ethylene	ND		0.50		ug/L			10/13/11 20:56	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*82*		*10 - 168*		*10/13/11 20:56*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.10		mg/L			10/05/11 20:21	1
Alkalinity	**250**		5.0		mg/L			10/10/11 11:36	1
Chloride	**5.1**		1.0		mg/L			10/11/11 10:54	1
Sulfate	**25**		10		mg/L			10/06/11 14:31	2
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	**4.5**		1.0		mg/L			10/12/11 13:15	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: FB1
Date Collected: 10/04/11 11:30
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/14/11 03:02	1
Benzene	ND		1.0		ug/L			10/14/11 03:02	1
Dichlorobromomethane	ND		1.0		ug/L			10/14/11 03:02	1
Bromoform	ND		1.0		ug/L			10/14/11 03:02	1
Bromomethane	ND		1.0		ug/L			10/14/11 03:02	1
2-Butanone (MEK)	ND		10		ug/L			10/14/11 03:02	1
Carbon disulfide	ND		1.0		ug/L			10/14/11 03:02	1
Carbon tetrachloride	ND		1.0		ug/L			10/14/11 03:02	1
Chlorobenzene	ND		1.0		ug/L			10/14/11 03:02	1
Chloroethane	ND		1.0		ug/L			10/14/11 03:02	1
Chloroform	ND		1.0		ug/L			10/14/11 03:02	1
Chloromethane	ND		1.0		ug/L			10/14/11 03:02	1
1,1-Dichloroethane	ND		1.0		ug/L			10/14/11 03:02	1
1,2-Dichloroethane	ND		1.0		ug/L			10/14/11 03:02	1
1,1-Dichloroethene	ND		1.0		ug/L			10/14/11 03:02	1
1,2-Dichloropropane	ND		1.0		ug/L			10/14/11 03:02	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/14/11 03:02	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/14/11 03:02	1
Ethylbenzene	ND		1.0		ug/L			10/14/11 03:02	1
2-Hexanone	ND		10		ug/L			10/14/11 03:02	1
Methylene Chloride	ND		1.0		ug/L			10/14/11 03:02	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/14/11 03:02	1
Styrene	ND		1.0		ug/L			10/14/11 03:02	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/14/11 03:02	1
Tetrachloroethene	ND		1.0		ug/L			10/14/11 03:02	1
Toluene	ND		1.0		ug/L			10/14/11 03:02	1
Trichloroethene	ND		1.0		ug/L			10/14/11 03:02	1
Vinyl chloride	ND		1.0		ug/L			10/14/11 03:02	1
Xylenes, Total	ND		2.0		ug/L			10/14/11 03:02	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/14/11 03:02	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/14/11 03:02	1
Cyclohexane	ND		1.0		ug/L			10/14/11 03:02	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/14/11 03:02	1
Ethylene Dibromide	ND		1.0		ug/L			10/14/11 03:02	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/14/11 03:02	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/14/11 03:02	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/14/11 03:02	1
Isopropylbenzene	ND		1.0		ug/L			10/14/11 03:02	1
Methyl acetate	ND		10		ug/L			10/14/11 03:02	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/14/11 03:02	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/14/11 03:02	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/14/11 03:02	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/14/11 03:02	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/14/11 03:02	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/14/11 03:02	1
Trichlorofluoromethane	ND		1.0		ug/L			10/14/11 03:02	1
Chlorodibromomethane	ND		1.0		ug/L			10/14/11 03:02	1
Methylcyclohexane	ND		1.0		ug/L			10/14/11 03:02	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: FB1
Date Collected: 10/04/11 11:30
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-3
Matrix: Water

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*63 - 129*		*10/14/11 03:02*	*1*
4-Bromofluorobenzene (Surr)	*89*		*66 - 117*		*10/14/11 03:02*	*1*
Toluene-d8 (Surr)	*100*		*74 - 115*		*10/14/11 03:02*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 121*		*10/14/11 03:02*	*1*

Client Sample ID: OW2
Date Collected: 10/04/11 12:45
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		25		ug/L			10/14/11 03:27	2.5
Benzene	ND		2.5		ug/L			10/14/11 03:27	2.5
Dichlorobromomethane	ND		2.5		ug/L			10/14/11 03:27	2.5
Bromoform	ND		2.5		ug/L			10/14/11 03:27	2.5
Bromomethane	ND		2.5		ug/L			10/14/11 03:27	2.5
2-Butanone (MEK)	ND		25		ug/L			10/14/11 03:27	2.5
Carbon disulfide	ND		2.5		ug/L			10/14/11 03:27	2.5
Carbon tetrachloride	ND		2.5		ug/L			10/14/11 03:27	2.5
Chlorobenzene	ND		2.5		ug/L			10/14/11 03:27	2.5
Chloroethane	ND		2.5		ug/L			10/14/11 03:27	2.5
Chloroform	ND		2.5		ug/L			10/14/11 03:27	2.5
Chloromethane	ND		2.5		ug/L			10/14/11 03:27	2.5
1,1-Dichloroethane	ND		2.5		ug/L			10/14/11 03:27	2.5
1,2-Dichloroethane	ND		2.5		ug/L			10/14/11 03:27	2.5
1,1-Dichloroethene	ND		2.5		ug/L			10/14/11 03:27	2.5
1,2-Dichloropropane	ND		2.5		ug/L			10/14/11 03:27	2.5
cis-1,3-Dichloropropene	ND		2.5		ug/L			10/14/11 03:27	2.5
trans-1,3-Dichloropropene	ND		2.5		ug/L			10/14/11 03:27	2.5
Ethylbenzene	ND		2.5		ug/L			10/14/11 03:27	2.5
2-Hexanone	ND		25		ug/L			10/14/11 03:27	2.5
Methylene Chloride	ND		2.5		ug/L			10/14/11 03:27	2.5
4-Methyl-2-pentanone (MIBK)	ND		25		ug/L			10/14/11 03:27	2.5
Styrene	ND		2.5		ug/L			10/14/11 03:27	2.5
1,1,2,2-Tetrachloroethane	ND		2.5		ug/L			10/14/11 03:27	2.5
Tetrachloroethene	**110**		2.5		ug/L			10/14/11 03:27	2.5
Toluene	ND		2.5		ug/L			10/14/11 03:27	2.5
Trichloroethene	**15**		2.5		ug/L			10/14/11 03:27	2.5
Vinyl chloride	ND		2.5		ug/L			10/14/11 03:27	2.5
Xylenes, Total	ND		5.0		ug/L			10/14/11 03:27	2.5
1,1,1-Trichloroethane	ND		2.5		ug/L			10/14/11 03:27	2.5
1,1,2-Trichloroethane	ND		2.5		ug/L			10/14/11 03:27	2.5
Cyclohexane	ND		2.5		ug/L			10/14/11 03:27	2.5
1,2-Dibromo-3-Chloropropane	ND		5.0		ug/L			10/14/11 03:27	2.5
Ethylene Dibromide	ND		2.5		ug/L			10/14/11 03:27	2.5
Dichlorodifluoromethane	ND		2.5		ug/L			10/14/11 03:27	2.5
cis-1,2-Dichloroethene	**98**		2.5		ug/L			10/14/11 03:27	2.5
trans-1,2-Dichloroethene	ND		2.5		ug/L			10/14/11 03:27	2.5
Isopropylbenzene	ND		2.5		ug/L			10/14/11 03:27	2.5
Methyl acetate	ND		25		ug/L			10/14/11 03:27	2.5

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: OW2
Date Collected: 10/04/11 12:45
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		13		ug/L			10/14/11 03:27	2.5
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.5		ug/L			10/14/11 03:27	2.5
1,2,4-Trichlorobenzene	ND		2.5		ug/L			10/14/11 03:27	2.5
1,2-Dichlorobenzene	ND		2.5		ug/L			10/14/11 03:27	2.5
1,3-Dichlorobenzene	ND		2.5		ug/L			10/14/11 03:27	2.5
1,4-Dichlorobenzene	ND		2.5		ug/L			10/14/11 03:27	2.5
Trichlorofluoromethane	ND		2.5		ug/L			10/14/11 03:27	2.5
Chlorodibromomethane	ND		2.5		ug/L			10/14/11 03:27	2.5
Methylcyclohexane	ND		2.5		ug/L			10/14/11 03:27	2.5

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*63 - 129*		*10/14/11 03:27*	*2.5*
4-Bromofluorobenzene (Surr)	*89*		*66 - 117*		*10/14/11 03:27*	*2.5*
Toluene-d8 (Surr)	*98*		*74 - 115*		*10/14/11 03:27*	*2.5*
Dibromofluoromethane (Surr)	*100*		*75 - 121*		*10/14/11 03:27*	*2.5*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.50		ug/L			10/13/11 21:37	1
Ethane	ND		0.50		ug/L			10/13/11 21:37	1
Ethylene	ND		0.50		ug/L			10/13/11 21:37	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*87*		*10 - 168*		*10/13/11 21:37*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**0.98**		0.10		mg/L			10/05/11 20:38	1
Alkalinity	**50**		5.0		mg/L			10/10/11 12:20	1
Chloride	**2.0**		1.0		mg/L			10/11/11 10:54	1
Sulfate	**15**		5.0		mg/L			10/06/11 13:05	1
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	ND		1.0		mg/L			10/12/11 13:25	1

Client Sample ID: OW10R
Date Collected: 10/04/11 09:25
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/13/11 00:46	1
Benzene	**2.4**		1.0		ug/L			10/13/11 00:46	1
Dichlorobromomethane	ND		1.0		ug/L			10/13/11 00:46	1
Bromoform	ND		1.0		ug/L			10/13/11 00:46	1
Bromomethane	ND		1.0		ug/L			10/13/11 00:46	1
2-Butanone (MEK)	ND		10		ug/L			10/13/11 00:46	1
Carbon disulfide	ND		1.0		ug/L			10/13/11 00:46	1
Carbon tetrachloride	ND		1.0		ug/L			10/13/11 00:46	1
Chlorobenzene	**5.1**		1.0		ug/L			10/13/11 00:46	1
Chloroethane	ND		1.0		ug/L			10/13/11 00:46	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: OW10R
Date Collected: 10/04/11 09:25
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		1.0		ug/L			10/13/11 00:46	1
Chloromethane	ND		1.0		ug/L			10/13/11 00:46	1
1,1-Dichloroethane	ND		1.0		ug/L			10/13/11 00:46	1
1,2-Dichloroethane	ND		1.0		ug/L			10/13/11 00:46	1
1,1-Dichloroethene	ND		1.0		ug/L			10/13/11 00:46	1
1,2-Dichloropropane	ND		1.0		ug/L			10/13/11 00:46	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/13/11 00:46	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/13/11 00:46	1
Ethylbenzene	ND		1.0		ug/L			10/13/11 00:46	1
2-Hexanone	ND		10		ug/L			10/13/11 00:46	1
Methylene Chloride	ND		1.0		ug/L			10/13/11 00:46	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/13/11 00:46	1
Styrene	ND		1.0		ug/L			10/13/11 00:46	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/13/11 00:46	1
Tetrachloroethene	ND		1.0		ug/L			10/13/11 00:46	1
Toluene	ND		1.0		ug/L			10/13/11 00:46	1
Trichloroethene	ND		1.0		ug/L			10/13/11 00:46	1
Vinyl chloride	ND		1.0		ug/L			10/13/11 00:46	1
Xylenes, Total	ND		2.0		ug/L			10/13/11 00:46	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/13/11 00:46	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/13/11 00:46	1
Cyclohexane	ND		1.0		ug/L			10/13/11 00:46	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/13/11 00:46	1
Ethylene Dibromide	ND		1.0		ug/L			10/13/11 00:46	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/13/11 00:46	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/13/11 00:46	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/13/11 00:46	1
Isopropylbenzene	ND		1.0		ug/L			10/13/11 00:46	1
Methyl acetate	ND		10		ug/L			10/13/11 00:46	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/13/11 00:46	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/13/11 00:46	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/13/11 00:46	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/13/11 00:46	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/13/11 00:46	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/13/11 00:46	1
Trichlorofluoromethane	ND		1.0		ug/L			10/13/11 00:46	1
Chlorodibromomethane	ND		1.0		ug/L			10/13/11 00:46	1
Methylcyclohexane	ND		1.0		ug/L			10/13/11 00:46	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*63 - 129*		*10/13/11 00:46*	*1*
4-Bromofluorobenzene (Surr)	*85*		*66 - 117*		*10/13/11 00:46*	*1*
Toluene-d8 (Surr)	*93*		*74 - 115*		*10/13/11 00:46*	*1*
Dibromofluoromethane (Surr)	*87*		*75 - 121*		*10/13/11 00:46*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**2200**		2.5		ug/L			10/14/11 18:21	5
Ethane	ND		0.50		ug/L			10/13/11 22:10	1
Ethylene	ND		0.50		ug/L			10/13/11 22:10	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: OW10R
Date Collected: 10/04/11 09:25
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-5
Matrix: Water

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*82*		*10 - 168*		*10/13/11 22:10*	*1*
1,1,1-Trifluoroethane	*68*		*10 - 168*		*10/14/11 18:21*	*5*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.10		mg/L			10/05/11 21:11	1
Alkalinity	**190**		5.0		mg/L			10/10/11 13:46	1
Chloride	**1.6**		1.0		mg/L			10/11/11 10:55	1
Sulfate	**34**		25		mg/L			10/06/11 13:29	5
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	**2.7**		1.0		mg/L			10/12/11 13:36	1

Client Sample ID: MW4
Date Collected: 10/04/11 14:10
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-6
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/13/11 01:10	1
Benzene	**1.1**		1.0		ug/L			10/13/11 01:10	1
Dichlorobromomethane	ND		1.0		ug/L			10/13/11 01:10	1
Bromoform	ND		1.0		ug/L			10/13/11 01:10	1
Bromomethane	ND		1.0		ug/L			10/13/11 01:10	1
2-Butanone (MEK)	ND		10		ug/L			10/13/11 01:10	1
Carbon disulfide	ND		1.0		ug/L			10/13/11 01:10	1
Carbon tetrachloride	ND		1.0		ug/L			10/13/11 01:10	1
Chlorobenzene	ND		1.0		ug/L			10/13/11 01:10	1
Chloroethane	ND		1.0		ug/L			10/13/11 01:10	1
Chloroform	ND		1.0		ug/L			10/13/11 01:10	1
Chloromethane	ND		1.0		ug/L			10/13/11 01:10	1
1,1-Dichloroethane	ND		1.0		ug/L			10/13/11 01:10	1
1,2-Dichloroethane	ND		1.0		ug/L			10/13/11 01:10	1
1,1-Dichloroethene	ND		1.0		ug/L			10/13/11 01:10	1
1,2-Dichloropropane	ND		1.0		ug/L			10/13/11 01:10	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/13/11 01:10	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/13/11 01:10	1
Ethylbenzene	ND		1.0		ug/L			10/13/11 01:10	1
2-Hexanone	ND		10		ug/L			10/13/11 01:10	1
Methylene Chloride	ND		1.0		ug/L			10/13/11 01:10	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/13/11 01:10	1
Styrene	ND		1.0		ug/L			10/13/11 01:10	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/13/11 01:10	1
Tetrachloroethene	ND		1.0		ug/L			10/13/11 01:10	1
Toluene	ND		1.0		ug/L			10/13/11 01:10	1
Trichloroethene	ND		1.0		ug/L			10/13/11 01:10	1
Vinyl chloride	ND		1.0		ug/L			10/13/11 01:10	1
Xylenes, Total	ND		2.0		ug/L			10/13/11 01:10	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/13/11 01:10	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/13/11 01:10	1
Cyclohexane	ND		1.0		ug/L			10/13/11 01:10	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: MW4
Date Collected: 10/04/11 14:10
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-6
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/13/11 01:10	1
Ethylene Dibromide	ND		1.0		ug/L			10/13/11 01:10	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/13/11 01:10	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/13/11 01:10	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/13/11 01:10	1
Isopropylbenzene	ND		1.0		ug/L			10/13/11 01:10	1
Methyl acetate	ND		10		ug/L			10/13/11 01:10	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/13/11 01:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/13/11 01:10	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/13/11 01:10	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/13/11 01:10	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/13/11 01:10	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/13/11 01:10	1
Trichlorofluoromethane	ND		1.0		ug/L			10/13/11 01:10	1
Chlorodibromomethane	ND		1.0		ug/L			10/13/11 01:10	1
Methylcyclohexane	ND		1.0		ug/L			10/13/11 01:10	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*63 - 129*		*10/13/11 01:10*	*1*
4-Bromofluorobenzene (Surr)	*83*		*66 - 117*		*10/13/11 01:10*	*1*
Toluene-d8 (Surr)	*92*		*74 - 115*		*10/13/11 01:10*	*1*
Dibromofluoromethane (Surr)	*89*		*75 - 121*		*10/13/11 01:10*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**97**		0.50		ug/L			10/14/11 18:53	1
Ethane	ND		0.50		ug/L			10/14/11 18:53	1
Ethylene	ND		0.50		ug/L			10/14/11 18:53	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*87*		*10 - 168*		*10/14/11 18:53*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**0.19**		0.10		mg/L			10/05/11 21:43	1
Alkalinity	**190**		5.0		mg/L			10/10/11 12:28	1
Chloride	**61**		5.0		mg/L			10/11/11 11:08	5
Sulfate	**39**		10		mg/L			10/06/11 14:31	2
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	**1.5**		1.0		mg/L			10/12/11 13:47	1

Client Sample ID: TB1
Date Collected: 10/04/11 00:00
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-7
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/13/11 01:34	1
Benzene	ND		1.0		ug/L			10/13/11 01:34	1
Dichlorobromomethane	ND		1.0		ug/L			10/13/11 01:34	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: TB1
Date Collected: 10/04/11 00:00
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-7
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromoform	ND		1.0		ug/L			10/13/11 01:34	1
Bromomethane	ND		1.0		ug/L			10/13/11 01:34	1
2-Butanone (MEK)	ND		10		ug/L			10/13/11 01:34	1
Carbon disulfide	ND		1.0		ug/L			10/13/11 01:34	1
Carbon tetrachloride	ND		1.0		ug/L			10/13/11 01:34	1
Chlorobenzene	ND		1.0		ug/L			10/13/11 01:34	1
Chloroethane	ND		1.0		ug/L			10/13/11 01:34	1
Chloroform	ND		1.0		ug/L			10/13/11 01:34	1
Chloromethane	ND		1.0		ug/L			10/13/11 01:34	1
1,1-Dichloroethane	ND		1.0		ug/L			10/13/11 01:34	1
1,2-Dichloroethane	ND		1.0		ug/L			10/13/11 01:34	1
1,1-Dichloroethene	ND		1.0		ug/L			10/13/11 01:34	1
1,2-Dichloropropane	ND		1.0		ug/L			10/13/11 01:34	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/13/11 01:34	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/13/11 01:34	1
Ethylbenzene	ND		1.0		ug/L			10/13/11 01:34	1
2-Hexanone	ND		10		ug/L			10/13/11 01:34	1
Methylene Chloride	**1.9**	**B**	1.0		ug/L			10/13/11 01:34	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/13/11 01:34	1
Styrene	ND		1.0		ug/L			10/13/11 01:34	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/13/11 01:34	1
Tetrachloroethene	ND		1.0		ug/L			10/13/11 01:34	1
Toluene	ND		1.0		ug/L			10/13/11 01:34	1
Trichloroethene	ND		1.0		ug/L			10/13/11 01:34	1
Vinyl chloride	ND		1.0		ug/L			10/13/11 01:34	1
Xylenes, Total	ND		2.0		ug/L			10/13/11 01:34	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/13/11 01:34	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/13/11 01:34	1
Cyclohexane	ND		1.0		ug/L			10/13/11 01:34	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/13/11 01:34	1
Ethylene Dibromide	ND		1.0		ug/L			10/13/11 01:34	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/13/11 01:34	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/13/11 01:34	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/13/11 01:34	1
Isopropylbenzene	ND		1.0		ug/L			10/13/11 01:34	1
Methyl acetate	ND		10		ug/L			10/13/11 01:34	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/13/11 01:34	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/13/11 01:34	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/13/11 01:34	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/13/11 01:34	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/13/11 01:34	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/13/11 01:34	1
Trichlorofluoromethane	ND		1.0		ug/L			10/13/11 01:34	1
Chlorodibromomethane	ND		1.0		ug/L			10/13/11 01:34	1
Methylcyclohexane	ND		1.0		ug/L			10/13/11 01:34	1

1.94 BNQ 1/2/2012 Based on detection in MB.

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*63 - 129*		*10/13/11 01:34*	*1*
4-Bromofluorobenzene (Surr)	*83*		*66 - 117*		*10/13/11 01:34*	*1*
Toluene-d8 (Surr)	*92*		*74 - 115*		*10/13/11 01:34*	*1*

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: TB1
Date Collected: 10/04/11 00:00
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-7
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	91		75 - 121		10/13/11 01:34	1

Surrogate Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(63-129)	(66-117)	(74-115)	(75-121)
240-4528-1	OW22	95	85	93	86
240-4528-2	OW21	95	85	92	86
240-4528-3	FB1	95	89	100	105
240-4528-4	OW2	92	89	98	100
240-4528-5	OW10R	91	85	93	87
240-4528-6	MW4	93	83	92	89
240-4528-7	TB1	95	83	92	91
LCS 240-18911/6	Lab Control Sample	95	88	93	86
LCS 240-19076/6	Lab Control Sample	91	97	104	100
MB 240-18911/5	Method Blank	94	86	95	87
MB 240-19076/5	Method Blank	90	89	104	103

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		Trifluoroetl
Lab Sample ID	Client Sample ID	(10-168)
240-4528-1	OW22	99
240-4528-2	OW21	82
240-4528-4	OW2	87
240-4528-5	OW10R	82
240-4528-5	OW10R	68
240-4528-6	MW4	87
LCS 240-18710/27	Lab Control Sample	84
LCS 240-19036/3	Lab Control Sample	93
MB 240-18710/28	Method Blank	83
MB 240-19036/4	Method Blank	92

Surrogate Legend

1,1,1-Trifluoroethane = 1,1,1-Trifluoroethane

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-18911/5
Matrix: Water
Analysis Batch: 18911

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/12/11 19:59	1
Benzene	ND		1.0		ug/L			10/12/11 19:59	1
Dichlorobromomethane	ND		1.0		ug/L			10/12/11 19:59	1
Bromoform	ND		1.0		ug/L			10/12/11 19:59	1
Bromomethane	ND		1.0		ug/L			10/12/11 19:59	1
2-Butanone (MEK)	ND		10		ug/L			10/12/11 19:59	1
Carbon disulfide	ND		1.0		ug/L			10/12/11 19:59	1
Carbon tetrachloride	ND		1.0		ug/L			10/12/11 19:59	1
Chlorobenzene	ND		1.0		ug/L			10/12/11 19:59	1
Chloroethane	ND		1.0		ug/L			10/12/11 19:59	1
Chloroform	ND		1.0		ug/L			10/12/11 19:59	1
Chloromethane	ND		1.0		ug/L			10/12/11 19:59	1
1,1-Dichloroethane	ND		1.0		ug/L			10/12/11 19:59	1
1,2-Dichloroethane	ND		1.0		ug/L			10/12/11 19:59	1
1,1-Dichloroethene	ND		1.0		ug/L			10/12/11 19:59	1
1,2-Dichloropropane	ND		1.0		ug/L			10/12/11 19:59	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/12/11 19:59	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/12/11 19:59	1
Ethylbenzene	ND		1.0		ug/L			10/12/11 19:59	1
2-Hexanone	ND		10		ug/L			10/12/11 19:59	1
Methylene Chloride	1.62		1.0		ug/L			10/12/11 19:59	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/12/11 19:59	1
Styrene	ND		1.0		ug/L			10/12/11 19:59	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/12/11 19:59	1
Tetrachloroethene	ND		1.0		ug/L			10/12/11 19:59	1
Toluene	ND		1.0		ug/L			10/12/11 19:59	1
Trichloroethene	ND		1.0		ug/L			10/12/11 19:59	1
Vinyl chloride	ND		1.0		ug/L			10/12/11 19:59	1
Xylenes, Total	ND		2.0		ug/L			10/12/11 19:59	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/12/11 19:59	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/12/11 19:59	1
Cyclohexane	ND		1.0		ug/L			10/12/11 19:59	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/12/11 19:59	1
Ethylene Dibromide	ND		1.0		ug/L			10/12/11 19:59	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/12/11 19:59	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/12/11 19:59	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/12/11 19:59	1
Isopropylbenzene	ND		1.0		ug/L			10/12/11 19:59	1
Methyl acetate	ND		10		ug/L			10/12/11 19:59	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/12/11 19:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/12/11 19:59	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/12/11 19:59	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/12/11 19:59	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/12/11 19:59	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/12/11 19:59	1
Trichlorofluoromethane	ND		1.0		ug/L			10/12/11 19:59	1
Chlorodibromomethane	ND		1.0		ug/L			10/12/11 19:59	1
Methylcyclohexane	ND		1.0		ug/L			10/12/11 19:59	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-18911/5
Matrix: Water
Analysis Batch: 18911

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB % Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		63 - 129		10/12/11 19:59	1
4-Bromofluorobenzene (Surr)	86		66 - 117		10/12/11 19:59	1
Toluene-d8 (Surr)	95		74 - 115		10/12/11 19:59	1
Dibromofluoromethane (Surr)	87		75 - 121		10/12/11 19:59	1

Lab Sample ID: LCS 240-18911/6
Matrix: Water
Analysis Batch: 18911

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Acetone	40.0	39.0		ug/L		98	43 - 136
Benzene	20.0	19.1		ug/L		96	83 - 112
Dichlorobromomethane	20.0	19.0		ug/L		95	72 - 121
Bromoform	20.0	13.3		ug/L		67	40 - 131
Bromomethane	20.0	18.3		ug/L		92	11 - 185
2-Butanone (MEK)	40.0	33.9		ug/L		85	60 - 126
Carbon disulfide	20.0	22.5		ug/L		113	62 - 142
Carbon tetrachloride	20.0	18.0		ug/L		90	66 - 128
Chlorobenzene	20.0	19.8		ug/L		99	85 - 110
Chloroethane	20.0	19.1		ug/L		96	25 - 153
Chloroform	20.0	20.5		ug/L		103	79 - 117
Chloromethane	20.0	18.2		ug/L		91	44 - 126
1,1-Dichloroethane	20.0	20.0		ug/L		100	82 - 115
1,2-Dichloroethane	20.0	19.7		ug/L		99	71 - 127
1,1-Dichloroethene	20.0	22.8		ug/L		114	78 - 131
1,2-Dichloropropane	20.0	18.3		ug/L		92	81 - 115
cis-1,3-Dichloropropene	20.0	17.6		ug/L		88	61 - 115
trans-1,3-Dichloropropene	20.0	19.1		ug/L		96	58 - 117
Ethylbenzene	20.0	19.5		ug/L		98	83 - 112
2-Hexanone	40.0	31.3		ug/L		78	55 - 133
Methylene Chloride	20.0	22.2		ug/L		111	66 - 131
4-Methyl-2-pentanone (MIBK)	40.0	31.2		ug/L		78	63 - 128
Styrene	20.0	19.8		ug/L		99	79 - 114
1,1,2,2-Tetrachloroethane	20.0	23.0		ug/L		115	68 - 118
Tetrachloroethene	20.0	18.4		ug/L		92	79 - 114
Toluene	20.0	19.2		ug/L		96	84 - 111
Trichloroethene	20.0	19.4		ug/L		97	76 - 117
Vinyl chloride	20.0	22.1		ug/L		111	53 - 127
Xylenes, Total	60.0	57.7		ug/L		96	83 - 112
1,1,1-Trichloroethane	20.0	20.0		ug/L		100	74 - 118
1,1,2-Trichloroethane	20.0	20.4		ug/L		102	80 - 112
Cyclohexane	20.0	17.4		ug/L		87	54 - 121
1,2-Dibromo-3-Chloropropane	20.0	18.5		ug/L		93	42 - 136
Ethylene Dibromide	20.0	18.7		ug/L		94	79 - 113
Dichlorodifluoromethane	20.0	24.9		ug/L		125	19 - 129
cis-1,2-Dichloroethene	20.0	20.1		ug/L		101	80 - 113
trans-1,2-Dichloroethene	20.0	21.4		ug/L		107	83 - 117
Isopropylbenzene	20.0	19.2		ug/L		96	75 - 114
Methyl acetate	20.0	15.3		ug/L		77	58 - 131

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-18911/6
Matrix: Water
Analysis Batch: 18911

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Methyl tert-butyl ether	20.0	20.6		ug/L		103	52 - 144
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	25.8		ug/L		129	74 - 151
1,2,4-Trichlorobenzene	20.0	18.6		ug/L		93	48 - 135
1,2-Dichlorobenzene	20.0	19.8		ug/L		99	81 - 110
1,3-Dichlorobenzene	20.0	20.3		ug/L		102	80 - 110
1,4-Dichlorobenzene	20.0	20.2		ug/L		101	82 - 110
Trichlorofluoromethane	20.0	25.5		ug/L		128	49 - 157
Chlorodibromomethane	20.0	19.1		ug/L		96	64 - 119
Methylcyclohexane	20.0	17.7		ug/L		89	56 - 127
m-Xylene & p-Xylene	40.0	38.1		ug/L		95	83 - 113
o-Xylene	20.0	19.6		ug/L		98	83 - 113

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*63 - 129*
4-Bromofluorobenzene (Surr)	*88*		*66 - 117*
Toluene-d8 (Surr)	*93*		*74 - 115*
Dibromofluoromethane (Surr)	*86*		*75 - 121*

Lab Sample ID: MB 240-19076/5
Matrix: Water
Analysis Batch: 19076

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/13/11 20:01	1
Benzene	ND		1.0		ug/L			10/13/11 20:01	1
Dichlorobromomethane	ND		1.0		ug/L			10/13/11 20:01	1
Bromoform	ND		1.0		ug/L			10/13/11 20:01	1
Bromomethane	ND		1.0		ug/L			10/13/11 20:01	1
2-Butanone (MEK)	ND		10		ug/L			10/13/11 20:01	1
Carbon disulfide	ND		1.0		ug/L			10/13/11 20:01	1
Carbon tetrachloride	ND		1.0		ug/L			10/13/11 20:01	1
Chlorobenzene	ND		1.0		ug/L			10/13/11 20:01	1
Chloroethane	ND		1.0		ug/L			10/13/11 20:01	1
Chloroform	ND		1.0		ug/L			10/13/11 20:01	1
Chloromethane	ND		1.0		ug/L			10/13/11 20:01	1
1,1-Dichloroethane	ND		1.0		ug/L			10/13/11 20:01	1
1,2-Dichloroethane	ND		1.0		ug/L			10/13/11 20:01	1
1,1-Dichloroethene	ND		1.0		ug/L			10/13/11 20:01	1
1,2-Dichloropropane	ND		1.0		ug/L			10/13/11 20:01	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/13/11 20:01	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/13/11 20:01	1
Ethylbenzene	ND		1.0		ug/L			10/13/11 20:01	1
2-Hexanone	ND		10		ug/L			10/13/11 20:01	1
Methylene Chloride	ND		1.0		ug/L			10/13/11 20:01	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/13/11 20:01	1
Styrene	ND		1.0		ug/L			10/13/11 20:01	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/13/11 20:01	1
Tetrachloroethene	ND		1.0		ug/L			10/13/11 20:01	1
Toluene	ND		1.0		ug/L			10/13/11 20:01	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-19076/5
Matrix: Water
Analysis Batch: 19076

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	ND		1.0		ug/L			10/13/11 20:01	1
Vinyl chloride	ND		1.0		ug/L			10/13/11 20:01	1
Xylenes, Total	ND		2.0		ug/L			10/13/11 20:01	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/13/11 20:01	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/13/11 20:01	1
Cyclohexane	ND		1.0		ug/L			10/13/11 20:01	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/13/11 20:01	1
Ethylene Dibromide	ND		1.0		ug/L			10/13/11 20:01	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/13/11 20:01	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/13/11 20:01	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/13/11 20:01	1
Isopropylbenzene	ND		1.0		ug/L			10/13/11 20:01	1
Methyl acetate	ND		10		ug/L			10/13/11 20:01	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/13/11 20:01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/13/11 20:01	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/13/11 20:01	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/13/11 20:01	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/13/11 20:01	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/13/11 20:01	1
Trichlorofluoromethane	ND		1.0		ug/L			10/13/11 20:01	1
Chlorodibromomethane	ND		1.0		ug/L			10/13/11 20:01	1
Methylcyclohexane	ND		1.0		ug/L			10/13/11 20:01	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*63 - 129*		*10/13/11 20:01*	*1*
4-Bromofluorobenzene (Surr)	*89*		*66 - 117*		*10/13/11 20:01*	*1*
Toluene-d8 (Surr)	*104*		*74 - 115*		*10/13/11 20:01*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 121*		*10/13/11 20:01*	*1*

Lab Sample ID: LCS 240-19076/6
Matrix: Water
Analysis Batch: 19076

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Acetone	40.0	47.2		ug/L		118	43 - 136
Benzene	20.0	19.8		ug/L		99	83 - 112
Dichlorobromomethane	20.0	19.9		ug/L		100	72 - 121
Bromoform	20.0	17.2		ug/L		86	40 - 131
Bromomethane	20.0	23.4		ug/L		117	11 - 185
2-Butanone (MEK)	40.0	39.5		ug/L		99	60 - 126
Carbon disulfide	20.0	24.1		ug/L		121	62 - 142
Carbon tetrachloride	20.0	22.9		ug/L		115	66 - 128
Chlorobenzene	20.0	19.8		ug/L		99	85 - 110
Chloroethane	20.0	22.3		ug/L		112	25 - 153
Chloroform	20.0	20.2		ug/L		101	79 - 117
Chloromethane	20.0	17.2		ug/L		86	44 - 126
1,1-Dichloroethane	20.0	20.1		ug/L		101	82 - 115
1,2-Dichloroethane	20.0	19.8		ug/L		99	71 - 127
1,1-Dichloroethene	20.0	24.7		ug/L		124	78 - 131

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-19076/6
Matrix: Water
Analysis Batch: 19076

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
1,2-Dichloropropane	20.0	18.7		ug/L		94	81 - 115
cis-1,3-Dichloropropene	20.0	19.3		ug/L		97	61 - 115
trans-1,3-Dichloropropene	20.0	19.4		ug/L		97	58 - 117
Ethylbenzene	20.0	20.5		ug/L		103	83 - 112
2-Hexanone	40.0	36.9		ug/L		92	55 - 133
Methylene Chloride	20.0	19.6		ug/L		98	66 - 131
4-Methyl-2-pentanone (MIBK)	40.0	36.8		ug/L		92	63 - 128
Styrene	20.0	21.0		ug/L		105	79 - 114
1,1,2,2-Tetrachloroethane	20.0	19.7		ug/L		99	68 - 118
Tetrachloroethene	20.0	21.8		ug/L		109	79 - 114
Toluene	20.0	19.8		ug/L		99	84 - 111
Trichloroethene	20.0	19.9		ug/L		100	76 - 117
Vinyl chloride	20.0	23.1		ug/L		116	53 - 127
Xylenes, Total	60.0	61.5		ug/L		103	83 - 112
1,1,1-Trichloroethane	20.0	21.5		ug/L		108	74 - 118
1,1,2-Trichloroethane	20.0	21.1		ug/L		106	80 - 112
Cyclohexane	20.0	16.3		ug/L		82	54 - 121
1,2-Dibromo-3-Chloropropane	20.0	20.3		ug/L		102	42 - 136
Ethylene Dibromide	20.0	21.0		ug/L		105	79 - 113
Dichlorodifluoromethane	20.0	16.5		ug/L		83	19 - 129
cis-1,2-Dichloroethene	20.0	18.8		ug/L		94	80 - 113
trans-1,2-Dichloroethene	20.0	19.8		ug/L		99	83 - 117
Isopropylbenzene	20.0	19.7		ug/L		99	75 - 114
Methyl acetate	20.0	17.8		ug/L		89	58 - 131
Methyl tert-butyl ether	20.0	19.8		ug/L		99	52 - 144
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	24.5		ug/L		123	74 - 151
1,2,4-Trichlorobenzene	20.0	19.6		ug/L		98	48 - 135
1,2-Dichlorobenzene	20.0	20.0		ug/L		100	81 - 110
1,3-Dichlorobenzene	20.0	19.8		ug/L		99	80 - 110
1,4-Dichlorobenzene	20.0	19.4		ug/L		97	82 - 110
Trichlorofluoromethane	20.0	29.1		ug/L		146	49 - 157
Chlorodibromomethane	20.0	20.4		ug/L		102	64 - 119
Methylcyclohexane	20.0	18.0		ug/L		90	56 - 127
m-Xylene & p-Xylene	40.0	41.2		ug/L		103	83 - 113
o-Xylene	20.0	20.3		ug/L		102	83 - 113

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*63 - 129*
4-Bromofluorobenzene (Surr)	*97*		*66 - 117*
Toluene-d8 (Surr)	*104*		*74 - 115*
Dibromofluoromethane (Surr)	*100*		*75 - 121*

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-18710/28
Matrix: Water
Analysis Batch: 18710

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.50		ug/L			10/12/11 09:54	1
Ethane	ND		0.50		ug/L			10/12/11 09:54	1
Ethylene	ND		0.50		ug/L			10/12/11 09:54	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*83*		*10 - 168*		*10/12/11 09:54*	*1*

Lab Sample ID: LCS 240-18710/27
Matrix: Water
Analysis Batch: 18710

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Methane	116	103		ug/L		89	75 - 114
Ethane	218	201		ug/L		92	71 - 123
Ethylene	203	162		ug/L		80	72 - 126

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*84*		*10 - 168*

Lab Sample ID: MB 240-19036/4
Matrix: Water
Analysis Batch: 19036

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.50		ug/L			10/13/11 15:34	1
Ethane	ND		0.50		ug/L			10/13/11 15:34	1
Ethylene	ND		0.50		ug/L			10/13/11 15:34	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*92*		*10 - 168*		*10/13/11 15:34*	*1*

Lab Sample ID: LCS 240-19036/3
Matrix: Water
Analysis Batch: 19036

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Methane	116	108		ug/L		93	75 - 114
Ethane	218	211		ug/L		97	71 - 123
Ethylene	203	179		ug/L		88	72 - 126

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*93*		*10 - 168*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 240-18128/5
Matrix: Water
Analysis Batch: 18128

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.10		mg/L			10/05/11 15:59	1

Lab Sample ID: LCS 240-18128/6
Matrix: Water
Analysis Batch: 18128

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Nitrate as N	2.50	2.44		mg/L		98	90 - 110

Lab Sample ID: 240-4528-4 MS
Matrix: Water
Analysis Batch: 18128

Client Sample ID: OW2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	% Rec	% Rec. Limits
Nitrate as N	0.98		2.50	3.63		mg/L		106	80 - 120

Method: 310.1 - Alkalinity

Lab Sample ID: MB 240-18658/3
Matrix: Water
Analysis Batch: 18658

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	ND		5.0		mg/L			10/10/11 10:25	1

Lab Sample ID: LCS 240-18658/2
Matrix: Water
Analysis Batch: 18658

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Alkalinity	102	106		mg/L		104	90 - 127

Lab Sample ID: 240-4528-2 MS
Matrix: Water
Analysis Batch: 18658

Client Sample ID: OW21
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	% Rec	% Rec. Limits
Alkalinity	250		500	679		mg/L		86	10 - 160

Lab Sample ID: 240-4528-2 MSD
Matrix: Water
Analysis Batch: 18658

Client Sample ID: OW21
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Alkalinity	250		500	697		mg/L		89	10 - 160	3	24

Method: 310.1 - Alkalinity (Continued)

Lab Sample ID: 240-4528-6 DU
Matrix: Water
Analysis Batch: 18658

Client Sample ID: MW4
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	190		191		mg/L		1	20

Method: 325.2 - Chloride

Lab Sample ID: MB 240-18694/3
Matrix: Water
Analysis Batch: 18694

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0		mg/L			10/11/11 10:54	1

Lab Sample ID: LCS 240-18694/4
Matrix: Water
Analysis Batch: 18694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Chloride	44.7	43.8		mg/L		98	88 - 114

Method: 375.4 - Sulfate

Lab Sample ID: MB 240-18246/20
Matrix: Water
Analysis Batch: 18246

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0		mg/L			10/06/11 13:06	1

Lab Sample ID: LCS 240-18246/31
Matrix: Water
Analysis Batch: 18246

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Sulfate	29.5	26.5		mg/L		90	80 - 112

Method: 376.1 - Sulfide

Lab Sample ID: MB 240-18638/1
Matrix: Water
Analysis Batch: 18638

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1

Lab Sample ID: LCS 240-18638/2
Matrix: Water
Analysis Batch: 18638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Sulfide	16.5	16.4		mg/L		99	79 - 110

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Method: 415.1 - TOC

Lab Sample ID: MB 240-18917/3
Matrix: Water
Analysis Batch: 18917

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0		mg/L			10/12/11 11:05	1

Lab Sample ID: LCS 240-18917/4
Matrix: Water
Analysis Batch: 18917

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Total Organic Carbon	29.9	30.3		mg/L		101	88 - 115

QC Association Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

GC/MS VOA

Analysis Batch: 18911

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4528-1	OW22	Total/NA	Water	8260B	
240-4528-2	OW21	Total/NA	Water	8260B	
240-4528-5	OW10R	Total/NA	Water	8260B	
240-4528-6	MW4	Total/NA	Water	8260B	
240-4528-7	TB1	Total/NA	Water	8260B	
LCS 240-18911/6	Lab Control Sample	Total/NA	Water	8260B	
MB 240-18911/5	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 19076

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4528-3	FB1	Total/NA	Water	8260B	
240-4528-4	OW2	Total/NA	Water	8260B	
LCS 240-19076/6	Lab Control Sample	Total/NA	Water	8260B	
MB 240-19076/5	Method Blank	Total/NA	Water	8260B	

GC VOA

Analysis Batch: 18710

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4528-1	OW22	Total/NA	Water	RSK-175	
LCS 240-18710/27	Lab Control Sample	Total/NA	Water	RSK-175	
MB 240-18710/28	Method Blank	Total/NA	Water	RSK-175	

Analysis Batch: 19036

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4528-2	OW21	Total/NA	Water	RSK-175	
240-4528-4	OW2	Total/NA	Water	RSK-175	
240-4528-5	OW10R	Total/NA	Water	RSK-175	
240-4528-5	OW10R	Total/NA	Water	RSK-175	
240-4528-6	MW4	Total/NA	Water	RSK-175	
LCS 240-19036/3	Lab Control Sample	Total/NA	Water	RSK-175	
MB 240-19036/4	Method Blank	Total/NA	Water	RSK-175	

General Chemistry

Analysis Batch: 18128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4528-1	OW22	Total/NA	Water	300.0	
240-4528-2	OW21	Total/NA	Water	300.0	
240-4528-4	OW2	Total/NA	Water	300.0	
240-4528-4 MS	OW2	Total/NA	Water	300.0	
240-4528-5	OW10R	Total/NA	Water	300.0	
240-4528-6	MW4	Total/NA	Water	300.0	
LCS 240-18128/6	Lab Control Sample	Total/NA	Water	300.0	
MB 240-18128/5	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 18246

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4528-1	OW22	Total/NA	Water	375.4	
240-4528-2	OW21	Total/NA	Water	375.4	
240-4528-4	OW2	Total/NA	Water	375.4	
240-4528-5	OW10R	Total/NA	Water	375.4	

General Chemistry (Continued)

Analysis Batch: 18246 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4528-6	MW4	Total/NA	Water	375.4	
LCS 240-18246/31	Lab Control Sample	Total/NA	Water	375.4	
MB 240-18246/20	Method Blank	Total/NA	Water	375.4	

Analysis Batch: 18638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4528-1	OW22	Total/NA	Water	376.1	
240-4528-2	OW21	Total/NA	Water	376.1	
240-4528-4	OW2	Total/NA	Water	376.1	
240-4528-5	OW10R	Total/NA	Water	376.1	
240-4528-6	MW4	Total/NA	Water	376.1	
LCS 240-18638/2	Lab Control Sample	Total/NA	Water	376.1	
MB 240-18638/1	Method Blank	Total/NA	Water	376.1	

Analysis Batch: 18658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4528-1	OW22	Total/NA	Water	310.1	
240-4528-2	OW21	Total/NA	Water	310.1	
240-4528-2 MS	OW21	Total/NA	Water	310.1	
240-4528-2 MSD	OW21	Total/NA	Water	310.1	
240-4528-4	OW2	Total/NA	Water	310.1	
240-4528-5	OW10R	Total/NA	Water	310.1	
240-4528-6	MW4	Total/NA	Water	310.1	
240-4528-6 DU	MW4	Total/NA	Water	310.1	
LCS 240-18658/2	Lab Control Sample	Total/NA	Water	310.1	
MB 240-18658/3	Method Blank	Total/NA	Water	310.1	

Analysis Batch: 18694

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4528-1	OW22	Total/NA	Water	325.2	
240-4528-2	OW21	Total/NA	Water	325.2	
240-4528-4	OW2	Total/NA	Water	325.2	
240-4528-5	OW10R	Total/NA	Water	325.2	
240-4528-6	MW4	Total/NA	Water	325.2	
LCS 240-18694/4	Lab Control Sample	Total/NA	Water	325.2	
MB 240-18694/3	Method Blank	Total/NA	Water	325.2	

Analysis Batch: 18917

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4528-1	OW22	Total/NA	Water	415.1	
240-4528-2	OW21	Total/NA	Water	415.1	
240-4528-4	OW2	Total/NA	Water	415.1	
240-4528-5	OW10R	Total/NA	Water	415.1	
240-4528-6	MW4	Total/NA	Water	415.1	
LCS 240-18917/4	Lab Control Sample	Total/NA	Water	415.1	
MB 240-18917/3	Method Blank	Total/NA	Water	415.1	

Lab Chronicle

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: OW22

Date Collected: 10/04/11 10:45
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	18911	10/12/11 23:09	TL	TAL NC
Total/NA	Analysis	RSK-175		10	18710	10/13/11 12:31	DH	TAL NC
Total/NA	Analysis	300.0		1	18128	10/05/11 19:49	LG	TAL NC
Total/NA	Analysis	375.4		1	18246	10/06/11 13:32	BR	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	310.1		1	18658	10/10/11 11:26	JB	TAL NC
Total/NA	Analysis	325.2		1	18694	10/11/11 10:54	BR	TAL NC
Total/NA	Analysis	415.1		1	18917	10/12/11 12:42	TH	TAL NC

Client Sample ID: OW21

Date Collected: 10/04/11 11:45
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	18911	10/12/11 23:33	TL	TAL NC
Total/NA	Analysis	RSK-175		1	19036	10/13/11 20:56	DH	TAL NC
Total/NA	Analysis	300.0		1	18128	10/05/11 20:21	LG	TAL NC
Total/NA	Analysis	375.4		2	18246	10/06/11 14:31	BR	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	310.1		1	18658	10/10/11 11:36	JB	TAL NC
Total/NA	Analysis	325.2		1	18694	10/11/11 10:54	BR	TAL NC
Total/NA	Analysis	415.1		1	18917	10/12/11 13:15	TH	TAL NC

Client Sample ID: FB1

Date Collected: 10/04/11 11:30
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19076	10/14/11 03:02	TL	TAL NC

Client Sample ID: OW2

Date Collected: 10/04/11 12:45
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2.5	19076	10/14/11 03:27	TL	TAL NC
Total/NA	Analysis	RSK-175		1	19036	10/13/11 21:37	DH	TAL NC
Total/NA	Analysis	300.0		1	18128	10/05/11 20:38	LG	TAL NC
Total/NA	Analysis	375.4		1	18246	10/06/11 13:05	BR	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	310.1		1	18658	10/10/11 12:20	JB	TAL NC
Total/NA	Analysis	325.2		1	18694	10/11/11 10:54	BR	TAL NC

Lab Chronicle

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Client Sample ID: OW2

Date Collected: 10/04/11 12:45
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	415.1		1	18917	10/12/11 13:25	TH	TAL NC

Client Sample ID: OW10R

Date Collected: 10/04/11 09:25
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	18911	10/13/11 00:46	TL	TAL NC
Total/NA	Analysis	RSK-175		1	19036	10/13/11 22:10	DH	TAL NC
Total/NA	Analysis	RSK-175		5	19036	10/14/11 18:21	DH	TAL NC
Total/NA	Analysis	300.0		1	18128	10/05/11 21:11	LG	TAL NC
Total/NA	Analysis	375.4		5	18246	10/06/11 13:29	BR	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	310.1		1	18658	10/10/11 13:46	JB	TAL NC
Total/NA	Analysis	325.2		1	18694	10/11/11 10:55	BR	TAL NC
Total/NA	Analysis	415.1		1	18917	10/12/11 13:36	TH	TAL NC

Client Sample ID: MW4

Date Collected: 10/04/11 14:10
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	18911	10/13/11 01:10	TL	TAL NC
Total/NA	Analysis	RSK-175		1	19036	10/14/11 18:53	DH	TAL NC
Total/NA	Analysis	300.0		1	18128	10/05/11 21:43	LG	TAL NC
Total/NA	Analysis	375.4		2	18246	10/06/11 14:31	BR	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	310.1		1	18658	10/10/11 12:28	JB	TAL NC
Total/NA	Analysis	325.2		5	18694	10/11/11 11:08	BR	TAL NC
Total/NA	Analysis	415.1		1	18917	10/12/11 13:47	TH	TAL NC

Client Sample ID: TB1

Date Collected: 10/04/11 00:00
Date Received: 10/05/11 09:30

Lab Sample ID: 240-4528-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	18911	10/13/11 01:34	TL	TAL NC

Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4528-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica North Canton	ACLASS	DoD ELAP		ADE-1437
TestAmerica North Canton	California	NELAC	9	01144CA
TestAmerica North Canton	Connecticut	State Program	1	PH-0590
TestAmerica North Canton	Florida	NELAC	4	E87225
TestAmerica North Canton	Georgia	Georgia EPD	4	N/A
TestAmerica North Canton	Illinois	NELAC	5	200004
TestAmerica North Canton	Kansas	NELAC	7	E-10336
TestAmerica North Canton	Kentucky	State Program	4	58
TestAmerica North Canton	Minnesota	NELAC	5	039-999-348
TestAmerica North Canton	Nevada	State Program	9	OH-000482008A
TestAmerica North Canton	New Jersey	NELAC	2	OH001
TestAmerica North Canton	New York	NELAC	2	10975
TestAmerica North Canton	Ohio	OVAP	5	CL0024
TestAmerica North Canton	Pennsylvania	NELAC	3	68-00340
TestAmerica North Canton	USDA	USDA		P330-11-00328
TestAmerica North Canton	Virginia	NELAC Secondary AB	3	460175
TestAmerica North Canton	West Virginia	West Virginia DEP	3	210
TestAmerica North Canton	Wisconsin	State Program	5	999518190

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: _____

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other _____

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: Cardinal Resources, LLC	Client Project Manager: Buck Jones	Site Contact: Buck Jones	Lab Contact: Nathan Pierros	COC No: 034330
Address: 1505 E. Carson St.	Telephone: 412 374 0989	Telephone:	Telephone:	1 of ____ COCs
City/State/Zip: Pittsburgh, PA 15203	Email: BJones@CardinalRes.com	Analysis Turnaround Time (In BUS days)	Analyses	For lab use only
Phone: 412 374-0989		TAT if different from below ____		Walk-in client ☐
Project Name: Carroll + Dubois (C+D)	Method of Shipment/Carrier: FedX	☐ 3 weeks ☒ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Lab pickup ☐ Lab sampling ☐
Project Number: 104-0012-0200	Shipping/Tracking No: 8730 0905 1808			Job/SDG No:
PO#				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite C/Grab G	TLC VOCs	Methane/Ethane/Ethene	Sulfate	Sulfide	Alkalinity	Chloride	Nitrate (N)	TOC	Sample Specific Notes / Special Instructions:
OW22	10-4-11	1045		X				X		X		X	X				X	X	X	X	X	X	X	X	
OW21	10-4-11	1145		X				X		X		X	X				X	X	X	X	X	X	X	X	
~~FB~~ FB1	10-4-11	1130		X						X							X								
OW2	10-4-11	1245		X				X		X		X	X				X	X	X	X	X	X	X	X	
OW10R	10-4-11	0925		X				X		X		X	X				X	X	X	X	X	X	X	X	
MW4	10-4-11	1410		X				X		X		X	X				X	X	X	X	X	X	X	X	
TB1	Lab	Prepared		X						X							X								

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☒ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
John Vogeding	Cardinal Resources	Oct 4, 2011 / 1600			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: TAL	Date/Time: 10-5-11 0930

TAL 0018- 1 (04/10)

TestAmerica Cooler Receipt Form/Narrative **Lot Number:**_____
North Canton Facility

Client Cardinal Project Carroll & Dubois By: _____ (Signature)
Cooler Received on 10-5-11 Opened on 10-5-11
FedEx ☑ UPS ☐ DHL ☐ FAS ☐ Stetson ☐ Client Drop Off ☐ TestAmerica Courier ☐ Other _____
TestAmerica Cooler # _____ Multiple Coolers ☐ Foam Box ☐ Client Cooler ☑ Other _____

1. Were custody seals on the outside of the cooler(s)? Yes ☑ No ☐ Intact? Yes ☑ No ☐ NA ☐
   If YES, Quantity 1 Quantity Unsalvageable _____
   Were custody seals on the outside of cooler(s) signed and dated? Yes ☑ No ☐ NA ☐
   Were custody seals on the bottle(s)? Yes ☐ No ☑
   If YES, are there any exceptions? _____
2. Shippers' packing slip attached to the cooler(s)? Yes ☑ No ☐
3. Did custody papers accompany the sample(s)? Yes ☑ No ☐ Relinquished by client? Yes ☑ No ☐
4. Were the custody papers signed in the appropriate place? Yes ☑ No ☐
5. Packing material used: Bubble Wrap ☑ Foam ☐ None ☐ Other _____
6. Cooler temperature upon receipt 1.6 °C See back of form for multiple coolers/temps ☐
   METHOD: IR ☑ Other ☐ _____
   COOLANT: Wet Ice ☑ Blue Ice ☐ Dry Ice ☐ Water ☐ None ☐
7. Did all bottles arrive in good condition (Unbroken)? Yes ☑ No ☐
8. Could all bottle labels be reconciled with the COC? Yes ☑ No ☐
9. Were sample(s) at the correct pH upon receipt? Yes ☑ No ☐ NA ☐
10. Were correct bottle(s) used for the test(s) indicated? Yes ☑ No ☐
11. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☑ NA ☐
12. Sufficient quantity received to perform indicated analyses? Yes ☑ No ☐
13. Was a trip blank present in the cooler(s)? Yes ☑ No ☐ Were VOAs on the COC? Yes ☑ No ☐

Contacted PM _____ Date _____ by _____ via Verbal ☐ Voice Mail ☐ Other ☐
Concerning

14. CHAIN OF CUSTODY

The following discrepancies occurred:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in Sample Receiving to meet recommended pH level(s). *Nitric Acid Lot# 110410-HNO_3; Sulfuric Acid Lot# 110410-H_2SO_4; Sodium Hydroxide Lot# 121809 -NaOH; Hydrochloric Acid Lot# 041911-HCl; Sodium Hydroxide and Zinc Acetate Lot# 100108-$(CH_3COO)_2ZN$/NaOH.* What time was preservative added to sample(s)? _____

Client ID	pH	Date	Initials
22	12 12	10.5.11	JS
21	12 12		
2	12 12		
10R	12 12		
4	12 12		

TestAmerica Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH	Date	Initials

Cooler #	Temp. °C	Method	Coolant

Discrepancies Cont'd:

Login Sample Receipt Checklist

Client: Cardinal Resources

Job Number: 240-4528-1

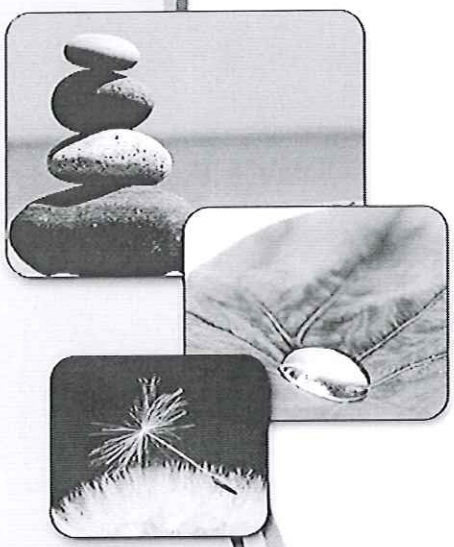
Login Number: 4528
List Number: 1
Creator: Sutek, Nick

List Source: TestAmerica North Canton

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	1.6
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica North Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-4593-1
Client Project/Site: C & D GW Sampling

For:
Cardinal Resources
1505 E Carson Street
Suite #200
Pittsburgh, Pennsylvania 15203

Attn: Barbara Jones

Authorized for release by:
11/03/2011 02:10:41 PM

Nathan Pietras
Project Manager II
nathan.pietras@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Table of Contents

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
X	Surrogate is outside control limits
F	RPD of the MS and MSD exceeds the control limits

General Chemistry

Qualifier	Qualifier Description
F	MS or MSD exceeds the control limits
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-4593-1

Laboratory: TestAmerica North Canton

Narrative

CASE NARRATIVE

Client: Cardinal Resources

Project: C & D GW Sampling

Report Number: 240-4593-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica North Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 10/06/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt were3.5 and 4.2 C.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Samples OW8 (240-4593-1), MW1 (240-4593-2), FB2 (240-4593-3), OW5 (240-4593-4), OW6 (240-4593-5), OW13R (240-4593-6), DUP1 (240-4593-7) and TB2 (240-4593-8) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 10/16/2011, 10/17/2011 and 11/01/2011.

4-Bromofluorobenzene (Surr) failed the surrogate recovery criteria high for OW5MSD (240-4593-4MSD). Refer to the QC report for details.

Trichlorofluoromethane exceeded the rpd limit for the MSD of sample OW5MSD (240-4593-4) in batch 240-19305.

Refer to the QC report for details.

Sample OW6 (240-4593-5)[1.67X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Method(s) 8260B: The following sample(s) was analyzed outside of analytical holding time due to lab error: FB2 (240-4593-3).

Job ID: 240-4593-1 (Continued)

Laboratory: TestAmerica North Canton (Continued)

No other difficulties were encountered during the VOCs analyses.

All other quality control parameters were within the acceptance limits.

DISSOLVED GASES

Samples OW8 (240-4593-1), MW1 (240-4593-2), OW5 (240-4593-4), OW6 (240-4593-5), OW13R (240-4593-6) and DUP1 (240-4593-7) were analyzed for dissolved gases in accordance with RSK_175. The samples were analyzed on 10/13/2011.

No difficulties were encountered during the dissolved gases analyses.

All quality control parameters were within the acceptance limits.

ANIONS

Samples OW8 (240-4593-1), MW1 (240-4593-2), OW5 (240-4593-4), OW6 (240-4593-5), OW13R (240-4593-6) and DUP1 (240-4593-7) were analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 10/07/2011.

Method(s) 300.0: The following sample analyzed for nitrate by IC was received with greater than 50% of holding time expired: DUP1 (240-4593-7). The sample was prepped and loaded onto the instrument prior to expiring, but the laboratory had insufficient time remaining to perform the analysis within holding time.

No other difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

ALKALINITY

Samples OW8 (240-4593-1), MW1 (240-4593-2), OW5 (240-4593-4), OW6 (240-4593-5), OW13R (240-4593-6) and DUP1 (240-4593-7) were analyzed for alkalinity in accordance with EPA Method 310.1. The samples were analyzed on 10/10/2011.

No difficulties were encountered during the alkalinity analyses.

All quality control parameters were within the acceptance limits.

CHLORIDE

Samples OW8 (240-4593-1), MW1 (240-4593-2), OW5 (240-4593-4), OW6 (240-4593-5), OW13R (240-4593-6) and DUP1 (240-4593-7) were analyzed for chloride in accordance with EPA Method 325.2. The samples were analyzed on 10/11/2011.

No difficulties were encountered during the chloride analyses.

All quality control parameters were within the acceptance limits.

SULFATE

Samples OW8 (240-4593-1), MW1 (240-4593-2), OW5 (240-4593-4), OW6 (240-4593-5), OW13R (240-4593-6) and DUP1 (240-4593-7) were analyzed for sulfate in accordance with EPA method 375.4. The samples were analyzed on 10/18/2011.

Samples OW13R (240-4593-6)[2X] and DUP1 (240-4593-7)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the sulfate analyses.

All quality control parameters were within the acceptance limits.

SULFIDE

Samples OW8 (240-4593-1), MW1 (240-4593-2), OW5 (240-4593-4), OW6 (240-4593-5), OW13R (240-4593-6) and DUP1 (240-4593-7) were analyzed for sulfide in accordance with EPA Method 376.1. The samples were analyzed on 10/11/2011.

Job ID: 240-4593-1 (Continued)

Laboratory: TestAmerica North Canton (Continued)

Sulfide failed the recovery criteria high for the MS/MSD of sample OW5MS/MSD (240-4593-4) in batch 240-18638.

Refer to the QC report for details.

No other difficulties were encountered during the sulfide analyses.

All other quality control parameters were within the acceptance limits.

TOTAL ORGANIC CARBON

Samples OW8 (240-4593-1), MW1 (240-4593-2), OW5 (240-4593-4), OW6 (240-4593-5), OW13R (240-4593-6) and DUP1 (240-4593-7) were analyzed for total organic carbon in accordance with EPA Method 415.1. The samples were analyzed on 10/13/2011 and 10/14/2011.

No difficulties were encountered during the TOC analyses.

All quality control parameters were within the acceptance limits.

Method Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL NC
RSK-175	Dissolved Gases (GC)	RSK	TAL NC
300.0	Anions, Ion Chromatography	MCAWW	TAL NC
310.1	Alkalinity	MCAWW	TAL NC
325.2	Chloride	MCAWW	TAL NC
375.4	Sulfate	MCAWW	TAL NC
376.1	Sulfide	MCAWW	TAL NC
415.1	TOC	MCAWW	TAL NC

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-4593-1	OW8	Water	10/05/11 09:35	10/06/11 09:00
240-4593-2	MW1	Water	10/05/11 10:25	10/06/11 09:00
240-4593-3	FB2	Water	10/05/11 10:05	10/06/11 09:00
240-4593-4	OW5	Water	10/05/11 11:20	10/06/11 09:00
240-4593-5	OW6	Water	10/05/11 12:20	10/06/11 09:00
240-4593-6	OW13R	Water	10/05/11 14:15	10/06/11 09:00
240-4593-7	DUP1	Water	10/05/11 00:00	10/06/11 09:00
240-4593-8	TB2	Water	10/05/11 00:00	10/06/11 09:00

Detection Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: OW8

Lab Sample ID: 240-4593-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methane	0.70		0.50		ug/L	1		RSK-175	Total/NA
Alkalinity	43		5.0		mg/L	1		310.1	Total/NA
Chloride	2.1		1.0		mg/L	1		325.2	Total/NA
Sulfate	17		5.0		mg/L	1		375.4	Total/NA

Client Sample ID: MW1

Lab Sample ID: 240-4593-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methane	6.8		0.50		ug/L	1		RSK-175	Total/NA
Nitrate as N	0.15		0.10		mg/L	1		300.0	Total/NA
Alkalinity	97		5.0		mg/L	1		310.1	Total/NA
Chloride	3.2		1.0		mg/L	1		325.2	Total/NA
Sulfate	14		5.0		mg/L	1		375.4	Total/NA
Total Organic Carbon	1.3		1.0		mg/L	1		415.1	Total/NA

Client Sample ID: FB2

Lab Sample ID: 240-4593-3

No Detections

Client Sample ID: OW5

Lab Sample ID: 240-4593-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	1.4		1.0		ug/L	1		8260B	Total/NA
Nitrate as N	0.88		0.10		mg/L	1		300.0	Total/NA
Alkalinity	120		5.0		mg/L	1		310.1	Total/NA
Chloride	3.3		1.0		mg/L	1		325.2	Total/NA
Sulfate	22		5.0		mg/L	1		375.4	Total/NA
Sulfide	2.8		1.0		mg/L	1		376.1	Total/NA

Client Sample ID: OW6

Lab Sample ID: 240-4593-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	52		1.7		ug/L	1.67		8260B	Total/NA
Trichloroethene	11		1.7		ug/L	1.67		8260B	Total/NA
cis-1,2-Dichloroethene	40		1.7		ug/L	1.67		8260B	Total/NA
Nitrate as N	0.42		0.10		mg/L	1		300.0	Total/NA
Alkalinity	54		5.0		mg/L	1		310.1	Total/NA
Chloride	4.0		1.0		mg/L	1		325.2	Total/NA
Sulfate	28		5.0		mg/L	1		375.4	Total/NA
Total Organic Carbon	2.2		1.0		mg/L	1		415.1	Total/NA

Client Sample ID: OW13R

Lab Sample ID: 240-4593-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	0.95		0.10		mg/L	1		300.0	Total/NA
Alkalinity	250		5.0		mg/L	1		310.1	Total/NA
Chloride	1.3		1.0		mg/L	1		325.2	Total/NA
Sulfate	33		10		mg/L	2		375.4	Total/NA
Total Organic Carbon	4.4		1.0		mg/L	1		415.1	Total/NA

Client Sample ID: DUP1

Lab Sample ID: 240-4593-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.3		1.0		ug/L	1		8260B	Total/NA

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: DUP1 (Continued)

Lab Sample ID: 240-4593-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methane	0.50		0.50		ug/L	1		RSK-175	Total/NA
Nitrate as N	0.86	H	0.10		mg/L	1		300.0	Total/NA
Alkalinity	230		5.0		mg/L	1		310.1	Total/NA
Chloride	1.4		1.0		mg/L	1		325.2	Total/NA
Sulfate	34		10		mg/L	2		375.4	Total/NA
Total Organic Carbon	3.8		1.0		mg/L	1		415.1	Total/NA

9.9% 8.3% 1.4% 3.0% 14.6%
/ 10.95 / 250 / 1.3 / 33 / 4.4

Client Sample ID: TB2

Lab Sample ID: 240-4593-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	2.1		1.0		ug/L	1		8260B	Total/NA

$$\frac{|A-B|}{\frac{1}{2}(A+B)} \times 100$$

Client Sample Results

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: OW8
Date Collected: 10/05/11 09:35
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/16/11 16:09	1
Benzene	ND		1.0		ug/L			10/16/11 16:09	1
Dichlorobromomethane	ND		1.0		ug/L			10/16/11 16:09	1
Bromoform	ND		1.0		ug/L			10/16/11 16:09	1
Bromomethane	ND		1.0		ug/L			10/16/11 16:09	1
2-Butanone (MEK)	ND		10		ug/L			10/16/11 16:09	1
Carbon disulfide	ND		1.0		ug/L			10/16/11 16:09	1
Carbon tetrachloride	ND		1.0		ug/L			10/16/11 16:09	1
Chlorobenzene	ND		1.0		ug/L			10/16/11 16:09	1
Chloroethane	ND		1.0		ug/L			10/16/11 16:09	1
Chloroform	ND		1.0		ug/L			10/16/11 16:09	1
Chloromethane	ND		1.0		ug/L			10/16/11 16:09	1
1,1-Dichloroethane	ND		1.0		ug/L			10/16/11 16:09	1
1,2-Dichloroethane	ND		1.0		ug/L			10/16/11 16:09	1
1,1-Dichloroethene	ND		1.0		ug/L			10/16/11 16:09	1
1,2-Dichloropropane	ND		1.0		ug/L			10/16/11 16:09	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 16:09	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 16:09	1
Ethylbenzene	ND		1.0		ug/L			10/16/11 16:09	1
2-Hexanone	ND		10		ug/L			10/16/11 16:09	1
Methylene Chloride	ND		1.0		ug/L			10/16/11 16:09	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/16/11 16:09	1
Styrene	ND		1.0		ug/L			10/16/11 16:09	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/16/11 16:09	1
Tetrachloroethene	ND		1.0		ug/L			10/16/11 16:09	1
Toluene	ND		1.0		ug/L			10/16/11 16:09	1
Trichloroethene	ND		1.0		ug/L			10/16/11 16:09	1
Vinyl chloride	ND		1.0		ug/L			10/16/11 16:09	1
Xylenes, Total	ND		2.0		ug/L			10/16/11 16:09	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/16/11 16:09	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/16/11 16:09	1
Cyclohexane	ND		1.0		ug/L			10/16/11 16:09	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/16/11 16:09	1
Ethylene Dibromide	ND		1.0		ug/L			10/16/11 16:09	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/16/11 16:09	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 16:09	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 16:09	1
Isopropylbenzene	ND		1.0		ug/L			10/16/11 16:09	1
Methyl acetate	ND		10		ug/L			10/16/11 16:09	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/16/11 16:09	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/16/11 16:09	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/16/11 16:09	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/16/11 16:09	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/16/11 16:09	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/16/11 16:09	1
Trichlorofluoromethane	ND		1.0		ug/L			10/16/11 16:09	1
Chlorodibromomethane	ND		1.0		ug/L			10/16/11 16:09	1
Methylcyclohexane	ND		1.0		ug/L			10/16/11 16:09	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: OW8

Date Collected: 10/05/11 09:35
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-1
Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 129*		*10/16/11 16:09*	*1*
4-Bromofluorobenzene (Surr)	*99*		*66 - 117*		*10/16/11 16:09*	*1*
Toluene-d8 (Surr)	*103*		*74 - 115*		*10/16/11 16:09*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 121*		*10/16/11 16:09*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.70**		0.50		ug/L			10/13/11 16:34	1
Ethane	ND		0.50		ug/L			10/13/11 16:34	1
Ethylene	ND		0.50		ug/L			10/13/11 16:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*105*		*10 - 168*		*10/13/11 16:34*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.10		mg/L			10/07/11 07:48	1
Alkalinity	**43**		5.0		mg/L			10/10/11 16:00	1
Chloride	**2.1**		1.0		mg/L			10/11/11 11:44	1
Sulfate	**17**		5.0		mg/L			10/18/11 10:27	1
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	ND		1.0		mg/L			10/14/11 17:06	1

Client Sample ID: MW1

Date Collected: 10/05/11 10:25
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/16/11 16:31	1
Benzene	ND		1.0		ug/L			10/16/11 16:31	1
Dichlorobromomethane	ND		1.0		ug/L			10/16/11 16:31	1
Bromoform	ND		1.0		ug/L			10/16/11 16:31	1
Bromomethane	ND		1.0		ug/L			10/16/11 16:31	1
2-Butanone (MEK)	ND		10		ug/L			10/16/11 16:31	1
Carbon disulfide	ND		1.0		ug/L			10/16/11 16:31	1
Carbon tetrachloride	ND		1.0		ug/L			10/16/11 16:31	1
Chlorobenzene	ND		1.0		ug/L			10/16/11 16:31	1
Chloroethane	ND		1.0		ug/L			10/16/11 16:31	1
Chloroform	ND		1.0		ug/L			10/16/11 16:31	1
Chloromethane	ND		1.0		ug/L			10/16/11 16:31	1
1,1-Dichloroethane	ND		1.0		ug/L			10/16/11 16:31	1
1,2-Dichloroethane	ND		1.0		ug/L			10/16/11 16:31	1
1,1-Dichloroethene	ND		1.0		ug/L			10/16/11 16:31	1
1,2-Dichloropropane	ND		1.0		ug/L			10/16/11 16:31	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 16:31	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 16:31	1
Ethylbenzene	ND		1.0		ug/L			10/16/11 16:31	1
2-Hexanone	ND		10		ug/L			10/16/11 16:31	1
Methylene Chloride	ND		1.0		ug/L			10/16/11 16:31	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/16/11 16:31	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: MW1
Date Collected: 10/05/11 10:25
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Styrene	ND		1.0		ug/L			10/16/11 16:31	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/16/11 16:31	1
Tetrachloroethene	ND		1.0		ug/L			10/16/11 16:31	1
Toluene	ND		1.0		ug/L			10/16/11 16:31	1
Trichloroethene	ND		1.0		ug/L			10/16/11 16:31	1
Vinyl chloride	ND		1.0		ug/L			10/16/11 16:31	1
Xylenes, Total	ND		2.0		ug/L			10/16/11 16:31	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/16/11 16:31	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/16/11 16:31	1
Cyclohexane	ND		1.0		ug/L			10/16/11 16:31	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/16/11 16:31	1
Ethylene Dibromide	ND		1.0		ug/L			10/16/11 16:31	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/16/11 16:31	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 16:31	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 16:31	1
Isopropylbenzene	ND		1.0		ug/L			10/16/11 16:31	1
Methyl acetate	ND		10		ug/L			10/16/11 16:31	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/16/11 16:31	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/16/11 16:31	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/16/11 16:31	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/16/11 16:31	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/16/11 16:31	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/16/11 16:31	1
Trichlorofluoromethane	ND		1.0		ug/L			10/16/11 16:31	1
Chlorodibromomethane	ND		1.0		ug/L			10/16/11 16:31	1
Methylcyclohexane	ND		1.0		ug/L			10/16/11 16:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*63 - 129*		*10/16/11 16:31*	*1*
4-Bromofluorobenzene (Surr)	*91*		*66 - 117*		*10/16/11 16:31*	*1*
Toluene-d8 (Surr)	*104*		*74 - 115*		*10/16/11 16:31*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 121*		*10/16/11 16:31*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**6.8**		0.50		ug/L			10/13/11 17:07	1
Ethane	ND		0.50		ug/L			10/13/11 17:07	1
Ethylene	ND		0.50		ug/L			10/13/11 17:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*103*		*10 - 168*		*10/13/11 17:07*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**0.15**		0.10		mg/L			10/07/11 08:05	1
Alkalinity	**97**		5.0		mg/L			10/10/11 16:07	1
Chloride	**3.2**		1.0		mg/L			10/11/11 11:44	1
Sulfate	**14**		5.0		mg/L			10/18/11 10:23	1
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	**1.3**		1.0		mg/L			10/14/11 17:17	1

Client Sample Results

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: FB2
Date Collected: 10/05/11 10:05
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-3
Matrix: Water

1/4/2012 BNC
ALL Results qualified as UJ because of analysis outside of holding time.

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND	H	10		ug/L			11/01/11 16:14	1
Benzene	ND	H	1.0		ug/L			11/01/11 16:14	1
Dichlorobromomethane	ND	H	1.0		ug/L			11/01/11 16:14	1
Bromoform	ND	H	1.0		ug/L			11/01/11 16:14	1
Bromomethane	ND	H	1.0		ug/L			11/01/11 16:14	1
2-Butanone (MEK)	ND	H	10		ug/L			11/01/11 16:14	1
Carbon disulfide	ND	H	1.0		ug/L			11/01/11 16:14	1
Carbon tetrachloride	ND	H	1.0		ug/L			11/01/11 16:14	1
Chlorobenzene	ND	H	1.0		ug/L			11/01/11 16:14	1
Chloroethane	ND	H	1.0		ug/L			11/01/11 16:14	1
Chloroform	ND	H	1.0		ug/L			11/01/11 16:14	1
Chloromethane	ND	H	1.0		ug/L			11/01/11 16:14	1
1,1-Dichloroethane	ND	H	1.0		ug/L			11/01/11 16:14	1
1,2-Dichloroethane	ND	H	1.0		ug/L			11/01/11 16:14	1
1,1-Dichloroethene	ND	H	1.0		ug/L			11/01/11 16:14	1
1,2-Dichloropropane	ND	H	1.0		ug/L			11/01/11 16:14	1
cis-1,3-Dichloropropene	ND	H	1.0		ug/L			11/01/11 16:14	1
trans-1,3-Dichloropropene	ND	H	1.0		ug/L			11/01/11 16:14	1
Ethylbenzene	ND	H	1.0		ug/L			11/01/11 16:14	1
2-Hexanone	ND	H	10		ug/L			11/01/11 16:14	1
Methylene Chloride	ND	H	1.0		ug/L			11/01/11 16:14	1
4-Methyl-2-pentanone (MIBK)	ND	H	10		ug/L			11/01/11 16:14	1
Styrene	ND	H	1.0		ug/L			11/01/11 16:14	1
1,1,2,2-Tetrachloroethane	ND	H	1.0		ug/L			11/01/11 16:14	1
Tetrachloroethene	ND	H	1.0		ug/L			11/01/11 16:14	1
Toluene	ND	H	1.0		ug/L			11/01/11 16:14	1
Trichloroethene	ND	H	1.0		ug/L			11/01/11 16:14	1
Vinyl chloride	ND	H	1.0		ug/L			11/01/11 16:14	1
Xylenes, Total	ND	H	2.0		ug/L			11/01/11 16:14	1
1,1,1-Trichloroethane	ND	H	1.0		ug/L			11/01/11 16:14	1
1,1,2-Trichloroethane	ND	H	1.0		ug/L			11/01/11 16:14	1
Cyclohexane	ND	H	1.0		ug/L			11/01/11 16:14	1
1,2-Dibromo-3-Chloropropane	ND	H	2.0		ug/L			11/01/11 16:14	1
Ethylene Dibromide	ND	H	1.0		ug/L			11/01/11 16:14	1
Dichlorodifluoromethane	ND	H	1.0		ug/L			11/01/11 16:14	1
cis-1,2-Dichloroethene	ND	H	1.0		ug/L			11/01/11 16:14	1
trans-1,2-Dichloroethene	ND	H	1.0		ug/L			11/01/11 16:14	1
Isopropylbenzene	ND	H	1.0		ug/L			11/01/11 16:14	1
Methyl acetate	ND	H	10		ug/L			11/01/11 16:14	1
Methyl tert-butyl ether	ND	H	5.0		ug/L			11/01/11 16:14	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	H	1.0		ug/L			11/01/11 16:14	1
1,2,4-Trichlorobenzene	ND	H	1.0		ug/L			11/01/11 16:14	1
1,2-Dichlorobenzene	ND	H	1.0		ug/L			11/01/11 16:14	1
1,3-Dichlorobenzene	ND	H	1.0		ug/L			11/01/11 16:14	1
1,4-Dichlorobenzene	ND	H	1.0		ug/L			11/01/11 16:14	1
Trichlorofluoromethane	ND	H	1.0		ug/L			11/01/11 16:14	1
Chlorodibromomethane	ND	H	1.0		ug/L			11/01/11 16:14	1
Methylcyclohexane	ND	H	1.0		ug/L			11/01/11 16:14	1

UJ

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: FB2

Date Collected: 10/05/11 10:05
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-3

Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 129*		*11/01/11 16:14*	*1*
4-Bromofluorobenzene (Surr)	*99*		*66 - 117*		*11/01/11 16:14*	*1*
Toluene-d8 (Surr)	*105*		*74 - 115*		*11/01/11 16:14*	*1*
Dibromofluoromethane (Surr)	*95*		*75 - 121*		*11/01/11 16:14*	*1*

Client Sample ID: OW5

Date Collected: 10/05/11 11:20
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-4

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/16/11 16:54	1
Benzene	ND		1.0		ug/L			10/16/11 16:54	1
Dichlorobromomethane	ND		1.0		ug/L			10/16/11 16:54	1
Bromoform	ND		1.0		ug/L			10/16/11 16:54	1
Bromomethane	ND		1.0		ug/L			10/16/11 16:54	1
2-Butanone (MEK)	ND		10		ug/L			10/16/11 16:54	1
Carbon disulfide	ND		1.0		ug/L			10/16/11 16:54	1
Carbon tetrachloride	ND		1.0		ug/L			10/16/11 16:54	1
Chlorobenzene	ND		1.0		ug/L			10/16/11 16:54	1
Chloroethane	ND		1.0		ug/L			10/16/11 16:54	1
Chloroform	ND		1.0		ug/L			10/16/11 16:54	1
Chloromethane	ND		1.0		ug/L			10/16/11 16:54	1
1,1-Dichloroethane	ND		1.0		ug/L			10/16/11 16:54	1
1,2-Dichloroethane	ND		1.0		ug/L			10/16/11 16:54	1
1,1-Dichloroethene	ND		1.0		ug/L			10/16/11 16:54	1
1,2-Dichloropropane	ND		1.0		ug/L			10/16/11 16:54	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 16:54	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 16:54	1
Ethylbenzene	ND		1.0		ug/L			10/16/11 16:54	1
2-Hexanone	ND		10		ug/L			10/16/11 16:54	1
Methylene Chloride	ND		1.0		ug/L			10/16/11 16:54	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/16/11 16:54	1
Styrene	ND		1.0		ug/L			10/16/11 16:54	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/16/11 16:54	1
Tetrachloroethene	**1.4**		1.0		ug/L			10/16/11 16:54	1
Toluene	ND		1.0		ug/L			10/16/11 16:54	1
Trichloroethene	ND		1.0		ug/L			10/16/11 16:54	1
Vinyl chloride	ND		1.0		ug/L			10/16/11 16:54	1
Xylenes, Total	ND		2.0		ug/L			10/16/11 16:54	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/16/11 16:54	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/16/11 16:54	1
Cyclohexane	ND		1.0		ug/L			10/16/11 16:54	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/16/11 16:54	1
Ethylene Dibromide	ND		1.0		ug/L			10/16/11 16:54	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/16/11 16:54	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 16:54	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 16:54	1
Isopropylbenzene	ND		1.0		ug/L			10/16/11 16:54	1
Methyl acetate	ND		10		ug/L			10/16/11 16:54	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: OW5

Date Collected: 10/05/11 11:20
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		5.0		ug/L			10/16/11 16:54	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/16/11 16:54	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/16/11 16:54	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/16/11 16:54	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/16/11 16:54	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/16/11 16:54	1
Trichlorofluoromethane	ND		1.0		ug/L			10/16/11 16:54	1
Chlorodibromomethane	ND		1.0		ug/L			10/16/11 16:54	1
Methylcyclohexane	ND		1.0		ug/L			10/16/11 16:54	1

UJ based on MS/MSD results BWG 11/31/2012

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*63 - 129*		*10/16/11 16:54*	*1*
4-Bromofluorobenzene (Surr)	*99*		*66 - 117*		*10/16/11 16:54*	*1*
Toluene-d8 (Surr)	*104*		*74 - 115*		*10/16/11 16:54*	*1*
Dibromofluoromethane (Surr)	*110*		*75 - 121*		*10/16/11 16:54*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.50		ug/L			10/13/11 17:40	1
Ethane	ND		0.50		ug/L			10/13/11 17:40	1
Ethylene	ND		0.50		ug/L			10/13/11 17:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*98*		*10 - 168*		*10/13/11 17:40*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**0.88**		0.10		mg/L			10/07/11 10:24	1
Alkalinity	**120**		5.0		mg/L			10/10/11 16:25	1
Chloride	**3.3**		1.0		mg/L			10/11/11 11:44	1
Sulfate	**22**		5.0		mg/L			10/18/11 10:23	1
Sulfide	**2.8**		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	ND		1.0		mg/L			10/13/11 08:33	1

quality as J for high MS/MSD recovery

Client Sample ID: OW6

Date Collected: 10/05/11 12:20
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		17		ug/L			10/17/11 11:30	1.67
Benzene	ND		1.7		ug/L			10/17/11 11:30	1.67
Dichlorobromomethane	ND		1.7		ug/L			10/17/11 11:30	1.67
Bromoform	ND		1.7		ug/L			10/17/11 11:30	1.67
Bromomethane	ND		1.7		ug/L			10/17/11 11:30	1.67
2-Butanone (MEK)	ND		17		ug/L			10/17/11 11:30	1.67
Carbon disulfide	ND		1.7		ug/L			10/17/11 11:30	1.67
Carbon tetrachloride	ND		1.7		ug/L			10/17/11 11:30	1.67
Chlorobenzene	ND		1.7		ug/L			10/17/11 11:30	1.67
Chloroethane	ND		1.7		ug/L			10/17/11 11:30	1.67

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: OW6
Date Collected: 10/05/11 12:20
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		1.7		ug/L			10/17/11 11:30	1.67
Chloromethane	ND		1.7		ug/L			10/17/11 11:30	1.67
1,1-Dichloroethane	ND		1.7		ug/L			10/17/11 11:30	1.67
1,2-Dichloroethane	ND		1.7		ug/L			10/17/11 11:30	1.67
1,1-Dichloroethene	ND		1.7		ug/L			10/17/11 11:30	1.67
1,2-Dichloropropane	ND		1.7		ug/L			10/17/11 11:30	1.67
cis-1,3-Dichloropropene	ND		1.7		ug/L			10/17/11 11:30	1.67
trans-1,3-Dichloropropene	ND		1.7		ug/L			10/17/11 11:30	1.67
Ethylbenzene	ND		1.7		ug/L			10/17/11 11:30	1.67
2-Hexanone	ND		17		ug/L			10/17/11 11:30	1.67
Methylene Chloride	ND		1.7		ug/L			10/17/11 11:30	1.67
4-Methyl-2-pentanone (MIBK)	ND		17		ug/L			10/17/11 11:30	1.67
Styrene	ND		1.7		ug/L			10/17/11 11:30	1.67
1,1,2,2-Tetrachloroethane	ND		1.7		ug/L			10/17/11 11:30	1.67
Tetrachloroethene	**52**		1.7		ug/L			10/17/11 11:30	1.67
Toluene	ND		1.7		ug/L			10/17/11 11:30	1.67
Trichloroethene	**11**		1.7		ug/L			10/17/11 11:30	1.67
Vinyl chloride	ND		1.7		ug/L			10/17/11 11:30	1.67
Xylenes, Total	ND		3.3		ug/L			10/17/11 11:30	1.67
1,1,1-Trichloroethane	ND		1.7		ug/L			10/17/11 11:30	1.67
1,1,2-Trichloroethane	ND		1.7		ug/L			10/17/11 11:30	1.67
Cyclohexane	ND		1.7		ug/L			10/17/11 11:30	1.67
1,2-Dibromo-3-Chloropropane	ND		3.3		ug/L			10/17/11 11:30	1.67
Ethylene Dibromide	ND		1.7		ug/L			10/17/11 11:30	1.67
Dichlorodifluoromethane	ND		1.7		ug/L			10/17/11 11:30	1.67
cis-1,2-Dichloroethene	**40**		1.7		ug/L			10/17/11 11:30	1.67
trans-1,2-Dichloroethene	ND		1.7		ug/L			10/17/11 11:30	1.67
Isopropylbenzene	ND		1.7		ug/L			10/17/11 11:30	1.67
Methyl acetate	ND		17		ug/L			10/17/11 11:30	1.67
Methyl tert-butyl ether	ND		8.4		ug/L			10/17/11 11:30	1.67
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.7		ug/L			10/17/11 11:30	1.67
1,2,4-Trichlorobenzene	ND		1.7		ug/L			10/17/11 11:30	1.67
1,2-Dichlorobenzene	ND		1.7		ug/L			10/17/11 11:30	1.67
1,3-Dichlorobenzene	ND		1.7		ug/L			10/17/11 11:30	1.67
1,4-Dichlorobenzene	ND		1.7		ug/L			10/17/11 11:30	1.67
Trichlorofluoromethane	ND		1.7		ug/L			10/17/11 11:30	1.67
Chlorodibromomethane	ND		1.7		ug/L			10/17/11 11:30	1.67
Methylcyclohexane	ND		1.7		ug/L			10/17/11 11:30	1.67

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 129*		*10/17/11 11:30*	*1.67*
4-Bromofluorobenzene (Surr)	*103*		*66 - 117*		*10/17/11 11:30*	*1.67*
Toluene-d8 (Surr)	*106*		*74 - 115*		*10/17/11 11:30*	*1.67*
Dibromofluoromethane (Surr)	*104*		*75 - 121*		*10/17/11 11:30*	*1.67*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.50		ug/L			10/13/11 19:18	1
Ethane	ND		0.50		ug/L			10/13/11 19:18	1
Ethylene	ND		0.50		ug/L			10/13/11 19:18	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: OW6
Date Collected: 10/05/11 12:20
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-5
Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*90*		*10 - 168*		*10/13/11 19:18*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.42		0.10		mg/L			10/07/11 08:57	1
Alkalinity	54		5.0		mg/L			10/10/11 16:14	1
Chloride	4.0		1.0		mg/L			10/11/11 11:45	1
Sulfate	28		5.0		mg/L			10/18/11 10:20	1
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	2.2		1.0		mg/L			10/13/11 09:38	1

Client Sample ID: OW13R
Date Collected: 10/05/11 14:15
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-6
Matrix: Water

Detected in duplicate (Dup-1). BNJ 1/4/2012

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/16/11 18:25	1
Benzene	ND	UJ	1.0		ug/L			10/16/11 18:25	1
Dichlorobromomethane	ND		1.0		ug/L			10/16/11 18:25	1
Bromoform	ND		1.0		ug/L			10/16/11 18:25	1
Bromomethane	ND		1.0		ug/L			10/16/11 18:25	1
2-Butanone (MEK)	ND		10		ug/L			10/16/11 18:25	1
Carbon disulfide	ND		1.0		ug/L			10/16/11 18:25	1
Carbon tetrachloride	ND		1.0		ug/L			10/16/11 18:25	1
Chlorobenzene	ND		1.0		ug/L			10/16/11 18:25	1
Chloroethane	ND		1.0		ug/L			10/16/11 18:25	1
Chloroform	ND		1.0		ug/L			10/16/11 18:25	1
Chloromethane	ND		1.0		ug/L			10/16/11 18:25	1
1,1-Dichloroethane	ND		1.0		ug/L			10/16/11 18:25	1
1,2-Dichloroethane	ND		1.0		ug/L			10/16/11 18:25	1
1,1-Dichloroethene	ND		1.0		ug/L			10/16/11 18:25	1
1,2-Dichloropropane	ND		1.0		ug/L			10/16/11 18:25	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 18:25	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 18:25	1
Ethylbenzene	ND		1.0		ug/L			10/16/11 18:25	1
2-Hexanone	ND		10		ug/L			10/16/11 18:25	1
Methylene Chloride	ND		1.0		ug/L			10/16/11 18:25	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/16/11 18:25	1
Styrene	ND		1.0		ug/L			10/16/11 18:25	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/16/11 18:25	1
Tetrachloroethene	ND		1.0		ug/L			10/16/11 18:25	1
Toluene	ND		1.0		ug/L			10/16/11 18:25	1
Trichloroethene	ND		1.0		ug/L			10/16/11 18:25	1
Vinyl chloride	ND		1.0		ug/L			10/16/11 18:25	1
Xylenes, Total	ND		2.0		ug/L			10/16/11 18:25	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/16/11 18:25	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/16/11 18:25	1
Cyclohexane	ND		1.0		ug/L			10/16/11 18:25	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/16/11 18:25	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: OW13R
Date Collected: 10/05/11 14:15
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-6
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylene Dibromide	ND		1.0		ug/L			10/16/11 18:25	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/16/11 18:25	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 18:25	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 18:25	1
Isopropylbenzene	ND		1.0		ug/L			10/16/11 18:25	1
Methyl acetate	ND		10		ug/L			10/16/11 18:25	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/16/11 18:25	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/16/11 18:25	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/16/11 18:25	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/16/11 18:25	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/16/11 18:25	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/16/11 18:25	1
Trichlorofluoromethane	ND		1.0		ug/L			10/16/11 18:25	1
Chlorodibromomethane	ND		1.0		ug/L			10/16/11 18:25	1
Methylcyclohexane	ND		1.0		ug/L			10/16/11 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 129*		*10/16/11 18:25*	*1*
4-Bromofluorobenzene (Surr)	*95*		*66 - 117*		*10/16/11 18:25*	*1*
Toluene-d8 (Surr)	*103*		*74 - 115*		*10/16/11 18:25*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 121*		*10/16/11 18:25*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND	UJ - Because of detect in field dup BNJ	0.50		ug/L			10/13/11 19:51	1
Ethane	ND		0.50		ug/L			10/13/11 19:51	1
Ethylene	ND		0.50		ug/L			10/13/11 19:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*77*		*10 - 168*		*10/13/11 19:51*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**0.95**		0.10		mg/L			10/07/11 11:16	1
Alkalinity	**250**		5.0		mg/L			10/10/11 17:07	1
Chloride	**1.3**		1.0		mg/L			10/11/11 11:45	1
Sulfate	**33**		10		mg/L			10/18/11 11:25	2
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	**4.4**		1.0		mg/L			10/13/11 09:49	1

Client Sample ID: DUP1
Date Collected: 10/05/11 00:00
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-7
Matrix: Water

not detected in duplicate OW-13R. BNJ 1/4/2012

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND	J -	10		ug/L			10/16/11 18:47	1
Benzene	**1.3**		1.0		ug/L			10/16/11 18:47	1
Dichlorobromomethane	ND		1.0		ug/L			10/16/11 18:47	1
Bromoform	ND		1.0		ug/L			10/16/11 18:47	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: DUP1
Date Collected: 10/05/11 00:00
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-7
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		1.0		ug/L			10/16/11 18:47	1
2-Butanone (MEK)	ND		10		ug/L			10/16/11 18:47	1
Carbon disulfide	ND		1.0		ug/L			10/16/11 18:47	1
Carbon tetrachloride	ND		1.0		ug/L			10/16/11 18:47	1
Chlorobenzene	ND		1.0		ug/L			10/16/11 18:47	1
Chloroethane	ND		1.0		ug/L			10/16/11 18:47	1
Chloroform	ND		1.0		ug/L			10/16/11 18:47	1
Chloromethane	ND		1.0		ug/L			10/16/11 18:47	1
1,1-Dichloroethane	ND		1.0		ug/L			10/16/11 18:47	1
1,2-Dichloroethane	ND		1.0		ug/L			10/16/11 18:47	1
1,1-Dichloroethene	ND		1.0		ug/L			10/16/11 18:47	1
1,2-Dichloropropane	ND		1.0		ug/L			10/16/11 18:47	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 18:47	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 18:47	1
Ethylbenzene	ND		1.0		ug/L			10/16/11 18:47	1
2-Hexanone	ND		10		ug/L			10/16/11 18:47	1
Methylene Chloride	ND		1.0		ug/L			10/16/11 18:47	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/16/11 18:47	1
Styrene	ND		1.0		ug/L			10/16/11 18:47	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/16/11 18:47	1
Tetrachloroethene	ND		1.0		ug/L			10/16/11 18:47	1
Toluene	ND		1.0		ug/L			10/16/11 18:47	1
Trichloroethene	ND		1.0		ug/L			10/16/11 18:47	1
Vinyl chloride	ND		1.0		ug/L			10/16/11 18:47	1
Xylenes, Total	ND		2.0		ug/L			10/16/11 18:47	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/16/11 18:47	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/16/11 18:47	1
Cyclohexane	ND		1.0		ug/L			10/16/11 18:47	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/16/11 18:47	1
Ethylene Dibromide	ND		1.0		ug/L			10/16/11 18:47	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/16/11 18:47	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 18:47	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 18:47	1
Isopropylbenzene	ND		1.0		ug/L			10/16/11 18:47	1
Methyl acetate	ND		10		ug/L			10/16/11 18:47	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/16/11 18:47	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/16/11 18:47	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/16/11 18:47	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/16/11 18:47	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/16/11 18:47	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/16/11 18:47	1
Trichlorofluoromethane	ND		1.0		ug/L			10/16/11 18:47	1
Chlorodibromomethane	ND		1.0		ug/L			10/16/11 18:47	1
Methylcyclohexane	ND		1.0		ug/L			10/16/11 18:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*63 - 129*		*10/16/11 18:47*	*1*
4-Bromofluorobenzene (Surr)	*97*		*66 - 117*		*10/16/11 18:47*	*1*
Toluene-d8 (Surr)	*104*		*74 - 115*		*10/16/11 18:47*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 121*		*10/16/11 18:47*	*1*

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: DUP1
Date Collected: 10/05/11 00:00
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-7
Matrix: Water

J due to non-detect in duplicate.

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.50**	J	0.50		ug/L			10/13/11 20:24	1
Ethane	ND		0.50		ug/L			10/13/11 20:24	1
Ethylene	ND		0.50		ug/L			10/13/11 20:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*75*		*10 - 168*		*10/13/11 20:24*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**0.86**	H (J-)	0.10		mg/L			10/07/11 11:51	1
Alkalinity	**230**		5.0		mg/L			10/10/11 17:16	1
Chloride	**1.4**		1.0		mg/L			10/11/11 11:45	1
Sulfate	**34**		10		mg/L			10/18/11 11:25	2
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	**3.8**		1.0		mg/L			10/13/11 10:22	1

estimated (ow (holding time exceeded) BW 1/4/2012

Client Sample ID: TB2
Date Collected: 10/05/11 00:00
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-8
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/16/11 19:10	1
Benzene	ND		1.0		ug/L			10/16/11 19:10	1
Dichlorobromomethane	ND		1.0		ug/L			10/16/11 19:10	1
Bromoform	ND		1.0		ug/L			10/16/11 19:10	1
Bromomethane	ND		1.0		ug/L			10/16/11 19:10	1
2-Butanone (MEK)	ND		10		ug/L			10/16/11 19:10	1
Carbon disulfide	ND		1.0		ug/L			10/16/11 19:10	1
Carbon tetrachloride	ND		1.0		ug/L			10/16/11 19:10	1
Chlorobenzene	ND		1.0		ug/L			10/16/11 19:10	1
Chloroethane	ND		1.0		ug/L			10/16/11 19:10	1
Chloroform	ND		1.0		ug/L			10/16/11 19:10	1
Chloromethane	ND		1.0		ug/L			10/16/11 19:10	1
1,1-Dichloroethane	ND		1.0		ug/L			10/16/11 19:10	1
1,2-Dichloroethane	ND		1.0		ug/L			10/16/11 19:10	1
1,1-Dichloroethene	ND		1.0		ug/L			10/16/11 19:10	1
1,2-Dichloropropane	ND		1.0		ug/L			10/16/11 19:10	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 19:10	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 19:10	1
Ethylbenzene	ND		1.0		ug/L			10/16/11 19:10	1
2-Hexanone	ND		10		ug/L			10/16/11 19:10	1
Methylene Chloride	**2.1**		1.0		ug/L			10/16/11 19:10	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/16/11 19:10	1
Styrene	ND		1.0		ug/L			10/16/11 19:10	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/16/11 19:10	1
Tetrachloroethene	ND		1.0		ug/L			10/16/11 19:10	1
Toluene	ND		1.0		ug/L			10/16/11 19:10	1
Trichloroethene	ND		1.0		ug/L			10/16/11 19:10	1
Vinyl chloride	ND		1.0		ug/L			10/16/11 19:10	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: TB2
Date Collected: 10/05/11 00:00
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-8
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		2.0		ug/L			10/16/11 19:10	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/16/11 19:10	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/16/11 19:10	1
Cyclohexane	ND		1.0		ug/L			10/16/11 19:10	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/16/11 19:10	1
Ethylene Dibromide	ND		1.0		ug/L			10/16/11 19:10	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/16/11 19:10	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 19:10	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 19:10	1
Isopropylbenzene	ND		1.0		ug/L			10/16/11 19:10	1
Methyl acetate	ND		10		ug/L			10/16/11 19:10	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/16/11 19:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/16/11 19:10	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/16/11 19:10	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/16/11 19:10	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/16/11 19:10	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/16/11 19:10	1
Trichlorofluoromethane	ND		1.0		ug/L			10/16/11 19:10	1
Chlorodibromomethane	ND		1.0		ug/L			10/16/11 19:10	1
Methylcyclohexane	ND		1.0		ug/L			10/16/11 19:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*63 - 129*		*10/16/11 19:10*	*1*
4-Bromofluorobenzene (Surr)	*102*		*66 - 117*		*10/16/11 19:10*	*1*
Toluene-d8 (Surr)	*105*		*74 - 115*		*10/16/11 19:10*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 121*		*10/16/11 19:10*	*1*

Surrogate Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(63-129)	(66-117)	(74-115)	(75-121)
240-4593-1	OW8	104	99	103	104
240-4593-2	MW1	112	91	104	105
240-4593-3	FB2	104	99	105	95
240-4593-4	OW5	110	99	104	110
240-4593-4 MS	OW5	111	105	107	104
240-4593-4 MSD	OW5	109	125 X	106	102
240-4593-5	OW6	104	103	106	104
240-4593-6	OW13R	102	95	103	99
240-4593-7	DUP1	107	97	104	106
240-4593-8	TB2	111	102	105	108
LCS 240-19305/4	Lab Control Sample	103	116	105	105
LCS 240-19349/4	Lab Control Sample	104	114	106	102
LCS 240-21450/10	Lab Control Sample	102	108	106	106
MB 240-19305/5	Method Blank	103	102	102	101
MB 240-19349/5	Method Blank	106	102	102	106
MB 240-21450/11	Method Blank	103	100	102	96

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		Trifluoroetl
Lab Sample ID	Client Sample ID	(10-168)
240-4593-1	OW8	105
240-4593-2	MW1	103
240-4593-4	OW5	98
240-4593-4 MS	OW5	93
240-4593-4 MSD	OW5	92
240-4593-5	OW6	90
240-4593-6	OW13R	77
240-4593-7	DUP1	75
LCS 240-19036/3	Lab Control Sample	93
MB 240-19036/4	Method Blank	92

Surrogate Legend

1,1,1-Trifluoroethane = 1,1,1-Trifluoroethane

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-19305/5
Matrix: Water
Analysis Batch: 19305

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/16/11 13:07	1
Benzene	ND		1.0		ug/L			10/16/11 13:07	1
Dichlorobromomethane	ND		1.0		ug/L			10/16/11 13:07	1
Bromoform	ND		1.0		ug/L			10/16/11 13:07	1
Bromomethane	ND		1.0		ug/L			10/16/11 13:07	1
2-Butanone (MEK)	ND		10		ug/L			10/16/11 13:07	1
Carbon disulfide	ND		1.0		ug/L			10/16/11 13:07	1
Carbon tetrachloride	ND		1.0		ug/L			10/16/11 13:07	1
Chlorobenzene	ND		1.0		ug/L			10/16/11 13:07	1
Chloroethane	ND		1.0		ug/L			10/16/11 13:07	1
Chloroform	ND		1.0		ug/L			10/16/11 13:07	1
Chloromethane	ND		1.0		ug/L			10/16/11 13:07	1
1,1-Dichloroethane	ND		1.0		ug/L			10/16/11 13:07	1
1,2-Dichloroethane	ND		1.0		ug/L			10/16/11 13:07	1
1,1-Dichloroethene	ND		1.0		ug/L			10/16/11 13:07	1
1,2-Dichloropropane	ND		1.0		ug/L			10/16/11 13:07	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 13:07	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/16/11 13:07	1
Ethylbenzene	ND		1.0		ug/L			10/16/11 13:07	1
2-Hexanone	ND		10		ug/L			10/16/11 13:07	1
Methylene Chloride	ND		1.0		ug/L			10/16/11 13:07	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/16/11 13:07	1
Styrene	ND		1.0		ug/L			10/16/11 13:07	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/16/11 13:07	1
Tetrachloroethene	ND		1.0		ug/L			10/16/11 13:07	1
Toluene	ND		1.0		ug/L			10/16/11 13:07	1
Trichloroethene	ND		1.0		ug/L			10/16/11 13:07	1
Vinyl chloride	ND		1.0		ug/L			10/16/11 13:07	1
Xylenes, Total	ND		2.0		ug/L			10/16/11 13:07	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/16/11 13:07	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/16/11 13:07	1
Cyclohexane	ND		1.0		ug/L			10/16/11 13:07	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/16/11 13:07	1
Ethylene Dibromide	ND		1.0		ug/L			10/16/11 13:07	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/16/11 13:07	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 13:07	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/16/11 13:07	1
Isopropylbenzene	ND		1.0		ug/L			10/16/11 13:07	1
Methyl acetate	ND		10		ug/L			10/16/11 13:07	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/16/11 13:07	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/16/11 13:07	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/16/11 13:07	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/16/11 13:07	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/16/11 13:07	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/16/11 13:07	1
Trichlorofluoromethane	ND		1.0		ug/L			10/16/11 13:07	1
Chlorodibromomethane	ND		1.0		ug/L			10/16/11 13:07	1
Methylcyclohexane	ND		1.0		ug/L			10/16/11 13:07	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-19305/5
Matrix: Water
Analysis Batch: 19305

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*10/16/11 13:07*	*1*
4-Bromofluorobenzene (Surr)	*102*		*66 - 117*		*10/16/11 13:07*	*1*
Toluene-d8 (Surr)	*102*		*74 - 115*		*10/16/11 13:07*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 121*		*10/16/11 13:07*	*1*

Lab Sample ID: LCS 240-19305/4
Matrix: Water
Analysis Batch: 19305

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Acetone	20.0	16.8		ug/L		84	43 - 136
Benzene	10.0	9.28		ug/L		93	83 - 112
Dichlorobromomethane	10.0	9.01		ug/L		90	72 - 121
Bromoform	10.0	10.1		ug/L		101	40 - 131
Bromomethane	10.0	7.85		ug/L		79	11 - 185
2-Butanone (MEK)	20.0	19.4		ug/L		97	60 - 126
Carbon disulfide	10.0	9.20		ug/L		92	62 - 142
Carbon tetrachloride	10.0	9.74		ug/L		97	66 - 128
Chlorobenzene	10.0	9.23		ug/L		92	85 - 110
Chloroethane	10.0	9.04		ug/L		90	25 - 153
Chloroform	10.0	9.73		ug/L		97	79 - 117
Chloromethane	10.0	8.47		ug/L		85	44 - 126
1,1-Dichloroethane	10.0	9.75		ug/L		98	82 - 115
1,2-Dichloroethane	10.0	9.49		ug/L		95	71 - 127
1,1-Dichloroethene	10.0	10.5		ug/L		105	78 - 131
1,2-Dichloropropane	10.0	9.29		ug/L		93	81 - 115
cis-1,3-Dichloropropene	10.0	9.26		ug/L		93	61 - 115
trans-1,3-Dichloropropene	10.0	9.82		ug/L		98	58 - 117
Ethylbenzene	10.0	9.27		ug/L		93	83 - 112
2-Hexanone	20.0	20.7		ug/L		104	55 - 133
Methylene Chloride	10.0	8.87		ug/L		89	66 - 131
4-Methyl-2-pentanone (MIBK)	20.0	20.1		ug/L		101	63 - 128
Styrene	10.0	9.47		ug/L		95	79 - 114
1,1,2,2-Tetrachloroethane	10.0	8.98		ug/L		90	68 - 118
Tetrachloroethene	10.0	9.61		ug/L		96	79 - 114
Toluene	10.0	9.34		ug/L		93	84 - 111
Trichloroethene	10.0	9.00		ug/L		90	76 - 117
Vinyl chloride	10.0	8.81		ug/L		88	53 - 127
Xylenes, Total	30.0	28.4		ug/L		95	83 - 112
1,1,1-Trichloroethane	10.0	9.46		ug/L		95	74 - 118
1,1,2-Trichloroethane	10.0	9.31		ug/L		93	80 - 112
Cyclohexane	10.0	10.5		ug/L		105	54 - 121
1,2-Dibromo-3-Chloropropane	10.0	8.77		ug/L		88	42 - 136
Ethylene Dibromide	10.0	9.27		ug/L		93	79 - 113
Dichlorodifluoromethane	10.0	7.65		ug/L		77	19 - 129
cis-1,2-Dichloroethene	10.0	9.35		ug/L		94	80 - 113
trans-1,2-Dichloroethene	10.0	9.51		ug/L		95	83 - 117
Isopropylbenzene	10.0	9.46		ug/L		95	75 - 114
Methyl acetate	10.0	ND		ug/L		95	58 - 131

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-19305/4
Matrix: Water
Analysis Batch: 19305

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Methyl tert-butyl ether	10.0	9.52		ug/L		95	52 - 144
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	11.6		ug/L		116	74 - 151
1,2,4-Trichlorobenzene	10.0	8.29		ug/L		83	48 - 135
1,2-Dichlorobenzene	10.0	9.15		ug/L		92	81 - 110
1,3-Dichlorobenzene	10.0	9.14		ug/L		91	80 - 110
1,4-Dichlorobenzene	10.0	9.17		ug/L		92	82 - 110
Trichlorofluoromethane	10.0	9.85		ug/L		99	49 - 157
Chlorodibromomethane	10.0	9.56		ug/L		96	64 - 119
Methylcyclohexane	10.0	10.7		ug/L		107	56 - 127
m-Xylene & p-Xylene	20.0	18.6		ug/L		93	83 - 113
o-Xylene	10.0	9.76		ug/L		98	83 - 113

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*
4-Bromofluorobenzene (Surr)	*116*		*66 - 117*
Toluene-d8 (Surr)	*105*		*74 - 115*
Dibromofluoromethane (Surr)	*105*		*75 - 121*

Lab Sample ID: 240-4593-4 MS
Matrix: Water
Analysis Batch: 19305

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	% Rec. Limits
Acetone	ND		20.0	18.1		ug/L		91	33 - 145
Benzene	ND		10.0	9.28		ug/L		93	72 - 121
Dichlorobromomethane	ND		10.0	8.60		ug/L		86	67 - 120
Bromoform	ND		10.0	10.3		ug/L		103	32 - 128
Bromomethane	ND		10.0	7.32		ug/L		73	10 - 186
2-Butanone (MEK)	ND		20.0	18.7		ug/L		94	54 - 129
Carbon disulfide	ND		10.0	8.85		ug/L		89	57 - 147
Carbon tetrachloride	ND		10.0	9.79		ug/L		98	59 - 129
Chlorobenzene	ND		10.0	8.65		ug/L		87	80 - 110
Chloroethane	ND		10.0	8.20		ug/L		82	21 - 165
Chloroform	ND		10.0	9.22		ug/L		92	76 - 118
Chloromethane	ND		10.0	8.81		ug/L		88	33 - 132
1,1-Dichloroethane	ND		10.0	9.54		ug/L		95	79 - 116
1,2-Dichloroethane	ND		10.0	9.80		ug/L		98	68 - 129
1,1-Dichloroethene	ND		10.0	10.2		ug/L		102	74 - 135
1,2-Dichloropropane	ND		10.0	9.54		ug/L		95	78 - 115
cis-1,3-Dichloropropene	ND		10.0	7.98		ug/L		80	51 - 110
trans-1,3-Dichloropropene	ND		10.0	8.93		ug/L		89	46 - 116
Ethylbenzene	ND		10.0	8.73		ug/L		87	75 - 116
2-Hexanone	ND		20.0	21.3		ug/L		107	47 - 139
Methylene Chloride	ND		10.0	7.40		ug/L		74	63 - 128
4-Methyl-2-pentanone (MIBK)	ND		20.0	20.2		ug/L		101	56 - 131
Styrene	ND		10.0	8.94		ug/L		89	71 - 117
1,1,2,2-Tetrachloroethane	ND		10.0	8.38		ug/L		84	63 - 122
Tetrachloroethene	1.4		10.0	10.1		ug/L		87	70 - 117
Toluene	ND		10.0	8.86		ug/L		89	78 - 114

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-4593-4 MS
Matrix: Water
Analysis Batch: 19305

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	% Rec. Limits
Trichloroethene	ND		10.0	8.81		ug/L		84	66 - 120
Vinyl chloride	ND		10.0	8.70		ug/L		87	49 - 130
Xylenes, Total	ND		30.0	26.4		ug/L		88	76 - 116
1,1,1-Trichloroethane	ND		10.0	9.74		ug/L		97	68 - 121
1,1,2-Trichloroethane	ND		10.0	8.83		ug/L		88	75 - 115
Cyclohexane	ND		10.0	10.6		ug/L		106	49 - 123
1,2-Dibromo-3-Chloropropane	ND		10.0	7.76		ug/L		78	32 - 139
Ethylene Dibromide	ND		10.0	8.92		ug/L		89	74 - 113
Dichlorodifluoromethane	ND		10.0	7.15		ug/L		72	17 - 128
cis-1,2-Dichloroethene	ND		10.0	9.56		ug/L		90	70 - 120
trans-1,2-Dichloroethene	ND		10.0	9.54		ug/L		95	80 - 119
Isopropylbenzene	ND		10.0	8.92		ug/L		89	68 - 116
Methyl acetate	ND		10.0	ND		ug/L		89	47 - 130
Methyl tert-butyl ether	ND		10.0	8.71		ug/L		87	46 - 144
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10.0	12.3		ug/L		123	70 - 152
1,2,4-Trichlorobenzene	ND		10.0	6.51		ug/L		65	38 - 138
1,2-Dichlorobenzene	ND		10.0	8.92		ug/L		89	75 - 111
1,3-Dichlorobenzene	ND		10.0	8.43		ug/L		84	73 - 110
1,4-Dichlorobenzene	ND		10.0	8.85		ug/L		89	75 - 110
Trichlorofluoromethane	ND		10.0	9.02		ug/L		90	46 - 157
Chlorodibromomethane	ND		10.0	9.02		ug/L		90	56 - 118
Methylcyclohexane	ND		10.0	10.5		ug/L		105	49 - 127
m-Xylene & p-Xylene	ND		20.0	17.7		ug/L		89	75 - 117
o-Xylene	ND		10.0	8.74		ug/L		87	76 - 116

Surrogate	*MS % Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*63 - 129*
4-Bromofluorobenzene (Surr)	*105*		*66 - 117*
Toluene-d8 (Surr)	*107*		*74 - 115*
Dibromofluoromethane (Surr)	*104*		*75 - 121*

Lab Sample ID: 240-4593-4 MSD
Matrix: Water
Analysis Batch: 19305

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	% Rec. Limits	RPD	RPD Limit
Acetone	ND		20.0	17.3		ug/L		87	33 - 145	5	30
Benzene	ND		10.0	9.48		ug/L		95	72 - 121	2	30
Dichlorobromomethane	ND		10.0	9.44		ug/L		94	67 - 120	9	30
Bromoform	ND		10.0	9.91		ug/L		99	32 - 128	4	30
Bromomethane	ND		10.0	8.15		ug/L		82	10 - 186	11	30
2-Butanone (MEK)	ND		20.0	19.2		ug/L		96	54 - 129	3	30
Carbon disulfide	ND		10.0	9.10		ug/L		91	57 - 147	3	30
Carbon tetrachloride	ND		10.0	9.37		ug/L		94	59 - 129	4	30
Chlorobenzene	ND		10.0	9.51		ug/L		95	80 - 110	9	30
Chloroethane	ND		10.0	8.02		ug/L		80	21 - 165	2	30
Chloroform	ND		10.0	10.1		ug/L		101	76 - 118	9	30
Chloromethane	ND		10.0	8.70		ug/L		87	33 - 132	1	30
1,1-Dichloroethane	ND		10.0	10.0		ug/L		100	79 - 116	5	30

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-4593-4 MSD
Matrix: Water
Analysis Batch: 19305

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	% Rec. Limits	RPD	RPD Limit
1,2-Dichloroethane	ND		10.0	9.70		ug/L		97	68 - 129	1	30
1,1-Dichloroethene	ND		10.0	10.2		ug/L		102	74 - 135	0	30
1,2-Dichloropropane	ND		10.0	9.70		ug/L		97	78 - 115	2	30
cis-1,3-Dichloropropene	ND		10.0	9.08		ug/L		91	51 - 110	13	30
trans-1,3-Dichloropropene	ND		10.0	9.07		ug/L		91	46 - 116	2	30
Ethylbenzene	ND		10.0	9.74		ug/L		97	75 - 116	11	30
2-Hexanone	ND		20.0	21.5		ug/L		108	47 - 139	1	30
Methylene Chloride	ND		10.0	8.85		ug/L		89	63 - 128	18	30
4-Methyl-2-pentanone (MIBK)	ND		20.0	19.9		ug/L		100	56 - 131	1	30
Styrene	ND		10.0	9.74		ug/L		97	71 - 117	9	30
1,1,2,2-Tetrachloroethane	ND		10.0	8.68		ug/L		87	63 - 122	4	30
Tetrachloroethene	1.4		10.0	10.3		ug/L		89	70 - 117	2	30
Toluene	ND		10.0	9.26		ug/L		93	78 - 114	4	30
Trichloroethene	ND		10.0	9.70		ug/L		93	66 - 120	10	30
Vinyl chloride	ND		10.0	9.07		ug/L		91	49 - 130	4	30
Xylenes, Total	ND		30.0	29.0		ug/L		97	76 - 116	9	30
1,1,1-Trichloroethane	ND		10.0	9.78		ug/L		98	68 - 121	0	30
1,1,2-Trichloroethane	ND		10.0	9.78		ug/L		98	75 - 115	10	30
Cyclohexane	ND		10.0	8.64		ug/L		86	49 - 123	20	30
1,2-Dibromo-3-Chloropropane	ND		10.0	7.85		ug/L		79	32 - 139	1	30
Ethylene Dibromide	ND		10.0	9.46		ug/L		95	74 - 113	6	30
Dichlorodifluoromethane	ND		10.0	6.61		ug/L		66	17 - 128	8	30
cis-1,2-Dichloroethene	ND		10.0	10.1		ug/L		95	70 - 120	5	30
trans-1,2-Dichloroethene	ND		10.0	9.54		ug/L		95	80 - 119	0	30
Isopropylbenzene	ND		10.0	9.58		ug/L		96	68 - 116	7	30
Methyl acetate	ND		10.0	ND		ug/L		86	47 - 130	3	30
Methyl tert-butyl ether	ND		10.0	9.38		ug/L		94	46 - 144	7	30
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10.0	10.1		ug/L		101	70 - 152	20	30
1,2,4-Trichlorobenzene	ND		10.0	7.70		ug/L		77	38 - 138	17	30
1,2-Dichlorobenzene	ND		10.0	9.14		ug/L		91	75 - 111	2	30
1,3-Dichlorobenzene	ND		10.0	8.66		ug/L		87	73 - 110	3	30
1,4-Dichlorobenzene	ND		10.0	8.62		ug/L		86	75 - 110	3	30
Trichlorofluoromethane	ND		10.0	5.75	F	ug/L		58	46 - 157	44	30
Chlorodibromomethane	ND		10.0	9.57		ug/L		96	56 - 118	6	30
Methylcyclohexane	ND		10.0	8.31		ug/L		83	49 - 127	23	30
m-Xylene & p-Xylene	ND		20.0	19.0		ug/L		95	75 - 117	7	30
o-Xylene	ND		10.0	10.0		ug/L		100	76 - 116	13	30

Surrogate	*MSD % Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*63 - 129*
4-Bromofluorobenzene (Surr)	*125*	*X*	*66 - 117*
Toluene-d8 (Surr)	*106*		*74 - 115*
Dibromofluoromethane (Surr)	*102*		*75 - 121*

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-19349/5
Matrix: Water
Analysis Batch: 19349

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/17/11 11:08	1
Benzene	ND		1.0		ug/L			10/17/11 11:08	1
Dichlorobromomethane	ND		1.0		ug/L			10/17/11 11:08	1
Bromoform	ND		1.0		ug/L			10/17/11 11:08	1
Bromomethane	ND		1.0		ug/L			10/17/11 11:08	1
2-Butanone (MEK)	ND		10		ug/L			10/17/11 11:08	1
Carbon disulfide	ND		1.0		ug/L			10/17/11 11:08	1
Carbon tetrachloride	ND		1.0		ug/L			10/17/11 11:08	1
Chlorobenzene	ND		1.0		ug/L			10/17/11 11:08	1
Chloroethane	ND		1.0		ug/L			10/17/11 11:08	1
Chloroform	ND		1.0		ug/L			10/17/11 11:08	1
Chloromethane	ND		1.0		ug/L			10/17/11 11:08	1
1,1-Dichloroethane	ND		1.0		ug/L			10/17/11 11:08	1
1,2-Dichloroethane	ND		1.0		ug/L			10/17/11 11:08	1
1,1-Dichloroethene	ND		1.0		ug/L			10/17/11 11:08	1
1,2-Dichloropropane	ND		1.0		ug/L			10/17/11 11:08	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/17/11 11:08	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/17/11 11:08	1
Ethylbenzene	ND		1.0		ug/L			10/17/11 11:08	1
2-Hexanone	ND		10		ug/L			10/17/11 11:08	1
Methylene Chloride	ND		1.0		ug/L			10/17/11 11:08	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/17/11 11:08	1
Styrene	ND		1.0		ug/L			10/17/11 11:08	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/17/11 11:08	1
Tetrachloroethene	ND		1.0		ug/L			10/17/11 11:08	1
Toluene	ND		1.0		ug/L			10/17/11 11:08	1
Trichloroethene	ND		1.0		ug/L			10/17/11 11:08	1
Vinyl chloride	ND		1.0		ug/L			10/17/11 11:08	1
Xylenes, Total	ND		2.0		ug/L			10/17/11 11:08	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/17/11 11:08	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/17/11 11:08	1
Cyclohexane	ND		1.0		ug/L			10/17/11 11:08	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/17/11 11:08	1
Ethylene Dibromide	ND		1.0		ug/L			10/17/11 11:08	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/17/11 11:08	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/17/11 11:08	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/17/11 11:08	1
Isopropylbenzene	ND		1.0		ug/L			10/17/11 11:08	1
Methyl acetate	ND		10		ug/L			10/17/11 11:08	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/17/11 11:08	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/17/11 11:08	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/17/11 11:08	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/17/11 11:08	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/17/11 11:08	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/17/11 11:08	1
Trichlorofluoromethane	ND		1.0		ug/L			10/17/11 11:08	1
Chlorodibromomethane	ND		1.0		ug/L			10/17/11 11:08	1
Methylcyclohexane	ND		1.0		ug/L			10/17/11 11:08	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-19349/5
Matrix: Water
Analysis Batch: 19349

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB % Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		63 - 129		10/17/11 11:08	1
4-Bromofluorobenzene (Surr)	102		66 - 117		10/17/11 11:08	1
Toluene-d8 (Surr)	102		74 - 115		10/17/11 11:08	1
Dibromofluoromethane (Surr)	106		75 - 121		10/17/11 11:08	1

Lab Sample ID: LCS 240-19349/4
Matrix: Water
Analysis Batch: 19349

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Acetone	20.0	18.3		ug/L		92	43 - 136
Benzene	10.0	9.71		ug/L		97	83 - 112
Dichlorobromomethane	10.0	9.75		ug/L		98	72 - 121
Bromoform	10.0	11.7		ug/L		117	40 - 131
Bromomethane	10.0	7.67		ug/L		77	11 - 185
2-Butanone (MEK)	20.0	19.2		ug/L		96	60 - 126
Carbon disulfide	10.0	9.14		ug/L		91	62 - 142
Carbon tetrachloride	10.0	9.86		ug/L		99	66 - 128
Chlorobenzene	10.0	9.70		ug/L		97	85 - 110
Chloroethane	10.0	8.30		ug/L		83	25 - 153
Chloroform	10.0	9.86		ug/L		99	79 - 117
Chloromethane	10.0	8.22		ug/L		82	44 - 126
1,1-Dichloroethane	10.0	10.2		ug/L		102	82 - 115
1,2-Dichloroethane	10.0	9.49		ug/L		95	71 - 127
1,1-Dichloroethene	10.0	9.37		ug/L		94	78 - 131
1,2-Dichloropropane	10.0	10.3		ug/L		103	81 - 115
cis-1,3-Dichloropropene	10.0	9.63		ug/L		96	61 - 115
trans-1,3-Dichloropropene	10.0	10.2		ug/L		102	58 - 117
Ethylbenzene	10.0	9.27		ug/L		93	83 - 112
2-Hexanone	20.0	21.9		ug/L		110	55 - 133
Methylene Chloride	10.0	9.06		ug/L		91	66 - 131
4-Methyl-2-pentanone (MIBK)	20.0	21.1		ug/L		106	63 - 128
Styrene	10.0	9.98		ug/L		100	79 - 114
1,1,2,2-Tetrachloroethane	10.0	9.47		ug/L		95	68 - 118
Tetrachloroethene	10.0	9.29		ug/L		93	79 - 114
Toluene	10.0	9.53		ug/L		95	84 - 111
Trichloroethene	10.0	9.01		ug/L		90	76 - 117
Vinyl chloride	10.0	8.10		ug/L		81	53 - 127
Xylenes, Total	30.0	28.7		ug/L		96	83 - 112
1,1,1-Trichloroethane	10.0	9.68		ug/L		97	74 - 118
1,1,2-Trichloroethane	10.0	10.1		ug/L		101	80 - 112
Cyclohexane	10.0	8.71		ug/L		87	54 - 121
1,2-Dibromo-3-Chloropropane	10.0	9.03		ug/L		90	42 - 136
Ethylene Dibromide	10.0	9.14		ug/L		91	79 - 113
Dichlorodifluoromethane	10.0	6.65		ug/L		67	19 - 129
cis-1,2-Dichloroethene	10.0	9.75		ug/L		98	80 - 113
trans-1,2-Dichloroethene	10.0	9.28		ug/L		93	83 - 117
Isopropylbenzene	10.0	9.77		ug/L		98	75 - 114
Methyl acetate	10.0	ND		ug/L		97	58 - 131

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-19349/4
Matrix: Water
Analysis Batch: 19349

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Methyl tert-butyl ether	10.0	9.97		ug/L		100	52 - 144
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	9.69		ug/L		97	74 - 151
1,2,4-Trichlorobenzene	10.0	8.75		ug/L		88	48 - 135
1,2-Dichlorobenzene	10.0	10.1		ug/L		101	81 - 110
1,3-Dichlorobenzene	10.0	9.44		ug/L		94	80 - 110
1,4-Dichlorobenzene	10.0	9.78		ug/L		98	82 - 110
Trichlorofluoromethane	10.0	8.40		ug/L		84	49 - 157
Chlorodibromomethane	10.0	10.2		ug/L		102	64 - 119
Methylcyclohexane	10.0	8.66		ug/L		87	56 - 127
m-Xylene & p-Xylene	20.0	18.9		ug/L		95	83 - 113
o-Xylene	10.0	9.82		ug/L		98	83 - 113

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*63 - 129*
4-Bromofluorobenzene (Surr)	*114*		*66 - 117*
Toluene-d8 (Surr)	*106*		*74 - 115*
Dibromofluoromethane (Surr)	*102*		*75 - 121*

Lab Sample ID: MB 240-21450/11
Matrix: Water
Analysis Batch: 21450

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			11/01/11 15:51	1
Benzene	ND		1.0		ug/L			11/01/11 15:51	1
Dichlorobromomethane	ND		1.0		ug/L			11/01/11 15:51	1
Bromoform	ND		1.0		ug/L			11/01/11 15:51	1
Bromomethane	ND		1.0		ug/L			11/01/11 15:51	1
2-Butanone (MEK)	ND		10		ug/L			11/01/11 15:51	1
Carbon disulfide	ND		1.0		ug/L			11/01/11 15:51	1
Carbon tetrachloride	ND		1.0		ug/L			11/01/11 15:51	1
Chlorobenzene	ND		1.0		ug/L			11/01/11 15:51	1
Chloroethane	ND		1.0		ug/L			11/01/11 15:51	1
Chloroform	ND		1.0		ug/L			11/01/11 15:51	1
Chloromethane	ND		1.0		ug/L			11/01/11 15:51	1
1,1-Dichloroethane	ND		1.0		ug/L			11/01/11 15:51	1
1,2-Dichloroethane	ND		1.0		ug/L			11/01/11 15:51	1
1,1-Dichloroethene	ND		1.0		ug/L			11/01/11 15:51	1
1,2-Dichloropropane	ND		1.0		ug/L			11/01/11 15:51	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			11/01/11 15:51	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			11/01/11 15:51	1
Ethylbenzene	ND		1.0		ug/L			11/01/11 15:51	1
2-Hexanone	ND		10		ug/L			11/01/11 15:51	1
Methylene Chloride	ND		1.0		ug/L			11/01/11 15:51	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			11/01/11 15:51	1
Styrene	ND		1.0		ug/L			11/01/11 15:51	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			11/01/11 15:51	1
Tetrachloroethene	ND		1.0		ug/L			11/01/11 15:51	1
Toluene	ND		1.0		ug/L			11/01/11 15:51	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-21450/11
Matrix: Water
Analysis Batch: 21450

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	ND		1.0		ug/L			11/01/11 15:51	1
Vinyl chloride	ND		1.0		ug/L			11/01/11 15:51	1
Xylenes, Total	ND		2.0		ug/L			11/01/11 15:51	1
1,1,1-Trichloroethane	ND		1.0		ug/L			11/01/11 15:51	1
1,1,2-Trichloroethane	ND		1.0		ug/L			11/01/11 15:51	1
Cyclohexane	ND		1.0		ug/L			11/01/11 15:51	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			11/01/11 15:51	1
Ethylene Dibromide	ND		1.0		ug/L			11/01/11 15:51	1
Dichlorodifluoromethane	ND		1.0		ug/L			11/01/11 15:51	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			11/01/11 15:51	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			11/01/11 15:51	1
Isopropylbenzene	ND		1.0		ug/L			11/01/11 15:51	1
Methyl acetate	ND		10		ug/L			11/01/11 15:51	1
Methyl tert-butyl ether	ND		5.0		ug/L			11/01/11 15:51	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			11/01/11 15:51	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			11/01/11 15:51	1
1,2-Dichlorobenzene	ND		1.0		ug/L			11/01/11 15:51	1
1,3-Dichlorobenzene	ND		1.0		ug/L			11/01/11 15:51	1
1,4-Dichlorobenzene	ND		1.0		ug/L			11/01/11 15:51	1
Trichlorofluoromethane	ND		1.0		ug/L			11/01/11 15:51	1
Chlorodibromomethane	ND		1.0		ug/L			11/01/11 15:51	1
Methylcyclohexane	ND		1.0		ug/L			11/01/11 15:51	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*63 - 129*		*11/01/11 15:51*	*1*
4-Bromofluorobenzene (Surr)	*100*		*66 - 117*		*11/01/11 15:51*	*1*
Toluene-d8 (Surr)	*102*		*74 - 115*		*11/01/11 15:51*	*1*
Dibromofluoromethane (Surr)	*96*		*75 - 121*		*11/01/11 15:51*	*1*

Lab Sample ID: LCS 240-21450/10
Matrix: Water
Analysis Batch: 21450

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Acetone	20.0	18.3		ug/L		92	43 - 136
Benzene	10.0	9.59		ug/L		96	83 - 112
Dichlorobromomethane	10.0	9.35		ug/L		94	72 - 121
Bromoform	10.0	9.04		ug/L		90	40 - 131
Bromomethane	10.0	9.13		ug/L		91	11 - 185
2-Butanone (MEK)	20.0	17.7		ug/L		89	60 - 126
Carbon disulfide	10.0	10.0		ug/L		100	62 - 142
Carbon tetrachloride	10.0	8.53		ug/L		85	66 - 128
Chlorobenzene	10.0	9.38		ug/L		94	85 - 110
Chloroethane	10.0	9.24		ug/L		92	25 - 153
Chloroform	10.0	10.0		ug/L		100	79 - 117
Chloromethane	10.0	9.15		ug/L		92	44 - 126
1,1-Dichloroethane	10.0	10.0		ug/L		100	82 - 115
1,2-Dichloroethane	10.0	9.38		ug/L		94	71 - 127
1,1-Dichloroethene	10.0	10.9		ug/L		109	78 - 131

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-21450/10
Matrix: Water
Analysis Batch: 21450

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
1,2-Dichloropropane	10.0	9.80		ug/L		98	81 - 115
cis-1,3-Dichloropropene	10.0	7.73		ug/L		77	61 - 115
trans-1,3-Dichloropropene	10.0	7.84		ug/L		78	58 - 117
Ethylbenzene	10.0	9.41		ug/L		94	83 - 112
2-Hexanone	20.0	19.2		ug/L		96	55 - 133
Methylene Chloride	10.0	9.62		ug/L		96	66 - 131
4-Methyl-2-pentanone (MIBK)	20.0	19.6		ug/L		98	63 - 128
Styrene	10.0	9.52		ug/L		95	79 - 114
1,1,2,2-Tetrachloroethane	10.0	9.49		ug/L		95	68 - 118
Tetrachloroethene	10.0	9.40		ug/L		94	79 - 114
Toluene	10.0	9.23		ug/L		92	84 - 111
Trichloroethene	10.0	9.36		ug/L		94	76 - 117
Vinyl chloride	10.0	8.67		ug/L		87	53 - 127
Xylenes, Total	30.0	28.6		ug/L		95	83 - 112
1,1,1-Trichloroethane	10.0	9.88		ug/L		99	74 - 118
1,1,2-Trichloroethane	10.0	9.69		ug/L		97	80 - 112
Cyclohexane	10.0	10.1		ug/L		101	54 - 121
1,2-Dibromo-3-Chloropropane	10.0	10.1		ug/L		101	42 - 136
Ethylene Dibromide	10.0	9.70		ug/L		97	79 - 113
Dichlorodifluoromethane	10.0	6.79		ug/L		68	19 - 129
cis-1,2-Dichloroethene	10.0	9.71		ug/L		97	80 - 113
trans-1,2-Dichloroethene	10.0	9.85		ug/L		99	83 - 117
Isopropylbenzene	10.0	9.65		ug/L		97	75 - 114
Methyl acetate	10.0	ND		ug/L		94	58 - 131
Methyl tert-butyl ether	10.0	9.88		ug/L		99	52 - 144
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	11.7		ug/L		117	74 - 151
1,2,4-Trichlorobenzene	10.0	9.66		ug/L		97	48 - 135
1,2-Dichlorobenzene	10.0	9.40		ug/L		94	81 - 110
1,3-Dichlorobenzene	10.0	9.37		ug/L		94	80 - 110
1,4-Dichlorobenzene	10.0	9.32		ug/L		93	82 - 110
Trichlorofluoromethane	10.0	10.4		ug/L		104	49 - 157
Chlorodibromomethane	10.0	7.93		ug/L		79	64 - 119
Methylcyclohexane	10.0	10.2		ug/L		102	56 - 127
m-Xylene & p-Xylene	20.0	19.0		ug/L		95	83 - 113
o-Xylene	10.0	9.57		ug/L		96	83 - 113

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*63 - 129*
4-Bromofluorobenzene (Surr)	*108*		*66 - 117*
Toluene-d8 (Surr)	*106*		*74 - 115*
Dibromofluoromethane (Surr)	*106*		*75 - 121*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-19036/4
Matrix: Water
Analysis Batch: 19036

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.50		ug/L			10/13/11 15:34	1
Ethane	ND		0.50		ug/L			10/13/11 15:34	1
Ethylene	ND		0.50		ug/L			10/13/11 15:34	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*92*		*10 - 168*		*10/13/11 15:34*	*1*

Lab Sample ID: LCS 240-19036/3
Matrix: Water
Analysis Batch: 19036

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Methane	116	108		ug/L		93	75 - 114
Ethane	218	211		ug/L		97	71 - 123
Ethylene	203	179		ug/L		88	72 - 126

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*93*		*10 - 168*

Lab Sample ID: 240-4593-4 MS
Matrix: Water
Analysis Batch: 19036

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	% Rec. Limits
Methane	ND		116	101		ug/L		88	75 - 114
Ethane	ND		218	200		ug/L		92	71 - 123
Ethylene	ND		203	175		ug/L		86	72 - 126

Surrogate	*MS % Recovery*	*MS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*93*		*10 - 168*

Lab Sample ID: 240-4593-4 MSD
Matrix: Water
Analysis Batch: 19036

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	% Rec. Limits	RPD	RPD Limit
Methane	ND		116	102		ug/L		88	75 - 114	1	30
Ethane	ND		218	200		ug/L		92	71 - 123	0	30
Ethylene	ND		203	172		ug/L		85	72 - 126	2	30

Surrogate	*MSD % Recovery*	*MSD Qualifier*	*Limits*
1,1,1-Trifluoroethane	*92*		*10 - 168*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 240-18265/29
Matrix: Water
Analysis Batch: 18265

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.10		mg/L			10/07/11 02:52	1

Lab Sample ID: MB 240-18265/53
Matrix: Water
Analysis Batch: 18265

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.10		mg/L			10/07/11 09:49	1

Lab Sample ID: LCS 240-18265/30
Matrix: Water
Analysis Batch: 18265

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Nitrate as N	2.50	2.41		mg/L		96	90 - 110

Lab Sample ID: LCS 240-18265/54
Matrix: Water
Analysis Batch: 18265

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Nitrate as N	2.50	2.42		mg/L		97	90 - 110

Lab Sample ID: 240-4593-2 MS
Matrix: Water
Analysis Batch: 18265

Client Sample ID: MW1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	% Rec. Limits
Nitrate as N	0.15		2.50	2.71		mg/L		102	80 - 120

Lab Sample ID: 240-4593-4 MS
Matrix: Water
Analysis Batch: 18265

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	% Rec. Limits
Nitrate as N	0.88		2.50	3.48		mg/L		104	80 - 120

Lab Sample ID: 240-4593-4 MSD
Matrix: Water
Analysis Batch: 18265

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	% Rec. Limits	RPD	RPD Limit
Nitrate as N	0.88		2.50	3.47		mg/L		104	80 - 120	0	20

Method: 310.1 - Alkalinity

Lab Sample ID: MB 240-18658/28
Matrix: Water
Analysis Batch: 18658

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	ND		5.0		mg/L			10/10/11 14:56	1

Lab Sample ID: LCS 240-18658/27
Matrix: Water
Analysis Batch: 18658

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Alkalinity	102	99.0		mg/L		97	90 - 127

Lab Sample ID: 240-4593-4 MS
Matrix: Water
Analysis Batch: 18658

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	% Rec. Limits
Alkalinity	120		500	525		mg/L		82	10 - 160

Lab Sample ID: 240-4593-4 MSD
Matrix: Water
Analysis Batch: 18658

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	% Rec. Limits	RPD	RPD Limit
Alkalinity	120		500	532		mg/L		83	10 - 160	1	24

Method: 325.2 - Chloride

Lab Sample ID: MB 240-18694/49
Matrix: Water
Analysis Batch: 18694

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0		mg/L			10/11/11 11:44	1

Lab Sample ID: LCS 240-18694/50
Matrix: Water
Analysis Batch: 18694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Chloride	44.7	42.9		mg/L		96	88 - 114

Lab Sample ID: 240-4593-4 MS
Matrix: Water
Analysis Batch: 18694

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	% Rec. Limits
Chloride	3.3		25.0	27.8		mg/L		98	52 - 143

Method: 325.2 - Chloride (Continued)

Lab Sample ID: 240-4593-4 MSD — **Client Sample ID: OW5**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 18694

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	% Rec. Limits	RPD	RPD Limit
Chloride	3.3		25.0	33.6		mg/L		121	52 - 143	19	20

Method: 375.4 - Sulfate

Lab Sample ID: MB 240-19585/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 19585

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0		mg/L			10/18/11 10:00	1

Lab Sample ID: LCS 240-19585/34 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 19585

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Sulfate	29.5	28.4		mg/L		96	80 - 112

Lab Sample ID: 240-4593-4 MS — **Client Sample ID: OW5**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 19585

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	% Rec. Limits
Sulfate	22		25.0	50.8		mg/L		114	22 - 151

Lab Sample ID: 240-4593-4 MSD — **Client Sample ID: OW5**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 19585

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	% Rec. Limits	RPD	RPD Limit
Sulfate	22		25.0	51.0		mg/L		114	22 - 151	0	20

Method: 376.1 - Sulfide

Lab Sample ID: MB 240-18638/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 18638

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1

Lab Sample ID: LCS 240-18638/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 18638

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Sulfide	16.5	16.4		mg/L		99	79 - 110

Method: 376.1 - Sulfide (Continued)

Lab Sample ID: 240-4593-4 MS
Matrix: Water
Analysis Batch: 18638

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	% Rec. Limits
Sulfide	2.8		16.5	23.6	F	mg/L		126	75 - 110

Lab Sample ID: 240-4593-4 MSD
Matrix: Water
Analysis Batch: 18638

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	% Rec. Limits	RPD	RPD Limit
Sulfide	2.8		16.5	23.4	F	mg/L		125	75 - 110	1	20

Method: 415.1 - TOC

Lab Sample ID: MB 240-19004/3
Matrix: Water
Analysis Batch: 19004

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0		mg/L			10/13/11 08:11	1

Lab Sample ID: LCS 240-19004/4
Matrix: Water
Analysis Batch: 19004

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Total Organic Carbon	29.9	29.6		mg/L		99	88 - 115

Lab Sample ID: 240-4593-4 MS
Matrix: Water
Analysis Batch: 19004

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	% Rec. Limits
Total Organic Carbon	ND		25.0	26.2		mg/L		101	72 - 136

Lab Sample ID: 240-4593-4 MSD
Matrix: Water
Analysis Batch: 19004

Client Sample ID: OW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	% Rec. Limits	RPD	RPD Limit
Total Organic Carbon	ND		25.0	26.7		mg/L		103	72 - 136	2	20

Lab Sample ID: MB 240-19276/3
Matrix: Water
Analysis Batch: 19276

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0		mg/L			10/14/11 14:44	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Method: 415.1 - TOC (Continued)

Lab Sample ID: LCS 240-19276/4
Matrix: Water
Analysis Batch: 19276

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	% Rec. Limits
Total Organic Carbon	29.9	29.6		mg/L		99	88 - 115

QC Association Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

GC/MS VOA

Analysis Batch: 19305

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4593-1	OW8	Total/NA	Water	8260B	
240-4593-2	MW1	Total/NA	Water	8260B	
240-4593-4	OW5	Total/NA	Water	8260B	
240-4593-4 MS	OW5	Total/NA	Water	8260B	
240-4593-4 MSD	OW5	Total/NA	Water	8260B	
240-4593-6	OW13R	Total/NA	Water	8260B	
240-4593-7	DUP1	Total/NA	Water	8260B	
240-4593-8	TB2	Total/NA	Water	8260B	
LCS 240-19305/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-19305/5	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 19349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4593-5	OW6	Total/NA	Water	8260B	
LCS 240-19349/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-19349/5	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 21450

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4593-3	FB2	Total/NA	Water	8260B	
LCS 240-21450/10	Lab Control Sample	Total/NA	Water	8260B	
MB 240-21450/11	Method Blank	Total/NA	Water	8260B	

GC VOA

Analysis Batch: 19036

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4593-1	OW8	Total/NA	Water	RSK-175	
240-4593-2	MW1	Total/NA	Water	RSK-175	
240-4593-4	OW5	Total/NA	Water	RSK-175	
240-4593-4 MS	OW5	Total/NA	Water	RSK-175	
240-4593-4 MSD	OW5	Total/NA	Water	RSK-175	
240-4593-5	OW6	Total/NA	Water	RSK-175	
240-4593-6	OW13R	Total/NA	Water	RSK-175	
240-4593-7	DUP1	Total/NA	Water	RSK-175	
LCS 240-19036/3	Lab Control Sample	Total/NA	Water	RSK-175	
MB 240-19036/4	Method Blank	Total/NA	Water	RSK-175	

General Chemistry

Analysis Batch: 18265

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4593-1	OW8	Total/NA	Water	300.0	
240-4593-2	MW1	Total/NA	Water	300.0	
240-4593-2 MS	MW1	Total/NA	Water	300.0	
240-4593-4	OW5	Total/NA	Water	300.0	
240-4593-4 MS	OW5	Total/NA	Water	300.0	
240-4593-4 MSD	OW5	Total/NA	Water	300.0	
240-4593-5	OW6	Total/NA	Water	300.0	
240-4593-6	OW13R	Total/NA	Water	300.0	
240-4593-7	DUP1	Total/NA	Water	300.0	
LCS 240-18265/30	Lab Control Sample	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 18265 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-18265/54	Lab Control Sample	Total/NA	Water	300.0	
MB 240-18265/29	Method Blank	Total/NA	Water	300.0	
MB 240-18265/53	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 18638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4593-1	OW8	Total/NA	Water	376.1	
240-4593-2	MW1	Total/NA	Water	376.1	
240-4593-4	OW5	Total/NA	Water	376.1	
240-4593-4 MS	OW5	Total/NA	Water	376.1	
240-4593-4 MSD	OW5	Total/NA	Water	376.1	
240-4593-5	OW6	Total/NA	Water	376.1	
240-4593-6	OW13R	Total/NA	Water	376.1	
240-4593-7	DUP1	Total/NA	Water	376.1	
LCS 240-18638/2	Lab Control Sample	Total/NA	Water	376.1	
MB 240-18638/1	Method Blank	Total/NA	Water	376.1	

Analysis Batch: 18658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4593-1	OW8	Total/NA	Water	310.1	
240-4593-2	MW1	Total/NA	Water	310.1	
240-4593-4	OW5	Total/NA	Water	310.1	
240-4593-4 MS	OW5	Total/NA	Water	310.1	
240-4593-4 MSD	OW5	Total/NA	Water	310.1	
240-4593-5	OW6	Total/NA	Water	310.1	
240-4593-6	OW13R	Total/NA	Water	310.1	
240-4593-7	DUP1	Total/NA	Water	310.1	
LCS 240-18658/27	Lab Control Sample	Total/NA	Water	310.1	
MB 240-18658/28	Method Blank	Total/NA	Water	310.1	

Analysis Batch: 18694

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4593-1	OW8	Total/NA	Water	325.2	
240-4593-2	MW1	Total/NA	Water	325.2	
240-4593-4	OW5	Total/NA	Water	325.2	
240-4593-4 MS	OW5	Total/NA	Water	325.2	
240-4593-4 MSD	OW5	Total/NA	Water	325.2	
240-4593-5	OW6	Total/NA	Water	325.2	
240-4593-6	OW13R	Total/NA	Water	325.2	
240-4593-7	DUP1	Total/NA	Water	325.2	
LCS 240-18694/50	Lab Control Sample	Total/NA	Water	325.2	
MB 240-18694/49	Method Blank	Total/NA	Water	325.2	

Analysis Batch: 19004

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4593-4	OW5	Total/NA	Water	415.1	
240-4593-4 MS	OW5	Total/NA	Water	415.1	
240-4593-4 MSD	OW5	Total/NA	Water	415.1	
240-4593-5	OW6	Total/NA	Water	415.1	
240-4593-6	OW13R	Total/NA	Water	415.1	
240-4593-7	DUP1	Total/NA	Water	415.1	
LCS 240-19004/4	Lab Control Sample	Total/NA	Water	415.1	

General Chemistry (Continued)

Analysis Batch: 19004 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-19004/3	Method Blank	Total/NA	Water	415.1	

Analysis Batch: 19276

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4593-1	OW8	Total/NA	Water	415.1	
240-4593-2	MW1	Total/NA	Water	415.1	
LCS 240-19276/4	Lab Control Sample	Total/NA	Water	415.1	
MB 240-19276/3	Method Blank	Total/NA	Water	415.1	

Analysis Batch: 19585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4593-1	OW8	Total/NA	Water	375.4	
240-4593-2	MW1	Total/NA	Water	375.4	
240-4593-4	OW5	Total/NA	Water	375.4	
240-4593-4 MS	OW5	Total/NA	Water	375.4	
240-4593-4 MSD	OW5	Total/NA	Water	375.4	
240-4593-5	OW6	Total/NA	Water	375.4	
240-4593-6	OW13R	Total/NA	Water	375.4	
240-4593-7	DUP1	Total/NA	Water	375.4	
LCS 240-19585/34	Lab Control Sample	Total/NA	Water	375.4	
MB 240-19585/13	Method Blank	Total/NA	Water	375.4	

Lab Chronicle

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: OW8

Date Collected: 10/05/11 09:35
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19305	10/16/11 16:09	LE	TAL NC
Total/NA	Analysis	RSK-175		1	19036	10/13/11 16:34	DH	TAL NC
Total/NA	Analysis	300.0		1	18265	10/07/11 07:48	LG	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	310.1		1	18658	10/10/11 16:00	JB	TAL NC
Total/NA	Analysis	325.2		1	18694	10/11/11 11:44	BR	TAL NC
Total/NA	Analysis	415.1		1	19276	10/14/11 17:06	TH	TAL NC
Total/NA	Analysis	375.4		1	19585	10/18/11 10:27	JK	TAL NC

Client Sample ID: MW1

Date Collected: 10/05/11 10:25
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19305	10/16/11 16:31	LE	TAL NC
Total/NA	Analysis	RSK-175		1	19036	10/13/11 17:07	DH	TAL NC
Total/NA	Analysis	300.0		1	18265	10/07/11 08:05	LG	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	310.1		1	18658	10/10/11 16:07	JB	TAL NC
Total/NA	Analysis	325.2		1	18694	10/11/11 11:44	BR	TAL NC
Total/NA	Analysis	415.1		1	19276	10/14/11 17:17	TH	TAL NC
Total/NA	Analysis	375.4		1	19585	10/18/11 10:23	JK	TAL NC

Client Sample ID: FB2

Date Collected: 10/05/11 10:05
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	21450	11/01/11 16:14	LE	TAL NC

Client Sample ID: OW5

Date Collected: 10/05/11 11:20
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19305	10/16/11 16:54	LE	TAL NC
Total/NA	Analysis	RSK-175		1	19036	10/13/11 17:40	DH	TAL NC
Total/NA	Analysis	300.0		1	18265	10/07/11 10:24	LG	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	310.1		1	18658	10/10/11 16:25	JB	TAL NC
Total/NA	Analysis	325.2		1	18694	10/11/11 11:44	BR	TAL NC
Total/NA	Analysis	415.1		1	19004	10/13/11 08:33	TH	TAL NC

Lab Chronicle

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: OW5

Date Collected: 10/05/11 11:20
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	375.4		1	19585	10/18/11 10:23	JK	TAL NC

Client Sample ID: OW6

Date Collected: 10/05/11 12:20
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1.67	19349	10/17/11 11:30	LE	TAL NC
Total/NA	Analysis	RSK-175		1	19036	10/13/11 19:18	DH	TAL NC
Total/NA	Analysis	300.0		1	18265	10/07/11 08:57	LG	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	310.1		1	18658	10/10/11 16:14	JB	TAL NC
Total/NA	Analysis	325.2		1	18694	10/11/11 11:45	BR	TAL NC
Total/NA	Analysis	415.1		1	19004	10/13/11 09:38	TH	TAL NC
Total/NA	Analysis	375.4		1	19585	10/18/11 10:20	JK	TAL NC

Client Sample ID: OW13R

Date Collected: 10/05/11 14:15
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19305	10/16/11 18:25	LE	TAL NC
Total/NA	Analysis	RSK-175		1	19036	10/13/11 19:51	DH	TAL NC
Total/NA	Analysis	300.0		1	18265	10/07/11 11:16	LG	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	310.1		1	18658	10/10/11 17:07	JB	TAL NC
Total/NA	Analysis	325.2		1	18694	10/11/11 11:45	BR	TAL NC
Total/NA	Analysis	415.1		1	19004	10/13/11 09:49	TH	TAL NC
Total/NA	Analysis	375.4		2	19585	10/18/11 11:25	JK	TAL NC

Client Sample ID: DUP1

Date Collected: 10/05/11 00:00
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19305	10/16/11 18:47	LE	TAL NC
Total/NA	Analysis	RSK-175		1	19036	10/13/11 20:24	DH	TAL NC
Total/NA	Analysis	300.0		1	18265	10/07/11 11:51	LG	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	310.1		1	18658	10/10/11 17:16	JB	TAL NC
Total/NA	Analysis	325.2		1	18694	10/11/11 11:45	BR	TAL NC
Total/NA	Analysis	415.1		1	19004	10/13/11 10:22	TH	TAL NC

Lab Chronicle

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Client Sample ID: DUP1

Date Collected: 10/05/11 00:00
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	375.4		2	19585	10/18/11 11:25	JK	TAL NC

Client Sample ID: TB2

Date Collected: 10/05/11 00:00
Date Received: 10/06/11 09:00

Lab Sample ID: 240-4593-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19305	10/16/11 19:10	LE	TAL NC

Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4593-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica North Canton	ACLASS	DoD ELAP		ADE-1437
TestAmerica North Canton	California	NELAC	9	01144CA
TestAmerica North Canton	Connecticut	State Program	1	PH-0590
TestAmerica North Canton	Florida	NELAC	4	E87225
TestAmerica North Canton	Georgia	Georgia EPD	4	N/A
TestAmerica North Canton	Illinois	NELAC	5	200004
TestAmerica North Canton	Kansas	NELAC	7	E-10336
TestAmerica North Canton	Kentucky	State Program	4	58
TestAmerica North Canton	Minnesota	NELAC	5	039-999-348
TestAmerica North Canton	Nevada	State Program	9	OH-000482008A
TestAmerica North Canton	New Jersey	NELAC	2	OH001
TestAmerica North Canton	New York	NELAC	2	10975
TestAmerica North Canton	Ohio	OVAP	5	CL0024
TestAmerica North Canton	Pennsylvania	NELAC	3	68-00340
TestAmerica North Canton	USDA	USDA		P330-11-00328
TestAmerica North Canton	Virginia	NELAC Secondary AB	3	460175
TestAmerica North Canton	West Virginia	West Virginia DEP	3	210
TestAmerica North Canton	Wisconsin	State Program	5	999518190

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

(2) Coolers

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: ______
Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other ______

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: Cardinal Resources, LLC	Client Project Manager: Bob Jones	Site Contact: Bob Jones	Lab Contact: Nathan Pietras	COC No: 034329
Address: 1505 E. Carson St.	Telephone: 412-374-0989	Telephone:	Telephone:	1 of 1 COCs
City/State/Zip: Pittsburgh-PA 15203	Email: BJones@Cardinalres.com	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: 412 374-0989		TAT if different from below ______		Walk-in client ☐
Project Name: C+D	Method of Shipment/Carrier: FEDEX	☐ 3 weeks ☒ 2 weeks ☐ 1 week		Lab pickup ☐ Lab sampling ☐
Project Number: 104-0012-0200	Shipping/Tracking No: 8730 0905 1782 8730 0905 1793	☐ 2 days ☐ 1 day		Job/SDG No.:
PO#				

Sample Identification	Sample Date	Sample Time	Air	Aqueous	Sediment	Solid	Other	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y/N)	Composite=C/Grab=G	TLC VOCs	Methane/Ethane/Ethene	Sulfate	Sulfide	Alkalinity	Chloride	Nitrate (W)	TOC	Sample Specific Notes / Special Instructions
OW8	10-5-11	0935		X				X		X		X	X				X	X	X	X	X	X	X	X	
MW1	↓	1025		↓				X		X		X	X				X	X	X	X	X	X	X	X	
FB2	↓	1005		↓						X							X								
OW5	↓	1120		↓				X		X		X	X				X	X	X	X	X	X	X	X	
OW5 MS	↓	1120		↓				X		X		X	X				↓	↓	↓	↓	↓	↓	↓	↓	
OW5 MSD	↓	1120		↓				X		X		X	X				↓	↓	↓	↓	↓	↓	↓	↓	
OW6	↓	1220		↓				X		X		X	X				↓	↓	↓	↓	↓	↓	↓	↓	
OW13R	↓	1415		↓				X		X		X	X				↓	↓	↓	↓	↓	↓	↓	↓	
Dup 1	↓	—		↓				X		X		X	X				↓	↓	↓	↓	↓	↓	↓	↓	
TB2	Lab Prepared			↓						X							X								

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☒ Disposal By Lab ☐ Archive For ______ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
John Voegeding	Cardinal Resources	Oct 5, 2011 / 1600			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [signature]	Company: TAL	Date/Time: 9-6-11 0900

TAL 0018-1 (04/10)

TestAmerica Cooler Receipt Form/Narrative **Lot Number:**_____

North Canton Facility

Client Cardinal Resources Project C+D By: _____ (Signature)

Cooler Received on 10-6-11 Opened on 10-6-11

FedEx ☑ UPS ☐ DHL ☐ FAS ☐ Stetson ☐ Client Drop Off ☐ TestAmerica Courier ☐ Other_____

TestAmerica Cooler # _____ Multiple Coolers ☑ Foam Box ☐ Client Cooler ☐ Other_____

1. Were custody seals on the outside of the cooler(s)? Yes ☐ No ☑ Intact? Yes ☐ No ☐ NA ☑
   If YES, Quantity_____ Quantity Unsalvageable_____
   Were custody seals on the outside of cooler(s) signed and dated? Yes ☐ No ☐ NA ☑
   Were custody seals on the bottle(s)? Yes ☐ No ☑
   If YES, are there any exceptions? _____
2. Shippers' packing slip attached to the cooler(s)? Yes ☑ No ☐
3. Did custody papers accompany the sample(s)? Yes ☑ No ☐ Relinquished by client? Yes ☑ No ☐
4. Were the custody papers signed in the appropriate place? Yes ☑ No ☐
5. Packing material used: Bubble Wrap ☑ Foam ☑ None ☐ Other _____
6. Cooler temperature upon receipt _____ °C See back of form for multiple coolers/temps ☑
   METHOD: IR ☑ Other ☐ _____
   COOLANT: Wet Ice ☑ Blue Ice ☐ Dry Ice ☐ Water ☐ None ☐
7. Did all bottles arrive in good condition (Unbroken)? Yes ☑ No ☐
8. Could all bottle labels be reconciled with the COC? Yes ☑ No ☐
9. Were sample(s) at the correct pH upon receipt? Yes ☑ No ☐ NA ☐
10. Were correct bottle(s) used for the test(s) indicated? Yes ☑ No ☐
11. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☑ NA ☐
12. Sufficient quantity received to perform indicated analyses? Yes ☑ No ☐
13. Was a trip blank present in the cooler(s)? Yes ☑ No ☐ Were VOAs on the COC? Yes ☑ No ☐

Contacted PM _____ Date _____ by _____ via Verbal ☐ Voice Mail ☐ Other ☐

Concerning

14. CHAIN OF CUSTODY

The following discrepancies occurred:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in Sample Receiving to meet recommended pH level(s). *Nitric Acid Lot# 110410-HNO_3; Sulfuric Acid Lot# 110410-H_2SO_4; Sodium Hydroxide Lot# 121809-NaOH; Hydrochloric Acid Lot# 041911-HCl; Sodium Hydroxide and Zinc Acetate Lot# 100108-$(CH_3COO)_2ZN/NaOH$.* What time was preservative added to sample(s)?

Client ID	pH	Date	Initials
8	<2 7-9	10-6-11	AS
1	<2 7-9		
5	<2 <2 <2 7-9 7-9		
6	<2 7-9		
13R	<2 7-9		
DUP	<2 7-9		

TestAmerica Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH	Date	Initials

Cooler #	Temp. °C	Method	Coolant
S235	4.2	DR	ICE
241-813	3.5	T	J.

Discrepancies Cont'd:

Login Sample Receipt Checklist

Client: Cardinal Resources

Job Number: 240-4593-1

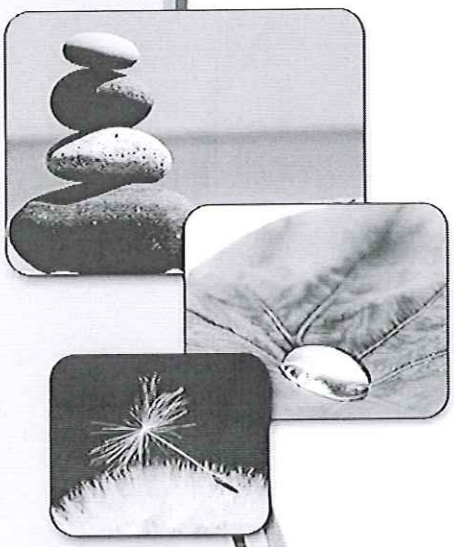
Login Number: 4593
List Number: 1
Creator: Sutek, Nick

List Source: TestAmerica North Canton

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.2/3.5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica North Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-4639-1
Client Project/Site: C & D GW Sampling

For:
Cardinal Resources
1505 E Carson Street
Suite #200
Pittsburgh, Pennsylvania 15203

Attn: Barbara Jones

Authorized for release by:
10/31/2011 10:06:33 AM

Nathan Pietras
Project Manager II
nathan.pietras@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Table of Contents

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F	RPD of the MS and MSD exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-4639-1

Laboratory: TestAmerica North Canton

Narrative

CASE NARRATIVE

Client: Cardinal Resources

Project: C & D GW Sampling

Report Number: 240-4639-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica North Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT
The samples were received on 10/07/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 0.7 C.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples SED 1 (240-4639-4), SED DUP (240-4639-5) and SED 2 (240-4639-7) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 10/14/2011.

Method(s) 8260A, 8260B: Internal standard responses were outside of acceptance limits for the following samples: SED 2 (240-4639-7), SED 2 (240-4639-7 MS), SED 2 (240-4639-7 MSD). The samples show evidence of matrix interference.

No other difficulties were encountered during the VOCs analyses.

All other quality control parameters were within the acceptance limits.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples FB3 (240-4639-1), SW1 (240-4639-2), SW DUP (240-4639-3), SW2 (240-4639-6), OW25 (240-4639-8), PUMP RINSE (240-4639-9), OW24 (240-4639-10), OW18 (240-4639-11), OW19 (240-4639-12) and TB3 (240-4639-13) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 10/18/2011.

Job ID: 240-4639-1 (Continued)

Laboratory: TestAmerica North Canton (Continued)

No difficulties were encountered during the VOCs analyses.

All quality control parameters were within the acceptance limits.

DISSOLVED GASES

Samples OW25 (240-4639-8), OW24 (240-4639-10), OW18 (240-4639-11) and OW19 (240-4639-12) were analyzed for dissolved gases in accordance with RSK_175. The samples were analyzed on 10/19/2011 and 10/20/2011.

Samples OW18 (240-4639-11)[2X] and OW19 (240-4639-12)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the dissolved gases analyses.

All other quality control parameters were within the acceptance limits.

ANIONS

Samples OW25 (240-4639-8), OW24 (240-4639-10), OW18 (240-4639-11) and OW19 (240-4639-12) were analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 10/07/2011.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

ALKALINITY

Samples OW25 (240-4639-8), OW24 (240-4639-10), OW18 (240-4639-11) and OW19 (240-4639-12) were analyzed for alkalinity in accordance with EPA Method 310.1. The samples were analyzed on 10/11/2011.

No difficulties were encountered during the alkalinity analyses.

All quality control parameters were within the acceptance limits.

CHLORIDE

Samples OW25 (240-4639-8), OW24 (240-4639-10), OW18 (240-4639-11) and OW19 (240-4639-12) were analyzed for chloride in accordance with EPA Method 325.2. The samples were analyzed on 10/11/2011.

Sample OW19 (240-4639-12)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the chloride analyses.

All quality control parameters were within the acceptance limits.

SULFATE

Samples OW25 (240-4639-8), OW24 (240-4639-10), OW18 (240-4639-11) and OW19 (240-4639-12) were analyzed for sulfate in accordance with EPA method 375.4. The samples were analyzed on 10/18/2011.

No difficulties were encountered during the sulfate analyses.

All quality control parameters were within the acceptance limits.

SULFIDE

Samples OW25 (240-4639-8), OW24 (240-4639-10), OW18 (240-4639-11) and OW19 (240-4639-12) were analyzed for sulfide in accordance with EPA Method 376.1. The samples were analyzed on 10/11/2011.

No other difficulties were encountered during the sulfide analyses.

Job ID: 240-4639-1 (Continued)

Laboratory: TestAmerica North Canton (Continued)

All other quality control parameters were within the acceptance limits.

TOTAL ORGANIC CARBON

Samples OW25 (240-4639-8), OW24 (240-4639-10), OW18 (240-4639-11) and OW19 (240-4639-12) were analyzed for total organic carbon in accordance with EPA Method 415.1. The samples were analyzed on 10/14/2011.

No difficulties were encountered during the TOC analyses.

All quality control parameters were within the acceptance limits.

PERCENT SOLIDS

Samples SED 1 (240-4639-4), SED DUP (240-4639-5) and SED 2 (240-4639-7) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 10/10/2011.

No difficulties were encountered during the % solids analyses.

All quality control parameters were within the acceptance limits.

Method Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL NC
RSK-175	Dissolved Gases (GC)	RSK	TAL NC
300.0	Anions, Ion Chromatography	MCAWW	TAL NC
310.1	Alkalinity	MCAWW	TAL NC
325.2	Chloride	MCAWW	TAL NC
375.4	Sulfate	MCAWW	TAL NC
376.1	Sulfide	MCAWW	TAL NC
415.1	TOC	MCAWW	TAL NC
Moisture	Percent Moisture	EPA	TAL NC

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-4639-1	FB3	Water	10/06/11 09:00	10/07/11 09:00
240-4639-2	SW1	Water	10/06/11 09:45	10/07/11 09:00
240-4639-3	SW DUP	Water	10/06/11 00:00	10/07/11 09:00
240-4639-4	SED 1	Solid	10/06/11 09:55	10/07/11 09:00
240-4639-5	SED DUP	Solid	10/06/11 00:00	10/07/11 09:00
240-4639-6	SW2	Water	10/06/11 10:40	10/07/11 09:00
240-4639-7	SED 2	Solid	10/06/11 10:50	10/07/11 09:00
240-4639-8	OW25	Water	10/06/11 10:45	10/07/11 09:00
240-4639-9	PUMP RINSE	Water	10/06/11 11:15	10/07/11 09:00
240-4639-10	OW24	Water	10/06/11 12:15	10/07/11 09:00
240-4639-11	OW18	Water	10/06/11 13:25	10/07/11 09:00
240-4639-12	OW19	Water	10/06/11 15:00	10/07/11 09:00
240-4639-13	TB3	Water	10/06/11 00:00	10/07/11 09:00

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: FB3

Lab Sample ID: 240-4639-1

No Detections

Client Sample ID: SW1

Lab Sample ID: 240-4639-2

No Detections

Client Sample ID: SW DUP

Lab Sample ID: 240-4639-3

No Detections

Client Sample ID: SED 1

Lab Sample ID: 240-4639-4

No Detections

Client Sample ID: SED DUP

Lab Sample ID: 240-4639-5

No Detections

Client Sample ID: SW2

Lab Sample ID: 240-4639-6

No Detections

Client Sample ID: SED 2

Lab Sample ID: 240-4639-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	13		12		ug/Kg	1	☼	8260B	Total/NA

Client Sample ID: OW25

Lab Sample ID: 240-4639-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	1.2		0.10		mg/L	1		300.0	Total/NA
Alkalinity	31		5.0		mg/L	1		310.1	Total/NA
Chloride	1.5		1.0		mg/L	1		325.2	Total/NA
Sulfate	9.3		5.0		mg/L	1		375.4	Total/NA
Sulfide	10		1.0		mg/L	1		376.1	Total/NA

Client Sample ID: PUMP RINSE

Lab Sample ID: 240-4639-9

No Detections

Client Sample ID: OW24

Lab Sample ID: 240-4639-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	0.33		0.10		mg/L	1		300.0	Total/NA
Alkalinity	120		5.0		mg/L	1		310.1	Total/NA
Chloride	3.5		1.0		mg/L	1		325.2	Total/NA
Sulfate	16		5.0		mg/L	1		375.4	Total/NA

Client Sample ID: OW18

Lab Sample ID: 240-4639-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	3.7		1.0		ug/L	1		8260B	Total/NA
Chlorobenzene	8.7		1.0		ug/L	1		8260B	Total/NA
Vinyl chloride	1.5		1.0		ug/L	1		8260B	Total/NA
1,4-Dichlorobenzene	1.6		1.0		ug/L	1		8260B	Total/NA
Methane	1000		1.0		ug/L	2		RSK-175	Total/NA

Client Sample ID: OW18 (Continued)

Lab Sample ID: 240-4639-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Alkalinity	280		5.0		mg/L	1		310.1	Total/NA
Chloride	24		1.0		mg/L	1		325.2	Total/NA
Sulfate	8.6		5.0		mg/L	1		375.4	Total/NA
Total Organic Carbon	10		1.0		mg/L	1		415.1	Total/NA

Client Sample ID: OW19

Lab Sample ID: 240-4639-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	3.0		1.0		ug/L	1		8260B	Total/NA
Chlorobenzene	8.4		1.0		ug/L	1		8260B	Total/NA
Chloroethane	1.4		1.0		ug/L	1		8260B	Total/NA
Vinyl chloride	3.3		1.0		ug/L	1		8260B	Total/NA
Dichlorodifluoromethane	1.2		1.0		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	1.6		1.0		ug/L	1		8260B	Total/NA
Methane	1800		2.5		ug/L	5		RSK-175	Total/NA
Alkalinity	290		5.0		mg/L	1		310.1	Total/NA
Chloride	110		5.0		mg/L	5		325.2	Total/NA
Sulfate	13		5.0		mg/L	1		375.4	Total/NA
Total Organic Carbon	12		1.0		mg/L	1		415.1	Total/NA

Client Sample ID: TB3

Lab Sample ID: 240-4639-13

No Detections

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: FB3
Date Collected: 10/06/11 09:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/18/11 01:50	1
Benzene	ND		1.0		ug/L			10/18/11 01:50	1
Dichlorobromomethane	ND		1.0		ug/L			10/18/11 01:50	1
Bromoform	ND		1.0		ug/L			10/18/11 01:50	1
Bromomethane	ND		1.0		ug/L			10/18/11 01:50	1
2-Butanone (MEK)	ND		10		ug/L			10/18/11 01:50	1
Carbon disulfide	ND		1.0		ug/L			10/18/11 01:50	1
Carbon tetrachloride	ND		1.0		ug/L			10/18/11 01:50	1
Chlorobenzene	ND		1.0		ug/L			10/18/11 01:50	1
Chloroethane	ND		1.0		ug/L			10/18/11 01:50	1
Chloroform	ND		1.0		ug/L			10/18/11 01:50	1
Chloromethane	ND		1.0		ug/L			10/18/11 01:50	1
1,1-Dichloroethane	ND		1.0		ug/L			10/18/11 01:50	1
1,2-Dichloroethane	ND		1.0		ug/L			10/18/11 01:50	1
1,1-Dichloroethene	ND		1.0		ug/L			10/18/11 01:50	1
1,2-Dichloropropane	ND		1.0		ug/L			10/18/11 01:50	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 01:50	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 01:50	1
Ethylbenzene	ND		1.0		ug/L			10/18/11 01:50	1
2-Hexanone	ND		10		ug/L			10/18/11 01:50	1
Methylene Chloride	ND		1.0		ug/L			10/18/11 01:50	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/18/11 01:50	1
Styrene	ND		1.0		ug/L			10/18/11 01:50	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/18/11 01:50	1
Tetrachloroethene	ND		1.0		ug/L			10/18/11 01:50	1
Toluene	ND		1.0		ug/L			10/18/11 01:50	1
Trichloroethene	ND		1.0		ug/L			10/18/11 01:50	1
Vinyl chloride	ND		1.0		ug/L			10/18/11 01:50	1
Xylenes, Total	ND		2.0		ug/L			10/18/11 01:50	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/18/11 01:50	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/18/11 01:50	1
Cyclohexane	ND		1.0		ug/L			10/18/11 01:50	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/18/11 01:50	1
Ethylene Dibromide	ND		1.0		ug/L			10/18/11 01:50	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/18/11 01:50	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 01:50	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 01:50	1
Isopropylbenzene	ND		1.0		ug/L			10/18/11 01:50	1
Methyl acetate	ND		10		ug/L			10/18/11 01:50	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/18/11 01:50	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/18/11 01:50	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/18/11 01:50	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/18/11 01:50	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/18/11 01:50	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/18/11 01:50	1
Trichlorofluoromethane	ND		1.0		ug/L			10/18/11 01:50	1
Chlorodibromomethane	ND		1.0		ug/L			10/18/11 01:50	1
Methylcyclohexane	ND		1.0		ug/L			10/18/11 01:50	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: FB3

Date Collected: 10/06/11 09:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-1
Matrix: Water

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*120*		*63 - 129*		*10/18/11 01:50*	*1*
4-Bromofluorobenzene (Surr)	*97*		*66 - 117*		*10/18/11 01:50*	*1*
Toluene-d8 (Surr)	*107*		*74 - 115*		*10/18/11 01:50*	*1*
Dibromofluoromethane (Surr)	*121*		*75 - 121*		*10/18/11 01:50*	*1*

Client Sample ID: SW1

Date Collected: 10/06/11 09:45
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/18/11 02:12	1
Benzene	ND		1.0		ug/L			10/18/11 02:12	1
Dichlorobromomethane	ND		1.0		ug/L			10/18/11 02:12	1
Bromoform	ND		1.0		ug/L			10/18/11 02:12	1
Bromomethane	ND		1.0		ug/L			10/18/11 02:12	1
2-Butanone (MEK)	ND		10		ug/L			10/18/11 02:12	1
Carbon disulfide	ND		1.0		ug/L			10/18/11 02:12	1
Carbon tetrachloride	ND		1.0		ug/L			10/18/11 02:12	1
Chlorobenzene	ND		1.0		ug/L			10/18/11 02:12	1
Chloroethane	ND		1.0		ug/L			10/18/11 02:12	1
Chloroform	ND		1.0		ug/L			10/18/11 02:12	1
Chloromethane	ND		1.0		ug/L			10/18/11 02:12	1
1,1-Dichloroethane	ND		1.0		ug/L			10/18/11 02:12	1
1,2-Dichloroethane	ND		1.0		ug/L			10/18/11 02:12	1
1,1-Dichloroethene	ND		1.0		ug/L			10/18/11 02:12	1
1,2-Dichloropropane	ND		1.0		ug/L			10/18/11 02:12	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 02:12	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 02:12	1
Ethylbenzene	ND		1.0		ug/L			10/18/11 02:12	1
2-Hexanone	ND		10		ug/L			10/18/11 02:12	1
Methylene Chloride	ND		1.0		ug/L			10/18/11 02:12	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/18/11 02:12	1
Styrene	ND		1.0		ug/L			10/18/11 02:12	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/18/11 02:12	1
Tetrachloroethene	ND		1.0		ug/L			10/18/11 02:12	1
Toluene	ND		1.0		ug/L			10/18/11 02:12	1
Trichloroethene	ND		1.0		ug/L			10/18/11 02:12	1
Vinyl chloride	ND		1.0		ug/L			10/18/11 02:12	1
Xylenes, Total	ND		2.0		ug/L			10/18/11 02:12	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/18/11 02:12	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/18/11 02:12	1
Cyclohexane	ND		1.0		ug/L			10/18/11 02:12	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/18/11 02:12	1
Ethylene Dibromide	ND		1.0		ug/L			10/18/11 02:12	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/18/11 02:12	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 02:12	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 02:12	1
Isopropylbenzene	ND		1.0		ug/L			10/18/11 02:12	1
Methyl acetate	ND		10		ug/L			10/18/11 02:12	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: SW1

Date Collected: 10/06/11 09:45
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		5.0		ug/L			10/18/11 02:12	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/18/11 02:12	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/18/11 02:12	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/18/11 02:12	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/18/11 02:12	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/18/11 02:12	1
Trichlorofluoromethane	ND		1.0		ug/L			10/18/11 02:12	1
Chlorodibromomethane	ND		1.0		ug/L			10/18/11 02:12	1
Methylcyclohexane	ND		1.0		ug/L			10/18/11 02:12	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*63 - 129*		*10/18/11 02:12*	*1*
4-Bromofluorobenzene (Surr)	*91*		*66 - 117*		*10/18/11 02:12*	*1*
Toluene-d8 (Surr)	*101*		*74 - 115*		*10/18/11 02:12*	*1*
Dibromofluoromethane (Surr)	*116*		*75 - 121*		*10/18/11 02:12*	*1*

Client Sample ID: SW DUP

Date Collected: 10/06/11 00:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/18/11 02:35	1
Benzene	ND		1.0		ug/L			10/18/11 02:35	1
Dichlorobromomethane	ND		1.0		ug/L			10/18/11 02:35	1
Bromoform	ND		1.0		ug/L			10/18/11 02:35	1
Bromomethane	ND		1.0		ug/L			10/18/11 02:35	1
2-Butanone (MEK)	ND		10		ug/L			10/18/11 02:35	1
Carbon disulfide	ND		1.0		ug/L			10/18/11 02:35	1
Carbon tetrachloride	ND		1.0		ug/L			10/18/11 02:35	1
Chlorobenzene	ND		1.0		ug/L			10/18/11 02:35	1
Chloroethane	ND		1.0		ug/L			10/18/11 02:35	1
Chloroform	ND		1.0		ug/L			10/18/11 02:35	1
Chloromethane	ND		1.0		ug/L			10/18/11 02:35	1
1,1-Dichloroethane	ND		1.0		ug/L			10/18/11 02:35	1
1,2-Dichloroethane	ND		1.0		ug/L			10/18/11 02:35	1
1,1-Dichloroethene	ND		1.0		ug/L			10/18/11 02:35	1
1,2-Dichloropropane	ND		1.0		ug/L			10/18/11 02:35	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 02:35	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 02:35	1
Ethylbenzene	ND		1.0		ug/L			10/18/11 02:35	1
2-Hexanone	ND		10		ug/L			10/18/11 02:35	1
Methylene Chloride	ND		1.0		ug/L			10/18/11 02:35	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/18/11 02:35	1
Styrene	ND		1.0		ug/L			10/18/11 02:35	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/18/11 02:35	1
Tetrachloroethene	ND		1.0		ug/L			10/18/11 02:35	1
Toluene	ND		1.0		ug/L			10/18/11 02:35	1
Trichloroethene	ND		1.0		ug/L			10/18/11 02:35	1
Vinyl chloride	ND		1.0		ug/L			10/18/11 02:35	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: SW DUP

Date Collected: 10/06/11 00:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-3

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		2.0		ug/L			10/18/11 02:35	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/18/11 02:35	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/18/11 02:35	1
Cyclohexane	ND		1.0		ug/L			10/18/11 02:35	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/18/11 02:35	1
Ethylene Dibromide	ND		1.0		ug/L			10/18/11 02:35	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/18/11 02:35	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 02:35	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 02:35	1
Isopropylbenzene	ND		1.0		ug/L			10/18/11 02:35	1
Methyl acetate	ND		10		ug/L			10/18/11 02:35	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/18/11 02:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/18/11 02:35	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/18/11 02:35	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/18/11 02:35	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/18/11 02:35	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/18/11 02:35	1
Trichlorofluoromethane	ND		1.0		ug/L			10/18/11 02:35	1
Chlorodibromomethane	ND		1.0		ug/L			10/18/11 02:35	1
Methylcyclohexane	ND		1.0		ug/L			10/18/11 02:35	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*63 - 129*		*10/18/11 02:35*	*1*
4-Bromofluorobenzene (Surr)	*96*		*66 - 117*		*10/18/11 02:35*	*1*
Toluene-d8 (Surr)	*108*		*74 - 115*		*10/18/11 02:35*	*1*
Dibromofluoromethane (Surr)	*121*		*75 - 121*		*10/18/11 02:35*	*1*

Client Sample ID: SED 1

Date Collected: 10/06/11 09:55
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-4

Matrix: Solid
Percent Solids: 58.3

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		34		ug/Kg	☼		10/14/11 23:00	1
Benzene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Dichlorobromomethane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Bromoform	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Bromomethane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
2-Butanone (MEK)	ND		34		ug/Kg	☼		10/14/11 23:00	1
Carbon disulfide	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Carbon tetrachloride	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Chlorobenzene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Chloroethane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Chloroform	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Chloromethane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
1,1-Dichloroethane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
1,2-Dichloroethane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
1,1-Dichloroethene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
1,2-Dichloropropane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
cis-1,3-Dichloropropene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: SED 1
Date Collected: 10/06/11 09:55
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-4
Matrix: Solid
Percent Solids: 58.3

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Ethylbenzene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
2-Hexanone	ND		34		ug/Kg	☼		10/14/11 23:00	1
Methylene Chloride	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
4-Methyl-2-pentanone (MIBK)	ND		34		ug/Kg	☼		10/14/11 23:00	1
Styrene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
1,1,2,2-Tetrachloroethane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Tetrachloroethene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Toluene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Trichloroethene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Vinyl chloride	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Xylenes, Total	ND		17		ug/Kg	☼		10/14/11 23:00	1
1,1,1-Trichloroethane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
1,1,2-Trichloroethane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Cyclohexane	ND		17		ug/Kg	☼		10/14/11 23:00	1
1,2-Dibromo-3-Chloropropane	ND		17		ug/Kg	☼		10/14/11 23:00	1
Ethylene Dibromide	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Dichlorodifluoromethane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
cis-1,2-Dichloroethene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
trans-1,2-Dichloroethene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Isopropylbenzene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Methyl acetate	ND		17		ug/Kg	☼		10/14/11 23:00	1
Methyl tert-butyl ether	ND		34		ug/Kg	☼		10/14/11 23:00	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
1,2,4-Trichlorobenzene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
1,2-Dichlorobenzene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
1,3-Dichlorobenzene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
1,4-Dichlorobenzene	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Trichlorofluoromethane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Chlorodibromomethane	ND		8.6		ug/Kg	☼		10/14/11 23:00	1
Methylcyclohexane	ND		17		ug/Kg	☼		10/14/11 23:00	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*76*		*58 - 123*		*10/14/11 23:00*	*1*
4-Bromofluorobenzene (Surr)	*77*		*52 - 136*		*10/14/11 23:00*	*1*
Toluene-d8 (Surr)	*85*		*67 - 125*		*10/14/11 23:00*	*1*
Dibromofluoromethane (Surr)	*77*		*37 - 132*		*10/14/11 23:00*	*1*

Client Sample ID: SED DUP
Date Collected: 10/06/11 00:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-5
Matrix: Solid
Percent Solids: 61.5

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		33		ug/Kg	☼		10/14/11 23:21	1
Benzene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Dichlorobromomethane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Bromoform	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Bromomethane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
2-Butanone (MEK)	ND		33		ug/Kg	☼		10/14/11 23:21	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: SED DUP
Date Collected: 10/06/11 00:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-5
Matrix: Solid
Percent Solids: 61.5

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon disulfide	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Carbon tetrachloride	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Chlorobenzene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Chloroethane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Chloroform	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Chloromethane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
1,1-Dichloroethane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
1,2-Dichloroethane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
1,1-Dichloroethene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
1,2-Dichloropropane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
cis-1,3-Dichloropropene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
trans-1,3-Dichloropropene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Ethylbenzene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
2-Hexanone	ND		33		ug/Kg	☼		10/14/11 23:21	1
Methylene Chloride	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
4-Methyl-2-pentanone (MIBK)	ND		33		ug/Kg	☼		10/14/11 23:21	1
Styrene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
1,1,2,2-Tetrachloroethane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Tetrachloroethene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Toluene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Trichloroethene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Vinyl chloride	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Xylenes, Total	ND		16		ug/Kg	☼		10/14/11 23:21	1
1,1,1-Trichloroethane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
1,1,2-Trichloroethane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Cyclohexane	ND		16		ug/Kg	☼		10/14/11 23:21	1
1,2-Dibromo-3-Chloropropane	ND		16		ug/Kg	☼		10/14/11 23:21	1
Ethylene Dibromide	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Dichlorodifluoromethane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
cis-1,2-Dichloroethene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
trans-1,2-Dichloroethene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Isopropylbenzene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Methyl acetate	ND		16		ug/Kg	☼		10/14/11 23:21	1
Methyl tert-butyl ether	ND		33		ug/Kg	☼		10/14/11 23:21	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
1,2,4-Trichlorobenzene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
1,2-Dichlorobenzene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
1,3-Dichlorobenzene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
1,4-Dichlorobenzene	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Trichlorofluoromethane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Chlorodibromomethane	ND		8.1		ug/Kg	☼		10/14/11 23:21	1
Methylcyclohexane	ND		16		ug/Kg	☼		10/14/11 23:21	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*77*		*58 - 123*		*10/14/11 23:21*	*1*
4-Bromofluorobenzene (Surr)	*80*		*52 - 136*		*10/14/11 23:21*	*1*
Toluene-d8 (Surr)	*86*		*67 - 125*		*10/14/11 23:21*	*1*
Dibromofluoromethane (Surr)	*76*		*37 - 132*		*10/14/11 23:21*	*1*

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: SW2
Date Collected: 10/06/11 10:40
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-6
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/18/11 02:58	1
Benzene	ND		1.0		ug/L			10/18/11 02:58	1
Dichlorobromomethane	ND		1.0		ug/L			10/18/11 02:58	1
Bromoform	ND		1.0		ug/L			10/18/11 02:58	1
Bromomethane	ND		1.0		ug/L			10/18/11 02:58	1
2-Butanone (MEK)	ND		10		ug/L			10/18/11 02:58	1
Carbon disulfide	ND		1.0		ug/L			10/18/11 02:58	1
Carbon tetrachloride	ND		1.0		ug/L			10/18/11 02:58	1
Chlorobenzene	ND		1.0		ug/L			10/18/11 02:58	1
Chloroethane	ND		1.0		ug/L			10/18/11 02:58	1
Chloroform	ND		1.0		ug/L			10/18/11 02:58	1
Chloromethane	ND		1.0		ug/L			10/18/11 02:58	1
1,1-Dichloroethane	ND		1.0		ug/L			10/18/11 02:58	1
1,2-Dichloroethane	ND		1.0		ug/L			10/18/11 02:58	1
1,1-Dichloroethene	ND		1.0		ug/L			10/18/11 02:58	1
1,2-Dichloropropane	ND		1.0		ug/L			10/18/11 02:58	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 02:58	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 02:58	1
Ethylbenzene	ND		1.0		ug/L			10/18/11 02:58	1
2-Hexanone	ND		10		ug/L			10/18/11 02:58	1
Methylene Chloride	ND		1.0		ug/L			10/18/11 02:58	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/18/11 02:58	1
Styrene	ND		1.0		ug/L			10/18/11 02:58	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/18/11 02:58	1
Tetrachloroethene	ND		1.0		ug/L			10/18/11 02:58	1
Toluene	ND		1.0		ug/L			10/18/11 02:58	1
Trichloroethene	ND		1.0		ug/L			10/18/11 02:58	1
Vinyl chloride	ND		1.0		ug/L			10/18/11 02:58	1
Xylenes, Total	ND		2.0		ug/L			10/18/11 02:58	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/18/11 02:58	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/18/11 02:58	1
Cyclohexane	ND		1.0		ug/L			10/18/11 02:58	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/18/11 02:58	1
Ethylene Dibromide	ND		1.0		ug/L			10/18/11 02:58	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/18/11 02:58	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 02:58	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 02:58	1
Isopropylbenzene	ND		1.0		ug/L			10/18/11 02:58	1
Methyl acetate	ND		10		ug/L			10/18/11 02:58	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/18/11 02:58	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/18/11 02:58	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/18/11 02:58	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/18/11 02:58	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/18/11 02:58	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/18/11 02:58	1
Trichlorofluoromethane	ND		1.0		ug/L			10/18/11 02:58	1
Chlorodibromomethane	ND		1.0		ug/L			10/18/11 02:58	1
Methylcyclohexane	ND		1.0		ug/L			10/18/11 02:58	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

BNJ 1/6/2012

Note: reminder of results qualified as UJ due to low internal std. recovery, except for meth. chloride, qualified J

Client Sample ID: SW2

Date Collected: 10/06/11 10:40
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-6
Matrix: Water

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		63 - 129		10/18/11 02:58	1
4-Bromofluorobenzene (Surr)	98		66 - 117		10/18/11 02:58	1
Toluene-d8 (Surr)	105		74 - 115		10/18/11 02:58	1
Dibromofluoromethane (Surr)	107		75 - 121		10/18/11 02:58	1

BNJ 1/6/2012 MS/MSD out of QC limits

Client Sample ID: SED 2

Date Collected: 10/06/11 10:50
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-7
Matrix: Solid
Percent Solids: 42.9

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND	UJ	47		ug/Kg	☼		10/14/11 23:43	1
Benzene	ND		12		ug/Kg	☼		10/14/11 23:43	1
Dichlorobromomethane	ND		12		ug/Kg	☼		10/14/11 23:43	1
Bromoform	ND		12		ug/Kg	☼		10/14/11 23:43	1
Bromomethane	ND		12		ug/Kg	☼		10/14/11 23:43	1
2-Butanone (MEK)	ND	UJ	47		ug/Kg	☼		10/14/11 23:43	1
Carbon disulfide	ND		12		ug/Kg	☼		10/14/11 23:43	1
Carbon tetrachloride	ND		12		ug/Kg	☼		10/14/11 23:43	1
Chlorobenzene	ND		12		ug/Kg	☼		10/14/11 23:43	1
Chloroethane	ND		12		ug/Kg	☼		10/14/11 23:43	1
Chloroform	ND		12		ug/Kg	☼		10/14/11 23:43	1
Chloromethane	ND		12		ug/Kg	☼		10/14/11 23:43	1
1,1-Dichloroethane	ND		12		ug/Kg	☼		10/14/11 23:43	1
1,2-Dichloroethane	ND		12		ug/Kg	☼		10/14/11 23:43	1
1,1-Dichloroethene	ND		12		ug/Kg	☼		10/14/11 23:43	1
1,2-Dichloropropane	ND		12		ug/Kg	☼		10/14/11 23:43	1
cis-1,3-Dichloropropene	ND		12		ug/Kg	☼		10/14/11 23:43	1
trans-1,3-Dichloropropene	ND		12		ug/Kg	☼		10/14/11 23:43	1
Ethylbenzene	ND		12		ug/Kg	☼		10/14/11 23:43	1
2-Hexanone	ND		47		ug/Kg	☼		10/14/11 23:43	1
Methylene Chloride	13	J	12		ug/Kg	☼		10/14/11 23:43	1
4-Methyl-2-pentanone (MIBK)	ND		47		ug/Kg	☼		10/14/11 23:43	1
Styrene	ND		12		ug/Kg	☼		10/14/11 23:43	1
1,1,2,2-Tetrachloroethane	ND		12		ug/Kg	☼		10/14/11 23:43	1
Tetrachloroethene	ND		12		ug/Kg	☼		10/14/11 23:43	1
Toluene	ND		12		ug/Kg	☼		10/14/11 23:43	1
Trichloroethene	ND		12		ug/Kg	☼		10/14/11 23:43	1
Vinyl chloride	ND		12		ug/Kg	☼		10/14/11 23:43	1
Xylenes, Total	ND		23		ug/Kg	☼		10/14/11 23:43	1
1,1,1-Trichloroethane	ND		12		ug/Kg	☼		10/14/11 23:43	1
1,1,2-Trichloroethane	ND		12		ug/Kg	☼		10/14/11 23:43	1
Cyclohexane	ND		23		ug/Kg	☼		10/14/11 23:43	1
1,2-Dibromo-3-Chloropropane	ND		23		ug/Kg	☼		10/14/11 23:43	1
Ethylene Dibromide	ND		12		ug/Kg	☼		10/14/11 23:43	1
Dichlorodifluoromethane	ND		12		ug/Kg	☼		10/14/11 23:43	1
cis-1,2-Dichloroethene	ND		12		ug/Kg	☼		10/14/11 23:43	1
trans-1,2-Dichloroethene	ND		12		ug/Kg	☼		10/14/11 23:43	1
Isopropylbenzene	ND		12		ug/Kg	☼		10/14/11 23:43	1
Methyl acetate	ND		23		ug/Kg	☼		10/14/11 23:43	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: SED 2

Date Collected: 10/06/11 10:50
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-7
Matrix: Solid
Percent Solids: 42.9

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		47		ug/Kg	☼		10/14/11 23:43	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		12		ug/Kg	☼		10/14/11 23:43	1
1,2,4-Trichlorobenzene	ND		12		ug/Kg	☼		10/14/11 23:43	1
1,2-Dichlorobenzene	ND		12		ug/Kg	☼		10/14/11 23:43	1
1,3-Dichlorobenzene	ND		12		ug/Kg	☼		10/14/11 23:43	1
1,4-Dichlorobenzene	ND		12		ug/Kg	☼		10/14/11 23:43	1
Trichlorofluoromethane	ND		12		ug/Kg	☼		10/14/11 23:43	1
Chlorodibromomethane	ND		12		ug/Kg	☼		10/14/11 23:43	1
Methylcyclohexane	ND		23		ug/Kg	☼		10/14/11 23:43	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*75*		*58 - 123*		*10/14/11 23:43*	*1*
4-Bromofluorobenzene (Surr)	*52*		*52 - 136*		*10/14/11 23:43*	*1*
Toluene-d8 (Surr)	*102*		*67 - 125*		*10/14/11 23:43*	*1*
Dibromofluoromethane (Surr)	*79*		*37 - 132*		*10/14/11 23:43*	*1*

Client Sample ID: OW25

Date Collected: 10/06/11 10:45
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-8
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/18/11 04:06	1
Benzene	ND		1.0		ug/L			10/18/11 04:06	1
Dichlorobromomethane	ND		1.0		ug/L			10/18/11 04:06	1
Bromoform	ND		1.0		ug/L			10/18/11 04:06	1
Bromomethane	ND		1.0		ug/L			10/18/11 04:06	1
2-Butanone (MEK)	ND		10		ug/L			10/18/11 04:06	1
Carbon disulfide	ND		1.0		ug/L			10/18/11 04:06	1
Carbon tetrachloride	ND		1.0		ug/L			10/18/11 04:06	1
Chlorobenzene	ND		1.0		ug/L			10/18/11 04:06	1
Chloroethane	ND		1.0		ug/L			10/18/11 04:06	1
Chloroform	ND		1.0		ug/L			10/18/11 04:06	1
Chloromethane	ND		1.0		ug/L			10/18/11 04:06	1
1,1-Dichloroethane	ND		1.0		ug/L			10/18/11 04:06	1
1,2-Dichloroethane	ND		1.0		ug/L			10/18/11 04:06	1
1,1-Dichloroethene	ND		1.0		ug/L			10/18/11 04:06	1
1,2-Dichloropropane	ND		1.0		ug/L			10/18/11 04:06	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 04:06	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 04:06	1
Ethylbenzene	ND		1.0		ug/L			10/18/11 04:06	1
2-Hexanone	ND		10		ug/L			10/18/11 04:06	1
Methylene Chloride	ND		1.0		ug/L			10/18/11 04:06	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/18/11 04:06	1
Styrene	ND		1.0		ug/L			10/18/11 04:06	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/18/11 04:06	1
Tetrachloroethene	ND		1.0		ug/L			10/18/11 04:06	1
Toluene	ND		1.0		ug/L			10/18/11 04:06	1
Trichloroethene	ND		1.0		ug/L			10/18/11 04:06	1
Vinyl chloride	ND		1.0		ug/L			10/18/11 04:06	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: OW25
Date Collected: 10/06/11 10:45
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-8
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		2.0		ug/L			10/18/11 04:06	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/18/11 04:06	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/18/11 04:06	1
Cyclohexane	ND		1.0		ug/L			10/18/11 04:06	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/18/11 04:06	1
Ethylene Dibromide	ND		1.0		ug/L			10/18/11 04:06	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/18/11 04:06	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 04:06	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 04:06	1
Isopropylbenzene	ND		1.0		ug/L			10/18/11 04:06	1
Methyl acetate	ND		10		ug/L			10/18/11 04:06	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/18/11 04:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/18/11 04:06	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/18/11 04:06	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/18/11 04:06	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/18/11 04:06	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/18/11 04:06	1
Trichlorofluoromethane	ND		1.0		ug/L			10/18/11 04:06	1
Chlorodibromomethane	ND		1.0		ug/L			10/18/11 04:06	1
Methylcyclohexane	ND		1.0		ug/L			10/18/11 04:06	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*63 - 129*		*10/18/11 04:06*	*1*
4-Bromofluorobenzene (Surr)	*96*		*66 - 117*		*10/18/11 04:06*	*1*
Toluene-d8 (Surr)	*103*		*74 - 115*		*10/18/11 04:06*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 121*		*10/18/11 04:06*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.50		ug/L			10/19/11 18:22	1
Ethane	ND		0.50		ug/L			10/19/11 18:22	1
Ethylene	ND		0.50		ug/L			10/19/11 18:22	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*105*		*10 - 168*		*10/19/11 18:22*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**1.2**		0.10		mg/L			10/07/11 17:37	1
Alkalinity	**31**		5.0		mg/L			10/11/11 16:45	1
Chloride	**1.5**		1.0		mg/L			10/11/11 11:45	1
Sulfate	**9.3**		5.0		mg/L			10/18/11 10:28	1
Sulfide	**10**		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	ND		1.0		mg/L			10/14/11 20:32	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: PUMP RINSE
Date Collected: 10/06/11 11:15
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-9
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/18/11 04:28	1
Benzene	ND		1.0		ug/L			10/18/11 04:28	1
Dichlorobromomethane	ND		1.0		ug/L			10/18/11 04:28	1
Bromoform	ND		1.0		ug/L			10/18/11 04:28	1
Bromomethane	ND		1.0		ug/L			10/18/11 04:28	1
2-Butanone (MEK)	ND		10		ug/L			10/18/11 04:28	1
Carbon disulfide	ND		1.0		ug/L			10/18/11 04:28	1
Carbon tetrachloride	ND		1.0		ug/L			10/18/11 04:28	1
Chlorobenzene	ND		1.0		ug/L			10/18/11 04:28	1
Chloroethane	ND		1.0		ug/L			10/18/11 04:28	1
Chloroform	ND		1.0		ug/L			10/18/11 04:28	1
Chloromethane	ND		1.0		ug/L			10/18/11 04:28	1
1,1-Dichloroethane	ND		1.0		ug/L			10/18/11 04:28	1
1,2-Dichloroethane	ND		1.0		ug/L			10/18/11 04:28	1
1,1-Dichloroethene	ND		1.0		ug/L			10/18/11 04:28	1
1,2-Dichloropropane	ND		1.0		ug/L			10/18/11 04:28	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 04:28	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 04:28	1
Ethylbenzene	ND		1.0		ug/L			10/18/11 04:28	1
2-Hexanone	ND		10		ug/L			10/18/11 04:28	1
Methylene Chloride	ND		1.0		ug/L			10/18/11 04:28	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/18/11 04:28	1
Styrene	ND		1.0		ug/L			10/18/11 04:28	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/18/11 04:28	1
Tetrachloroethene	ND		1.0		ug/L			10/18/11 04:28	1
Toluene	ND		1.0		ug/L			10/18/11 04:28	1
Trichloroethene	ND		1.0		ug/L			10/18/11 04:28	1
Vinyl chloride	ND		1.0		ug/L			10/18/11 04:28	1
Xylenes, Total	ND		2.0		ug/L			10/18/11 04:28	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/18/11 04:28	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/18/11 04:28	1
Cyclohexane	ND		1.0		ug/L			10/18/11 04:28	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/18/11 04:28	1
Ethylene Dibromide	ND		1.0		ug/L			10/18/11 04:28	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/18/11 04:28	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 04:28	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 04:28	1
Isopropylbenzene	ND		1.0		ug/L			10/18/11 04:28	1
Methyl acetate	ND		10		ug/L			10/18/11 04:28	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/18/11 04:28	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/18/11 04:28	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/18/11 04:28	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/18/11 04:28	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/18/11 04:28	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/18/11 04:28	1
Trichlorofluoromethane	ND		1.0		ug/L			10/18/11 04:28	1
Chlorodibromomethane	ND		1.0		ug/L			10/18/11 04:28	1
Methylcyclohexane	ND		1.0		ug/L			10/18/11 04:28	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: PUMP RINSE

Date Collected: 10/06/11 11:15
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-9
Matrix: Water

Surrogate	% Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		63 - 129		10/18/11 04:28	1
4-Bromofluorobenzene (Surr)	100		66 - 117		10/18/11 04:28	1
Toluene-d8 (Surr)	104		74 - 115		10/18/11 04:28	1
Dibromofluoromethane (Surr)	105		75 - 121		10/18/11 04:28	1

Client Sample ID: OW24

Date Collected: 10/06/11 12:15
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-10
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/18/11 04:51	1
Benzene	ND		1.0		ug/L			10/18/11 04:51	1
Dichlorobromomethane	ND		1.0		ug/L			10/18/11 04:51	1
Bromoform	ND		1.0		ug/L			10/18/11 04:51	1
Bromomethane	ND		1.0		ug/L			10/18/11 04:51	1
2-Butanone (MEK)	ND		10		ug/L			10/18/11 04:51	1
Carbon disulfide	ND		1.0		ug/L			10/18/11 04:51	1
Carbon tetrachloride	ND		1.0		ug/L			10/18/11 04:51	1
Chlorobenzene	ND		1.0		ug/L			10/18/11 04:51	1
Chloroethane	ND		1.0		ug/L			10/18/11 04:51	1
Chloroform	ND		1.0		ug/L			10/18/11 04:51	1
Chloromethane	ND		1.0		ug/L			10/18/11 04:51	1
1,1-Dichloroethane	ND		1.0		ug/L			10/18/11 04:51	1
1,2-Dichloroethane	ND		1.0		ug/L			10/18/11 04:51	1
1,1-Dichloroethene	ND		1.0		ug/L			10/18/11 04:51	1
1,2-Dichloropropane	ND		1.0		ug/L			10/18/11 04:51	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 04:51	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 04:51	1
Ethylbenzene	ND		1.0		ug/L			10/18/11 04:51	1
2-Hexanone	ND		10		ug/L			10/18/11 04:51	1
Methylene Chloride	ND		1.0		ug/L			10/18/11 04:51	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/18/11 04:51	1
Styrene	ND		1.0		ug/L			10/18/11 04:51	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/18/11 04:51	1
Tetrachloroethene	ND		1.0		ug/L			10/18/11 04:51	1
Toluene	ND		1.0		ug/L			10/18/11 04:51	1
Trichloroethene	ND		1.0		ug/L			10/18/11 04:51	1
Vinyl chloride	ND		1.0		ug/L			10/18/11 04:51	1
Xylenes, Total	ND		2.0		ug/L			10/18/11 04:51	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/18/11 04:51	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/18/11 04:51	1
Cyclohexane	ND		1.0		ug/L			10/18/11 04:51	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/18/11 04:51	1
Ethylene Dibromide	ND		1.0		ug/L			10/18/11 04:51	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/18/11 04:51	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 04:51	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 04:51	1
Isopropylbenzene	ND		1.0		ug/L			10/18/11 04:51	1
Methyl acetate	ND		10		ug/L			10/18/11 04:51	1

Client Sample ID: OW24
Date Collected: 10/06/11 12:15
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-10
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		5.0		ug/L			10/18/11 04:51	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/18/11 04:51	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/18/11 04:51	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/18/11 04:51	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/18/11 04:51	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/18/11 04:51	1
Trichlorofluoromethane	ND		1.0		ug/L			10/18/11 04:51	1
Chlorodibromomethane	ND		1.0		ug/L			10/18/11 04:51	1
Methylcyclohexane	ND		1.0		ug/L			10/18/11 04:51	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*63 - 129*		*10/18/11 04:51*	*1*
4-Bromofluorobenzene (Surr)	*99*		*66 - 117*		*10/18/11 04:51*	*1*
Toluene-d8 (Surr)	*106*		*74 - 115*		*10/18/11 04:51*	*1*
Dibromofluoromethane (Surr)	*109*		*75 - 121*		*10/18/11 04:51*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.50		ug/L			10/19/11 18:55	1
Ethane	ND		0.50		ug/L			10/19/11 18:55	1
Ethylene	ND		0.50		ug/L			10/19/11 18:55	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*101*		*10 - 168*		*10/19/11 18:55*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	**0.33**		0.10		mg/L			10/07/11 18:09	1
Alkalinity	**120**		5.0		mg/L			10/11/11 16:53	1
Chloride	**3.5**		1.0		mg/L			10/11/11 11:45	1
Sulfate	**16**		5.0		mg/L			10/18/11 10:28	1
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	ND		1.0		mg/L			10/14/11 21:05	1

Client Sample ID: OW18
Date Collected: 10/06/11 13:25
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-11
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/18/11 05:14	1
Benzene	**3.7**		1.0		ug/L			10/18/11 05:14	1
Dichlorobromomethane	ND		1.0		ug/L			10/18/11 05:14	1
Bromoform	ND		1.0		ug/L			10/18/11 05:14	1
Bromomethane	ND		1.0		ug/L			10/18/11 05:14	1
2-Butanone (MEK)	ND		10		ug/L			10/18/11 05:14	1
Carbon disulfide	ND		1.0		ug/L			10/18/11 05:14	1
Carbon tetrachloride	ND		1.0		ug/L			10/18/11 05:14	1
Chlorobenzene	**8.7**		1.0		ug/L			10/18/11 05:14	1
Chloroethane	ND		1.0		ug/L			10/18/11 05:14	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: OW18
Date Collected: 10/06/11 13:25
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-11
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		1.0		ug/L			10/18/11 05:14	1
Chloromethane	ND		1.0		ug/L			10/18/11 05:14	1
1,1-Dichloroethane	ND		1.0		ug/L			10/18/11 05:14	1
1,2-Dichloroethane	ND		1.0		ug/L			10/18/11 05:14	1
1,1-Dichloroethene	ND		1.0		ug/L			10/18/11 05:14	1
1,2-Dichloropropane	ND		1.0		ug/L			10/18/11 05:14	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 05:14	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 05:14	1
Ethylbenzene	ND		1.0		ug/L			10/18/11 05:14	1
2-Hexanone	ND		10		ug/L			10/18/11 05:14	1
Methylene Chloride	ND		1.0		ug/L			10/18/11 05:14	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/18/11 05:14	1
Styrene	ND		1.0		ug/L			10/18/11 05:14	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/18/11 05:14	1
Tetrachloroethene	ND		1.0		ug/L			10/18/11 05:14	1
Toluene	ND		1.0		ug/L			10/18/11 05:14	1
Trichloroethene	ND		1.0		ug/L			10/18/11 05:14	1
Vinyl chloride	**1.5**		1.0		ug/L			10/18/11 05:14	1
Xylenes, Total	ND		2.0		ug/L			10/18/11 05:14	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/18/11 05:14	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/18/11 05:14	1
Cyclohexane	ND		1.0		ug/L			10/18/11 05:14	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/18/11 05:14	1
Ethylene Dibromide	ND		1.0		ug/L			10/18/11 05:14	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/18/11 05:14	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 05:14	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 05:14	1
Isopropylbenzene	ND		1.0		ug/L			10/18/11 05:14	1
Methyl acetate	ND		10		ug/L			10/18/11 05:14	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/18/11 05:14	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/18/11 05:14	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/18/11 05:14	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/18/11 05:14	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/18/11 05:14	1
1,4-Dichlorobenzene	**1.6**		1.0		ug/L			10/18/11 05:14	1
Trichlorofluoromethane	ND		1.0		ug/L			10/18/11 05:14	1
Chlorodibromomethane	ND		1.0		ug/L			10/18/11 05:14	1
Methylcyclohexane	ND		1.0		ug/L			10/18/11 05:14	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*63 - 129*		*10/18/11 05:14*	*1*
4-Bromofluorobenzene (Surr)	*104*		*66 - 117*		*10/18/11 05:14*	*1*
Toluene-d8 (Surr)	*101*		*74 - 115*		*10/18/11 05:14*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 121*		*10/18/11 05:14*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**1000**		1.0		ug/L			10/20/11 12:23	2
Ethane	ND		1.0		ug/L			10/20/11 12:23	2
Ethylene	ND		1.0		ug/L			10/20/11 12:23	2

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: OW18

Date Collected: 10/06/11 13:25
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-11

Matrix: Water

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*106*		*10 - 168*		*10/20/11 12:23*	*2*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.10		mg/L			10/07/11 18:26	1
Alkalinity	**280**		5.0		mg/L			10/11/11 17:04	1
Chloride	**24**		1.0		mg/L			10/11/11 11:45	1
Sulfate	**8.6**		5.0		mg/L			10/18/11 10:28	1
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	**10**		1.0		mg/L			10/14/11 21:15	1

Client Sample ID: OW19

Date Collected: 10/06/11 15:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-12

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/18/11 05:36	1
Benzene	**3.0**		1.0		ug/L			10/18/11 05:36	1
Dichlorobromomethane	ND		1.0		ug/L			10/18/11 05:36	1
Bromoform	ND		1.0		ug/L			10/18/11 05:36	1
Bromomethane	ND		1.0		ug/L			10/18/11 05:36	1
2-Butanone (MEK)	ND		10		ug/L			10/18/11 05:36	1
Carbon disulfide	ND		1.0		ug/L			10/18/11 05:36	1
Carbon tetrachloride	ND		1.0		ug/L			10/18/11 05:36	1
Chlorobenzene	**8.4**		1.0		ug/L			10/18/11 05:36	1
Chloroethane	**1.4**		1.0		ug/L			10/18/11 05:36	1
Chloroform	ND		1.0		ug/L			10/18/11 05:36	1
Chloromethane	ND		1.0		ug/L			10/18/11 05:36	1
1,1-Dichloroethane	ND		1.0		ug/L			10/18/11 05:36	1
1,2-Dichloroethane	ND		1.0		ug/L			10/18/11 05:36	1
1,1-Dichloroethene	ND		1.0		ug/L			10/18/11 05:36	1
1,2-Dichloropropane	ND		1.0		ug/L			10/18/11 05:36	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 05:36	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 05:36	1
Ethylbenzene	ND		1.0		ug/L			10/18/11 05:36	1
2-Hexanone	ND		10		ug/L			10/18/11 05:36	1
Methylene Chloride	ND		1.0		ug/L			10/18/11 05:36	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/18/11 05:36	1
Styrene	ND		1.0		ug/L			10/18/11 05:36	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/18/11 05:36	1
Tetrachloroethene	ND		1.0		ug/L			10/18/11 05:36	1
Toluene	ND		1.0		ug/L			10/18/11 05:36	1
Trichloroethene	ND		1.0		ug/L			10/18/11 05:36	1
Vinyl chloride	**3.3**		1.0		ug/L			10/18/11 05:36	1
Xylenes, Total	ND		2.0		ug/L			10/18/11 05:36	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/18/11 05:36	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/18/11 05:36	1
Cyclohexane	ND		1.0		ug/L			10/18/11 05:36	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/18/11 05:36	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: OW19
Date Collected: 10/06/11 15:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-12
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylene Dibromide	ND		1.0		ug/L			10/18/11 05:36	1
Dichlorodifluoromethane	**1.2**		1.0		ug/L			10/18/11 05:36	1
cis-1,2-Dichloroethene	**1.6**		1.0		ug/L			10/18/11 05:36	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 05:36	1
Isopropylbenzene	ND		1.0		ug/L			10/18/11 05:36	1
Methyl acetate	ND		10		ug/L			10/18/11 05:36	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/18/11 05:36	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/18/11 05:36	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/18/11 05:36	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/18/11 05:36	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/18/11 05:36	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/18/11 05:36	1
Trichlorofluoromethane	ND		1.0		ug/L			10/18/11 05:36	1
Chlorodibromomethane	ND		1.0		ug/L			10/18/11 05:36	1
Methylcyclohexane	ND		1.0		ug/L			10/18/11 05:36	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*109*		*63 - 129*		*10/18/11 05:36*	*1*
4-Bromofluorobenzene (Surr)	*104*		*66 - 117*		*10/18/11 05:36*	*1*
Toluene-d8 (Surr)	*100*		*74 - 115*		*10/18/11 05:36*	*1*
Dibromofluoromethane (Surr)	*112*		*75 - 121*		*10/18/11 05:36*	*1*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**1800**		2.5		ug/L			10/20/11 12:56	5
Ethane	ND		2.5		ug/L			10/20/11 12:56	5
Ethylene	ND		2.5		ug/L			10/20/11 12:56	5

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*108*		*10 - 168*		*10/20/11 12:56*	*5*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.10		mg/L			10/07/11 18:42	1
Alkalinity	**290**		5.0		mg/L			10/11/11 17:15	1
Chloride	**110**		5.0		mg/L			10/11/11 11:59	5
Sulfate	**13**		5.0		mg/L			10/18/11 10:30	1
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1
Total Organic Carbon	**12**		1.0		mg/L			10/14/11 21:26	1

Client Sample ID: TB3
Date Collected: 10/06/11 00:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-13
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/18/11 05:59	1
Benzene	ND		1.0		ug/L			10/18/11 05:59	1
Dichlorobromomethane	ND		1.0		ug/L			10/18/11 05:59	1
Bromoform	ND		1.0		ug/L			10/18/11 05:59	1

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: TB3
Date Collected: 10/06/11 00:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-13
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND		1.0		ug/L			10/18/11 05:59	1
2-Butanone (MEK)	ND		10		ug/L			10/18/11 05:59	1
Carbon disulfide	ND		1.0		ug/L			10/18/11 05:59	1
Carbon tetrachloride	ND		1.0		ug/L			10/18/11 05:59	1
Chlorobenzene	ND		1.0		ug/L			10/18/11 05:59	1
Chloroethane	ND		1.0		ug/L			10/18/11 05:59	1
Chloroform	ND		1.0		ug/L			10/18/11 05:59	1
Chloromethane	ND		1.0		ug/L			10/18/11 05:59	1
1,1-Dichloroethane	ND		1.0		ug/L			10/18/11 05:59	1
1,2-Dichloroethane	ND		1.0		ug/L			10/18/11 05:59	1
1,1-Dichloroethene	ND		1.0		ug/L			10/18/11 05:59	1
1,2-Dichloropropane	ND		1.0		ug/L			10/18/11 05:59	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 05:59	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/18/11 05:59	1
Ethylbenzene	ND		1.0		ug/L			10/18/11 05:59	1
2-Hexanone	ND		10		ug/L			10/18/11 05:59	1
Methylene Chloride	ND		1.0		ug/L			10/18/11 05:59	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/18/11 05:59	1
Styrene	ND		1.0		ug/L			10/18/11 05:59	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/18/11 05:59	1
Tetrachloroethene	ND		1.0		ug/L			10/18/11 05:59	1
Toluene	ND		1.0		ug/L			10/18/11 05:59	1
Trichloroethene	ND		1.0		ug/L			10/18/11 05:59	1
Vinyl chloride	ND		1.0		ug/L			10/18/11 05:59	1
Xylenes, Total	ND		2.0		ug/L			10/18/11 05:59	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/18/11 05:59	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/18/11 05:59	1
Cyclohexane	ND		1.0		ug/L			10/18/11 05:59	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/18/11 05:59	1
Ethylene Dibromide	ND		1.0		ug/L			10/18/11 05:59	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/18/11 05:59	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 05:59	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/18/11 05:59	1
Isopropylbenzene	ND		1.0		ug/L			10/18/11 05:59	1
Methyl acetate	ND		10		ug/L			10/18/11 05:59	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/18/11 05:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/18/11 05:59	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/18/11 05:59	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/18/11 05:59	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/18/11 05:59	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/18/11 05:59	1
Trichlorofluoromethane	ND		1.0		ug/L			10/18/11 05:59	1
Chlorodibromomethane	ND		1.0		ug/L			10/18/11 05:59	1
Methylcyclohexane	ND		1.0		ug/L			10/18/11 05:59	1

Surrogate	*% Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*63 - 129*		*10/18/11 05:59*	*1*
4-Bromofluorobenzene (Surr)	*98*		*66 - 117*		*10/18/11 05:59*	*1*
Toluene-d8 (Surr)	*101*		*74 - 115*		*10/18/11 05:59*	*1*
Dibromofluoromethane (Surr)	*111*		*75 - 121*		*10/18/11 05:59*	*1*

Surrogate Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(58-123)	(52-136)	(67-125)	(37-132)
240-4639-4	SED 1	76	77	85	77
240-4639-5	SED DUP	77	80	86	76
240-4639-7	SED 2	75	52	102	79
240-4639-7 MS	SED 2	68	60	103	76
240-4639-7 MSD	SED 2	82	72	96	86
LCS 240-19255/5	Lab Control Sample	75	83	88	80
MB 240-19255/6	Method Blank	75	84	87	78

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(63-129)	(66-117)	(74-115)	(75-121)
240-4639-1	FB3	120	97	107	121
240-4639-2	SW1	112	91	101	116
240-4639-3	SW DUP	113	96	108	121
240-4639-6	SW2	104	98	105	107
240-4639-6 MS	SW2	110	110	105	113
240-4639-6 MSD	SW2	108	114	102	106
240-4639-8	OW25	108	96	103	102
240-4639-9	PUMP RINSE	108	100	104	105
240-4639-10	OW24	115	99	106	109
240-4639-11	OW18	105	104	101	108
240-4639-12	OW19	109	104	100	112
240-4639-13	TB3	115	98	101	111
LCS 240-19459/4	Lab Control Sample	116	113	107	105
MB 240-19459/5	Method Blank	102	100	104	101

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		Trifluoroetl
Lab Sample ID	Client Sample ID	(10-168)
240-4639-8	OW25	105
240-4639-10	OW24	101
240-4639-11	OW18	106
240-4639-12	OW19	108

Surrogate Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		Trifluoroetl
Lab Sample ID	**Client Sample ID**	**(10-168)**
LCS 240-19746/27	Lab Control Sample	85
LCS 240-19746/3	Lab Control Sample	95
MB 240-19746/28	Method Blank	90
MB 240-19746/4	Method Blank	101

Surrogate Legend

1,1,1-Trifluoroethane = 1,1,1-Trifluoroethane

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-19255/6
Matrix: Solid
Analysis Batch: 19255

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		20		ug/Kg			10/14/11 21:53	1
Benzene	ND		5.0		ug/Kg			10/14/11 21:53	1
Dichlorobromomethane	ND		5.0		ug/Kg			10/14/11 21:53	1
Bromoform	ND		5.0		ug/Kg			10/14/11 21:53	1
Bromomethane	ND		5.0		ug/Kg			10/14/11 21:53	1
2-Butanone (MEK)	ND		20		ug/Kg			10/14/11 21:53	1
Carbon disulfide	ND		5.0		ug/Kg			10/14/11 21:53	1
Carbon tetrachloride	ND		5.0		ug/Kg			10/14/11 21:53	1
Chlorobenzene	ND		5.0		ug/Kg			10/14/11 21:53	1
Chloroethane	ND		5.0		ug/Kg			10/14/11 21:53	1
Chloroform	ND		5.0		ug/Kg			10/14/11 21:53	1
Chloromethane	ND		5.0		ug/Kg			10/14/11 21:53	1
1,1-Dichloroethane	ND		5.0		ug/Kg			10/14/11 21:53	1
1,2-Dichloroethane	ND		5.0		ug/Kg			10/14/11 21:53	1
1,1-Dichloroethene	ND		5.0		ug/Kg			10/14/11 21:53	1
1,2-Dichloropropane	ND		5.0		ug/Kg			10/14/11 21:53	1
cis-1,3-Dichloropropene	ND		5.0		ug/Kg			10/14/11 21:53	1
trans-1,3-Dichloropropene	ND		5.0		ug/Kg			10/14/11 21:53	1
Ethylbenzene	ND		5.0		ug/Kg			10/14/11 21:53	1
2-Hexanone	ND		20		ug/Kg			10/14/11 21:53	1
Methylene Chloride	ND		5.0		ug/Kg			10/14/11 21:53	1
4-Methyl-2-pentanone (MIBK)	ND		20		ug/Kg			10/14/11 21:53	1
Styrene	ND		5.0		ug/Kg			10/14/11 21:53	1
1,1,2,2-Tetrachloroethane	ND		5.0		ug/Kg			10/14/11 21:53	1
Tetrachloroethene	ND		5.0		ug/Kg			10/14/11 21:53	1
Toluene	ND		5.0		ug/Kg			10/14/11 21:53	1
Trichloroethene	ND		5.0		ug/Kg			10/14/11 21:53	1
Vinyl chloride	ND		5.0		ug/Kg			10/14/11 21:53	1
Xylenes, Total	ND		10		ug/Kg			10/14/11 21:53	1
1,1,1-Trichloroethane	ND		5.0		ug/Kg			10/14/11 21:53	1
1,1,2-Trichloroethane	ND		5.0		ug/Kg			10/14/11 21:53	1
Cyclohexane	ND		10		ug/Kg			10/14/11 21:53	1
1,2-Dibromo-3-Chloropropane	ND		10		ug/Kg			10/14/11 21:53	1
Ethylene Dibromide	ND		5.0		ug/Kg			10/14/11 21:53	1
Dichlorodifluoromethane	ND		5.0		ug/Kg			10/14/11 21:53	1
cis-1,2-Dichloroethene	ND		5.0		ug/Kg			10/14/11 21:53	1
trans-1,2-Dichloroethene	ND		5.0		ug/Kg			10/14/11 21:53	1
Isopropylbenzene	ND		5.0		ug/Kg			10/14/11 21:53	1
Methyl acetate	ND		10		ug/Kg			10/14/11 21:53	1
Methyl tert-butyl ether	ND		20		ug/Kg			10/14/11 21:53	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.0		ug/Kg			10/14/11 21:53	1
1,2,4-Trichlorobenzene	ND		5.0		ug/Kg			10/14/11 21:53	1
1,2-Dichlorobenzene	ND		5.0		ug/Kg			10/14/11 21:53	1
1,3-Dichlorobenzene	ND		5.0		ug/Kg			10/14/11 21:53	1
1,4-Dichlorobenzene	ND		5.0		ug/Kg			10/14/11 21:53	1
Trichlorofluoromethane	ND		5.0		ug/Kg			10/14/11 21:53	1
Chlorodibromomethane	ND		5.0		ug/Kg			10/14/11 21:53	1
Methylcyclohexane	ND		10		ug/Kg			10/14/11 21:53	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-19255/6
Matrix: Solid
Analysis Batch: 19255

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB % Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	75		58 - 123		10/14/11 21:53	1
4-Bromofluorobenzene (Surr)	84		52 - 136		10/14/11 21:53	1
Toluene-d8 (Surr)	87		67 - 125		10/14/11 21:53	1
Dibromofluoromethane (Surr)	78		37 - 132		10/14/11 21:53	1

Lab Sample ID: LCS 240-19255/5
Matrix: Solid
Analysis Batch: 19255

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Acetone	100	87.1		ug/Kg		87	41 - 137
Benzene	50.0	47.2		ug/Kg		94	79 - 112
Dichlorobromomethane	50.0	44.5		ug/Kg		89	84 - 122
Bromoform	50.0	43.5		ug/Kg		87	62 - 133
Bromomethane	50.0	37.8		ug/Kg		76	42 - 136
2-Butanone (MEK)	100	104		ug/Kg		104	52 - 131
Carbon disulfide	50.0	39.8		ug/Kg		80	62 - 146
Carbon tetrachloride	50.0	41.1		ug/Kg		82	71 - 129
Chlorobenzene	50.0	47.1		ug/Kg		94	78 - 110
Chloroethane	50.0	35.8		ug/Kg		72	58 - 117
Chloroform	50.0	46.0		ug/Kg		92	77 - 114
Chloromethane	50.0	36.6		ug/Kg		73	50 - 110
1,1-Dichloroethane	50.0	45.6		ug/Kg		91	76 - 115
1,2-Dichloroethane	50.0	46.0		ug/Kg		92	72 - 120
1,1-Dichloroethene	50.0	46.6		ug/Kg		93	75 - 135
1,2-Dichloropropane	50.0	48.1		ug/Kg		96	87 - 113
cis-1,3-Dichloropropene	50.0	43.0		ug/Kg		86	74 - 128
trans-1,3-Dichloropropene	50.0	44.0		ug/Kg		88	73 - 131
Ethylbenzene	50.0	45.9		ug/Kg		92	79 - 117
2-Hexanone	100	97.9		ug/Kg		98	64 - 136
Methylene Chloride	50.0	41.7		ug/Kg		83	75 - 118
4-Methyl-2-pentanone (MIBK)	100	96.1		ug/Kg		96	67 - 135
Styrene	50.0	45.9		ug/Kg		92	87 - 117
1,1,2,2-Tetrachloroethane	50.0	48.9		ug/Kg		98	77 - 123
Tetrachloroethene	50.0	50.1		ug/Kg		100	79 - 114
Toluene	50.0	46.0		ug/Kg		92	75 - 111
Trichloroethene	50.0	49.8		ug/Kg		100	79 - 113
Vinyl chloride	50.0	39.7		ug/Kg		79	57 - 114
Xylenes, Total	150	138		ug/Kg		92	80 - 118
1,1,1-Trichloroethane	50.0	39.8		ug/Kg		80	77 - 126
1,1,2-Trichloroethane	50.0	49.4		ug/Kg		99	83 - 112
Cyclohexane	50.0	42.6		ug/Kg		85	66 - 110
1,2-Dibromo-3-Chloropropane	50.0	41.8		ug/Kg		84	61 - 132
Ethylene Dibromide	50.0	48.2		ug/Kg		96	83 - 117
Dichlorodifluoromethane	50.0	29.1		ug/Kg		58	26 - 113
cis-1,2-Dichloroethene	50.0	47.0		ug/Kg		94	76 - 113
trans-1,2-Dichloroethene	50.0	44.6		ug/Kg		89	78 - 117
Isopropylbenzene	50.0	45.0		ug/Kg		90	76 - 122
Methyl acetate	50.0	46.3		ug/Kg		93	57 - 130

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-19255/5
Matrix: Solid
Analysis Batch: 19255

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Methyl tert-butyl ether	50.0	40.9		ug/Kg		82	49 - 165
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	49.0		ug/Kg		98	82 - 138
1,2,4-Trichlorobenzene	50.0	43.6		ug/Kg		87	64 - 124
1,2-Dichlorobenzene	50.0	47.9		ug/Kg		96	76 - 110
1,3-Dichlorobenzene	50.0	47.4		ug/Kg		95	78 - 111
1,4-Dichlorobenzene	50.0	46.5		ug/Kg		93	75 - 110
Trichlorofluoromethane	50.0	42.8		ug/Kg		86	57 - 146
Chlorodibromomethane	50.0	45.4		ug/Kg		91	72 - 127
Methylcyclohexane	50.0	45.7		ug/Kg		91	70 - 126
m-Xylene & p-Xylene	100	92.7		ug/Kg		93	80 - 117
o-Xylene	50.0	45.6		ug/Kg		91	80 - 120

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*75*		*58 - 123*
4-Bromofluorobenzene (Surr)	*83*		*52 - 136*
Toluene-d8 (Surr)	*88*		*67 - 125*
Dibromofluoromethane (Surr)	*80*		*37 - 132*

Lab Sample ID: 240-4639-7 MS
Matrix: Solid
Analysis Batch: 19255

Client Sample ID: SED 2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	% Rec	% Rec. Limits
Acetone	ND		233	151		ug/Kg	☼	65	24 - 140
Benzene	ND		116	108		ug/Kg	☼	93	53 - 118
Dichlorobromomethane	ND		116	93.9		ug/Kg	☼	81	35 - 132
Bromoform	ND		116	81.7		ug/Kg	☼	70	18 - 129
Bromomethane	ND		116	73.6		ug/Kg	☼	63	33 - 130
2-Butanone (MEK)	ND		233	185		ug/Kg	☼	79	30 - 143
Carbon disulfide	ND		116	89.2		ug/Kg	☼	77	20 - 151
Carbon tetrachloride	ND		116	93.6		ug/Kg	☼	80	32 - 137
Chlorobenzene	ND		116	117		ug/Kg	☼	100	37 - 116
Chloroethane	ND		116	86.9		ug/Kg	☼	75	45 - 118
Chloroform	ND		116	106		ug/Kg	☼	91	53 - 119
Chloromethane	ND		116	86.6		ug/Kg	☼	74	34 - 117
1,1-Dichloroethane	ND		116	107		ug/Kg	☼	92	54 - 122
1,2-Dichloroethane	ND		116	102		ug/Kg	☼	88	49 - 123
1,1-Dichloroethene	ND		116	113		ug/Kg	☼	97	49 - 157
1,2-Dichloropropane	ND		116	110		ug/Kg	☼	95	61 - 117
cis-1,3-Dichloropropene	ND		116	70.1		ug/Kg	☼	60	27 - 133
trans-1,3-Dichloropropene	ND		116	97.4		ug/Kg	☼	84	28 - 137
Ethylbenzene	ND		116	122		ug/Kg	☼	105	30 - 131
2-Hexanone	ND		233	167		ug/Kg	☼	72	37 - 147
Methylene Chloride	13		116	110		ug/Kg	☼	83	54 - 115
4-Methyl-2-pentanone (MIBK)	ND		233	177		ug/Kg	☼	76	43 - 147
Styrene	ND		116	95.7		ug/Kg	☼	82	27 - 127
1,1,2,2-Tetrachloroethane	ND		116	175		ug/Kg	☼	150	16 - 179
Tetrachloroethene	ND		116	139		ug/Kg	☼	119	31 - 135
Toluene	ND		116	132		ug/Kg	☼	113	39 - 129

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-4639-7 MS
Matrix: Solid
Analysis Batch: 19255

Client Sample ID: SED 2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	% Rec	% Rec. Limits
Trichloroethene	ND		116	109		ug/Kg	☼	94	10 - 177
Vinyl chloride	ND		116	96.2		ug/Kg	☼	83	42 - 117
Xylenes, Total	ND		349	348		ug/Kg	☼	100	30 - 131
1,1,1-Trichloroethane	ND		116	92.7		ug/Kg	☼	80	51 - 128
1,1,2-Trichloroethane	ND		116	132		ug/Kg	☼	113	10 - 166
Cyclohexane	ND		116	93.9		ug/Kg	☼	81	28 - 118
1,2-Dibromo-3-Chloropropane	ND		116	98.7		ug/Kg	☼	85	10 - 153
Ethylene Dibromide	ND		116	118		ug/Kg	☼	101	45 - 127
Dichlorodifluoromethane	ND		116	68.9		ug/Kg	☼	59	17 - 115
cis-1,2-Dichloroethene	ND		116	107		ug/Kg	☼	92	50 - 119
trans-1,2-Dichloroethene	ND		116	106		ug/Kg	☼	91	50 - 123
Isopropylbenzene	ND		116	108		ug/Kg	☼	93	21 - 134
Methyl acetate	ND		116	47.3		ug/Kg	☼	41	33 - 165
Methyl tert-butyl ether	ND		116	91.3		ug/Kg	☼	78	51 - 157
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		116	112		ug/Kg	☼	96	50 - 147
1,2,4-Trichlorobenzene	ND		116	56.4		ug/Kg	☼	48	10 - 111
1,2-Dichlorobenzene	ND		116	117		ug/Kg	☼	100	17 - 122
1,3-Dichlorobenzene	ND		116	133		ug/Kg	☼	114	16 - 126
1,4-Dichlorobenzene	ND		116	127		ug/Kg	☼	109	15 - 121
Trichlorofluoromethane	ND		116	101		ug/Kg	☼	87	36 - 142
Chlorodibromomethane	ND		116	112		ug/Kg	☼	96	29 - 135
Methylcyclohexane	ND		116	87.3		ug/Kg	☼	75	20 - 132
m-Xylene & p-Xylene	ND		233	236		ug/Kg	☼	101	29 - 131
o-Xylene	ND		116	112		ug/Kg	☼	96	29 - 134

Surrogate	*MS % Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*68*		*58 - 123*
4-Bromofluorobenzene (Surr)	*60*		*52 - 136*
Toluene-d8 (Surr)	*103*		*67 - 125*
Dibromofluoromethane (Surr)	*76*		*37 - 132*

Lab Sample ID: 240-4639-7 MSD
Matrix: Solid
Analysis Batch: 19255

Client Sample ID: SED 2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Acetone	ND		233	231	F	ug/Kg	☼	99	24 - 140	41	30
Benzene	ND		116	123		ug/Kg	☼	105	53 - 118	13	30
Dichlorobromomethane	ND		116	102		ug/Kg	☼	88	35 - 132	9	30
Bromoform	ND		116	83.1		ug/Kg	☼	71	18 - 129	2	30
Bromomethane	ND		116	89.0		ug/Kg	☼	76	33 - 130	19	30
2-Butanone (MEK)	ND		233	260	F	ug/Kg	☼	112	30 - 143	34	30
Carbon disulfide	ND		116	107		ug/Kg	☼	92	20 - 151	18	30
Carbon tetrachloride	ND		116	109		ug/Kg	☼	93	32 - 137	15	30
Chlorobenzene	ND		116	116		ug/Kg	☼	100	37 - 116	0	30
Chloroethane	ND		116	106		ug/Kg	☼	91	45 - 118	20	30
Chloroform	ND		116	120		ug/Kg	☼	103	53 - 119	13	30
Chloromethane	ND		116	103		ug/Kg	☼	88	34 - 117	17	30
1,1-Dichloroethane	ND		116	125		ug/Kg	☼	107	54 - 122	15	30

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-4639-7 MSD
Matrix: Solid
Analysis Batch: 19255

Client Sample ID: SED 2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
1,2-Dichloroethane	ND		116	119		ug/Kg	☼	102	49 - 123	15	30
1,1-Dichloroethene	ND		116	133		ug/Kg	☼	115	49 - 157	17	30
1,2-Dichloropropane	ND		116	121		ug/Kg	☼	104	61 - 117	9	30
cis-1,3-Dichloropropene	ND		116	79.2		ug/Kg	☼	68	27 - 133	12	30
trans-1,3-Dichloropropene	ND		116	98.0		ug/Kg	☼	84	28 - 137	1	30
Ethylbenzene	ND		116	123		ug/Kg	☼	106	30 - 131	1	30
2-Hexanone	ND		233	202		ug/Kg	☼	87	37 - 147	19	30
Methylene Chloride	13		116	129		ug/Kg	☼	100	54 - 115	16	30
4-Methyl-2-pentanone (MIBK)	ND		233	227		ug/Kg	☼	97	43 - 147	24	30
Styrene	ND		116	98.5		ug/Kg	☼	85	27 - 127	3	30
1,1,2,2-Tetrachloroethane	ND		116	141		ug/Kg	☼	121	16 - 179	22	30
Tetrachloroethene	ND		116	145		ug/Kg	☼	125	31 - 135	5	30
Toluene	ND		116	129		ug/Kg	☼	111	39 - 129	2	30
Trichloroethene	ND		116	123		ug/Kg	☼	105	10 - 177	12	30
Vinyl chloride	ND		116	118		ug/Kg	☼	102	42 - 117	21	30
Xylenes, Total	ND		349	355		ug/Kg	☼	102	30 - 131	2	30
1,1,1-Trichloroethane	ND		116	107		ug/Kg	☼	92	51 - 128	14	30
1,1,2-Trichloroethane	ND		116	134		ug/Kg	☼	115	10 - 166	2	30
Cyclohexane	ND		116	112		ug/Kg	☼	96	28 - 118	17	30
1,2-Dibromo-3-Chloropropane	ND		116	92.5		ug/Kg	☼	79	10 - 153	7	30
Ethylene Dibromide	ND		116	123		ug/Kg	☼	105	45 - 127	4	30
Dichlorodifluoromethane	ND		116	88.0		ug/Kg	☼	76	17 - 115	24	30
cis-1,2-Dichloroethene	ND		116	122		ug/Kg	☼	104	50 - 119	13	30
trans-1,2-Dichloroethene	ND		116	124		ug/Kg	☼	107	50 - 123	16	30
Isopropylbenzene	ND		116	116		ug/Kg	☼	100	21 - 134	7	30
Methyl acetate	ND		116	82.4	F	ug/Kg	☼	71	33 - 165	54	30
Methyl tert-butyl ether	ND		116	109		ug/Kg	☼	94	51 - 157	18	30
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		116	137		ug/Kg	☼	118	50 - 147	20	30
1,2,4-Trichlorobenzene	ND		116	56.1		ug/Kg	☼	48	10 - 111	0	30
1,2-Dichlorobenzene	ND		116	98.3		ug/Kg	☼	84	17 - 122	17	30
1,3-Dichlorobenzene	ND		116	111		ug/Kg	☼	95	16 - 126	18	30
1,4-Dichlorobenzene	ND		116	108		ug/Kg	☼	93	15 - 121	16	30
Trichlorofluoromethane	ND		116	124		ug/Kg	☼	106	36 - 142	20	30
Chlorodibromomethane	ND		116	107		ug/Kg	☼	92	29 - 135	4	30
Methylcyclohexane	ND		116	111		ug/Kg	☼	96	20 - 132	24	30
m-Xylene & p-Xylene	ND		233	242		ug/Kg	☼	104	29 - 131	2	30
o-Xylene	ND		116	113		ug/Kg	☼	97	29 - 134	1	30

Surrogate	*MSD % Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*58 - 123*
4-Bromofluorobenzene (Surr)	*72*		*52 - 136*
Toluene-d8 (Surr)	*96*		*67 - 125*
Dibromofluoromethane (Surr)	*86*		*37 - 132*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-19459/5
Matrix: Water
Analysis Batch: 19459

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10		ug/L			10/17/11 23:57	1
Benzene	ND		1.0		ug/L			10/17/11 23:57	1
Dichlorobromomethane	ND		1.0		ug/L			10/17/11 23:57	1
Bromoform	ND		1.0		ug/L			10/17/11 23:57	1
Bromomethane	ND		1.0		ug/L			10/17/11 23:57	1
2-Butanone (MEK)	ND		10		ug/L			10/17/11 23:57	1
Carbon disulfide	ND		1.0		ug/L			10/17/11 23:57	1
Carbon tetrachloride	ND		1.0		ug/L			10/17/11 23:57	1
Chlorobenzene	ND		1.0		ug/L			10/17/11 23:57	1
Chloroethane	ND		1.0		ug/L			10/17/11 23:57	1
Chloroform	ND		1.0		ug/L			10/17/11 23:57	1
Chloromethane	ND		1.0		ug/L			10/17/11 23:57	1
1,1-Dichloroethane	ND		1.0		ug/L			10/17/11 23:57	1
1,2-Dichloroethane	ND		1.0		ug/L			10/17/11 23:57	1
1,1-Dichloroethene	ND		1.0		ug/L			10/17/11 23:57	1
1,2-Dichloropropane	ND		1.0		ug/L			10/17/11 23:57	1
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/17/11 23:57	1
trans-1,3-Dichloropropene	ND		1.0		ug/L			10/17/11 23:57	1
Ethylbenzene	ND		1.0		ug/L			10/17/11 23:57	1
2-Hexanone	ND		10		ug/L			10/17/11 23:57	1
Methylene Chloride	ND		1.0		ug/L			10/17/11 23:57	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/L			10/17/11 23:57	1
Styrene	ND		1.0		ug/L			10/17/11 23:57	1
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/17/11 23:57	1
Tetrachloroethene	ND		1.0		ug/L			10/17/11 23:57	1
Toluene	ND		1.0		ug/L			10/17/11 23:57	1
Trichloroethene	ND		1.0		ug/L			10/17/11 23:57	1
Vinyl chloride	ND		1.0		ug/L			10/17/11 23:57	1
Xylenes, Total	ND		2.0		ug/L			10/17/11 23:57	1
1,1,1-Trichloroethane	ND		1.0		ug/L			10/17/11 23:57	1
1,1,2-Trichloroethane	ND		1.0		ug/L			10/17/11 23:57	1
Cyclohexane	ND		1.0		ug/L			10/17/11 23:57	1
1,2-Dibromo-3-Chloropropane	ND		2.0		ug/L			10/17/11 23:57	1
Ethylene Dibromide	ND		1.0		ug/L			10/17/11 23:57	1
Dichlorodifluoromethane	ND		1.0		ug/L			10/17/11 23:57	1
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/17/11 23:57	1
trans-1,2-Dichloroethene	ND		1.0		ug/L			10/17/11 23:57	1
Isopropylbenzene	ND		1.0		ug/L			10/17/11 23:57	1
Methyl acetate	ND		10		ug/L			10/17/11 23:57	1
Methyl tert-butyl ether	ND		5.0		ug/L			10/17/11 23:57	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/17/11 23:57	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/17/11 23:57	1
1,2-Dichlorobenzene	ND		1.0		ug/L			10/17/11 23:57	1
1,3-Dichlorobenzene	ND		1.0		ug/L			10/17/11 23:57	1
1,4-Dichlorobenzene	ND		1.0		ug/L			10/17/11 23:57	1
Trichlorofluoromethane	ND		1.0		ug/L			10/17/11 23:57	1
Chlorodibromomethane	ND		1.0		ug/L			10/17/11 23:57	1
Methylcyclohexane	ND		1.0		ug/L			10/17/11 23:57	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-19459/5
Matrix: Water
Analysis Batch: 19459

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB % Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		63 - 129		10/17/11 23:57	1
4-Bromofluorobenzene (Surr)	100		66 - 117		10/17/11 23:57	1
Toluene-d8 (Surr)	104		74 - 115		10/17/11 23:57	1
Dibromofluoromethane (Surr)	101		75 - 121		10/17/11 23:57	1

Lab Sample ID: LCS 240-19459/4
Matrix: Water
Analysis Batch: 19459

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Acetone	20.0	18.3		ug/L		92	43 - 136
Benzene	10.0	9.15		ug/L		92	83 - 112
Dichlorobromomethane	10.0	9.27		ug/L		93	72 - 121
Bromoform	10.0	10.1		ug/L		101	40 - 131
Bromomethane	10.0	7.47		ug/L		75	11 - 185
2-Butanone (MEK)	20.0	20.6		ug/L		103	60 - 126
Carbon disulfide	10.0	8.13		ug/L		81	62 - 142
Carbon tetrachloride	10.0	8.76		ug/L		88	66 - 128
Chlorobenzene	10.0	8.53		ug/L		85	85 - 110
Chloroethane	10.0	7.92		ug/L		79	25 - 153
Chloroform	10.0	9.59		ug/L		96	79 - 117
Chloromethane	10.0	7.67		ug/L		77	44 - 126
1,1-Dichloroethane	10.0	9.53		ug/L		95	82 - 115
1,2-Dichloroethane	10.0	9.72		ug/L		97	71 - 127
1,1-Dichloroethene	10.0	10.2		ug/L		102	78 - 131
1,2-Dichloropropane	10.0	9.61		ug/L		96	81 - 115
cis-1,3-Dichloropropene	10.0	8.27		ug/L		83	61 - 115
trans-1,3-Dichloropropene	10.0	8.35		ug/L		84	58 - 117
Ethylbenzene	10.0	8.41		ug/L		84	83 - 112
2-Hexanone	20.0	21.5		ug/L		108	55 - 133
Methylene Chloride	10.0	8.30		ug/L		83	66 - 131
4-Methyl-2-pentanone (MIBK)	20.0	20.6		ug/L		103	63 - 128
Styrene	10.0	9.36		ug/L		94	79 - 114
1,1,2,2-Tetrachloroethane	10.0	8.37		ug/L		84	68 - 118
Tetrachloroethene	10.0	8.60		ug/L		86	79 - 114
Toluene	10.0	8.89		ug/L		89	84 - 111
Trichloroethene	10.0	9.48		ug/L		95	76 - 117
Vinyl chloride	10.0	8.03		ug/L		80	53 - 127
Xylenes, Total	30.0	26.0		ug/L		87	83 - 112
1,1,1-Trichloroethane	10.0	8.92		ug/L		89	74 - 118
1,1,2-Trichloroethane	10.0	9.19		ug/L		92	80 - 112
Cyclohexane	10.0	8.47		ug/L		85	54 - 121
1,2-Dibromo-3-Chloropropane	10.0	9.36		ug/L		94	42 - 136
Ethylene Dibromide	10.0	8.80		ug/L		88	79 - 113
Dichlorodifluoromethane	10.0	6.11		ug/L		61	19 - 129
cis-1,2-Dichloroethene	10.0	9.29		ug/L		93	80 - 113
trans-1,2-Dichloroethene	10.0	8.95		ug/L		90	83 - 117
Isopropylbenzene	10.0	8.31		ug/L		83	75 - 114
Methyl acetate	10.0	ND		ug/L		98	58 - 131

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-19459/4
Matrix: Water
Analysis Batch: 19459

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Methyl tert-butyl ether	10.0	9.50		ug/L		95	52 - 144
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	9.52		ug/L		95	74 - 151
1,2,4-Trichlorobenzene	10.0	7.72		ug/L		77	48 - 135
1,2-Dichlorobenzene	10.0	9.14		ug/L		91	81 - 110
1,3-Dichlorobenzene	10.0	8.08		ug/L		81	80 - 110
1,4-Dichlorobenzene	10.0	8.63		ug/L		86	82 - 110
Trichlorofluoromethane	10.0	8.76		ug/L		88	49 - 157
Chlorodibromomethane	10.0	9.28		ug/L		93	64 - 119
Methylcyclohexane	10.0	8.64		ug/L		86	56 - 127
m-Xylene & p-Xylene	20.0	16.8		ug/L		84	83 - 113
o-Xylene	10.0	9.21		ug/L		92	83 - 113

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*116*		*63 - 129*
4-Bromofluorobenzene (Surr)	*113*		*66 - 117*
Toluene-d8 (Surr)	*107*		*74 - 115*
Dibromofluoromethane (Surr)	*105*		*75 - 121*

Lab Sample ID: 240-4639-6 MS
Matrix: Water
Analysis Batch: 19459

Client Sample ID: SW2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	% Rec	% Rec. Limits
Acetone	ND		20.0	17.9		ug/L		90	33 - 145
Benzene	ND		10.0	9.85		ug/L		99	72 - 121
Dichlorobromomethane	ND		10.0	9.67		ug/L		97	67 - 120
Bromoform	ND		10.0	9.38		ug/L		94	32 - 128
Bromomethane	ND		10.0	6.12		ug/L		61	10 - 186
2-Butanone (MEK)	ND		20.0	18.8		ug/L		94	54 - 129
Carbon disulfide	ND		10.0	9.07		ug/L		91	57 - 147
Carbon tetrachloride	ND		10.0	9.87		ug/L		99	59 - 129
Chlorobenzene	ND		10.0	9.24		ug/L		92	80 - 110
Chloroethane	ND		10.0	9.30		ug/L		93	21 - 165
Chloroform	ND		10.0	10.3		ug/L		103	76 - 118
Chloromethane	ND		10.0	8.37		ug/L		84	33 - 132
1,1-Dichloroethane	ND		10.0	10.0		ug/L		100	79 - 116
1,2-Dichloroethane	ND		10.0	10.1		ug/L		101	68 - 129
1,1-Dichloroethene	ND		10.0	9.93		ug/L		99	74 - 135
1,2-Dichloropropane	ND		10.0	10.1		ug/L		101	78 - 115
cis-1,3-Dichloropropene	ND		10.0	7.94		ug/L		79	51 - 110
trans-1,3-Dichloropropene	ND		10.0	8.63		ug/L		86	46 - 116
Ethylbenzene	ND		10.0	9.34		ug/L		93	75 - 116
2-Hexanone	ND		20.0	19.9		ug/L		100	47 - 139
Methylene Chloride	ND		10.0	8.21		ug/L		82	63 - 128
4-Methyl-2-pentanone (MIBK)	ND		20.0	20.3		ug/L		102	56 - 131
Styrene	ND		10.0	9.65		ug/L		97	71 - 117
1,1,2,2-Tetrachloroethane	ND		10.0	8.27		ug/L		83	63 - 122
Tetrachloroethene	ND		10.0	9.98		ug/L		100	70 - 117
Toluene	ND		10.0	9.40		ug/L		92	78 - 114

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-4639-6 MS
Matrix: Water
Analysis Batch: 19459

Client Sample ID: SW2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	% Rec	% Rec. Limits
Trichloroethene	ND		10.0	9.74		ug/L		97	66 - 120
Vinyl chloride	ND		10.0	8.58		ug/L		86	49 - 130
Xylenes, Total	ND		30.0	28.4		ug/L		95	76 - 116
1,1,1-Trichloroethane	ND		10.0	10.1		ug/L		101	68 - 121
1,1,2-Trichloroethane	ND		10.0	9.33		ug/L		93	75 - 115
Cyclohexane	ND		10.0	8.68		ug/L		87	49 - 123
1,2-Dibromo-3-Chloropropane	ND		10.0	9.14		ug/L		91	32 - 139
Ethylene Dibromide	ND		10.0	9.08		ug/L		91	74 - 113
Dichlorodifluoromethane	ND		10.0	5.44		ug/L		54	17 - 128
cis-1,2-Dichloroethene	ND		10.0	9.25		ug/L		93	70 - 120
trans-1,2-Dichloroethene	ND		10.0	9.48		ug/L		95	80 - 119
Isopropylbenzene	ND		10.0	9.38		ug/L		94	68 - 116
Methyl acetate	ND		10.0	ND		ug/L		75	47 - 130
Methyl tert-butyl ether	ND		10.0	8.91		ug/L		89	46 - 144
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10.0	8.61		ug/L		86	70 - 152
1,2,4-Trichlorobenzene	ND		10.0	7.57		ug/L		76	38 - 138
1,2-Dichlorobenzene	ND		10.0	10.1		ug/L		101	75 - 111
1,3-Dichlorobenzene	ND		10.0	8.96		ug/L		90	73 - 110
1,4-Dichlorobenzene	ND		10.0	8.99		ug/L		90	75 - 110
Trichlorofluoromethane	ND		10.0	8.28		ug/L		83	46 - 157
Chlorodibromomethane	ND		10.0	9.42		ug/L		94	56 - 118
Methylcyclohexane	ND		10.0	7.31		ug/L		73	49 - 127
m-Xylene & p-Xylene	ND		20.0	18.7		ug/L		94	75 - 117
o-Xylene	ND		10.0	9.69		ug/L		97	76 - 116

Surrogate	*MS % Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*63 - 129*
4-Bromofluorobenzene (Surr)	*110*		*66 - 117*
Toluene-d8 (Surr)	*105*		*74 - 115*
Dibromofluoromethane (Surr)	*113*		*75 - 121*

Lab Sample ID: 240-4639-6 MSD
Matrix: Water
Analysis Batch: 19459

Client Sample ID: SW2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Acetone	ND		20.0	16.9		ug/L		85	33 - 145	6	30
Benzene	ND		10.0	9.34		ug/L		93	72 - 121	5	30
Dichlorobromomethane	ND		10.0	9.48		ug/L		95	67 - 120	2	30
Bromoform	ND		10.0	9.83		ug/L		98	32 - 128	5	30
Bromomethane	ND		10.0	6.57		ug/L		66	10 - 186	7	30
2-Butanone (MEK)	ND		20.0	18.2		ug/L		91	54 - 129	3	30
Carbon disulfide	ND		10.0	8.72		ug/L		87	57 - 147	4	30
Carbon tetrachloride	ND		10.0	9.10		ug/L		91	59 - 129	8	30
Chlorobenzene	ND		10.0	9.28		ug/L		93	80 - 110	0	30
Chloroethane	ND		10.0	8.32		ug/L		83	21 - 165	11	30
Chloroform	ND		10.0	9.73		ug/L		97	76 - 118	6	30
Chloromethane	ND		10.0	8.50		ug/L		85	33 - 132	2	30
1,1-Dichloroethane	ND		10.0	9.67		ug/L		97	79 - 116	3	30

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-4639-6 MSD
Matrix: Water
Analysis Batch: 19459

Client Sample ID: SW2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
1,2-Dichloroethane	ND		10.0	9.79		ug/L		98	68 - 129	3	30
1,1-Dichloroethene	ND		10.0	9.52		ug/L		95	74 - 135	4	30
1,2-Dichloropropane	ND		10.0	9.53		ug/L		95	78 - 115	6	30
cis-1,3-Dichloropropene	ND		10.0	8.11		ug/L		81	51 - 110	2	30
trans-1,3-Dichloropropene	ND		10.0	8.87		ug/L		89	46 - 116	3	30
Ethylbenzene	ND		10.0	9.16		ug/L		92	75 - 116	2	30
2-Hexanone	ND		20.0	18.7		ug/L		94	47 - 139	6	30
Methylene Chloride	ND		10.0	8.47		ug/L		85	63 - 128	3	30
4-Methyl-2-pentanone (MIBK)	ND		20.0	19.9		ug/L		100	56 - 131	2	30
Styrene	ND		10.0	9.52		ug/L		95	71 - 117	1	30
1,1,2,2-Tetrachloroethane	ND		10.0	8.83		ug/L		88	63 - 122	7	30
Tetrachloroethene	ND		10.0	9.13		ug/L		91	70 - 117	9	30
Toluene	ND		10.0	9.48		ug/L		93	78 - 114	1	30
Trichloroethene	ND		10.0	9.37		ug/L		94	66 - 120	4	30
Vinyl chloride	ND		10.0	8.35		ug/L		84	49 - 130	3	30
Xylenes, Total	ND		30.0	28.4		ug/L		95	76 - 116	0	30
1,1,1-Trichloroethane	ND		10.0	9.68		ug/L		97	68 - 121	4	30
1,1,2-Trichloroethane	ND		10.0	9.01		ug/L		90	75 - 115	3	30
Cyclohexane	ND		10.0	8.29		ug/L		83	49 - 123	5	30
1,2-Dibromo-3-Chloropropane	ND		10.0	9.26		ug/L		93	32 - 139	1	30
Ethylene Dibromide	ND		10.0	8.93		ug/L		89	74 - 113	2	30
Dichlorodifluoromethane	ND		10.0	5.64		ug/L		56	17 - 128	4	30
cis-1,2-Dichloroethene	ND		10.0	9.33		ug/L		93	70 - 120	1	30
trans-1,2-Dichloroethene	ND		10.0	9.16		ug/L		92	80 - 119	3	30
Isopropylbenzene	ND		10.0	8.98		ug/L		90	68 - 116	4	30
Methyl acetate	ND		10.0	ND		ug/L		65	47 - 130	14	30
Methyl tert-butyl ether	ND		10.0	9.03		ug/L		90	46 - 144	1	30
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10.0	8.48		ug/L		85	70 - 152	2	30
1,2,4-Trichlorobenzene	ND		10.0	8.03		ug/L		80	38 - 138	6	30
1,2-Dichlorobenzene	ND		10.0	9.86		ug/L		99	75 - 111	2	30
1,3-Dichlorobenzene	ND		10.0	9.11		ug/L		91	73 - 110	2	30
1,4-Dichlorobenzene	ND		10.0	8.84		ug/L		88	75 - 110	2	30
Trichlorofluoromethane	ND		10.0	8.55		ug/L		86	46 - 157	3	30
Chlorodibromomethane	ND		10.0	9.58		ug/L		96	56 - 118	2	30
Methylcyclohexane	ND		10.0	7.07		ug/L		71	49 - 127	3	30
m-Xylene & p-Xylene	ND		20.0	18.3		ug/L		92	75 - 117	2	30
o-Xylene	ND		10.0	10.1		ug/L		101	76 - 116	4	30

Surrogate	*MSD % Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*108*		*63 - 129*
4-Bromofluorobenzene (Surr)	*114*		*66 - 117*
Toluene-d8 (Surr)	*102*		*74 - 115*
Dibromofluoromethane (Surr)	*106*		*75 - 121*

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-19746/28
Matrix: Water
Analysis Batch: 19746

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.50		ug/L			10/20/11 04:44	1
Ethane	ND		0.50		ug/L			10/20/11 04:44	1
Ethylene	ND		0.50		ug/L			10/20/11 04:44	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*90*		*10 - 168*		*10/20/11 04:44*	*1*

Lab Sample ID: MB 240-19746/4
Matrix: Water
Analysis Batch: 19746

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.50		ug/L			10/19/11 15:39	1
Ethane	ND		0.50		ug/L			10/19/11 15:39	1
Ethylene	ND		0.50		ug/L			10/19/11 15:39	1

Surrogate	*MB % Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,1-Trifluoroethane	*101*		*10 - 168*		*10/19/11 15:39*	*1*

Lab Sample ID: LCS 240-19746/27
Matrix: Water
Analysis Batch: 19746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Methane	116	104		ug/L		90	75 - 114
Ethane	218	201		ug/L		93	71 - 123
Ethylene	203	164		ug/L		81	72 - 126

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*85*		*10 - 168*

Lab Sample ID: LCS 240-19746/3
Matrix: Water
Analysis Batch: 19746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Methane	116	108		ug/L		93	75 - 114
Ethane	218	211		ug/L		97	71 - 123
Ethylene	203	179		ug/L		88	72 - 126

Surrogate	*LCS % Recovery*	*LCS Qualifier*	*Limits*
1,1,1-Trifluoroethane	*95*		*10 - 168*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 240-18455/5
Matrix: Water
Analysis Batch: 18455

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.10		mg/L			10/07/11 17:04	1

Lab Sample ID: LCS 240-18455/6
Matrix: Water
Analysis Batch: 18455

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Nitrate as N	2.50	2.56		mg/L		102	90 - 110

Lab Sample ID: 240-4639-8 MS
Matrix: Water
Analysis Batch: 18455

Client Sample ID: OW25
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	% Rec	% Rec. Limits
Nitrate as N	1.2		2.50	3.86		mg/L		106	80 - 120

Method: 310.1 - Alkalinity

Lab Sample ID: MB 240-18818/28
Matrix: Water
Analysis Batch: 18818

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	ND		5.0		mg/L			10/11/11 16:39	1

Lab Sample ID: MB 240-18818/3
Matrix: Water
Analysis Batch: 18818

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	ND		5.0		mg/L			10/11/11 11:03	1

Lab Sample ID: LCS 240-18818/2
Matrix: Water
Analysis Batch: 18818

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Alkalinity	102	102		mg/L		100	90 - 127

Lab Sample ID: LCS 240-18818/27
Matrix: Water
Analysis Batch: 18818

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Alkalinity	102	100		mg/L		98	90 - 127

Method: 310.1 - Alkalinity (Continued)

Lab Sample ID: 240-4639-12 DU
Matrix: Water
Analysis Batch: 18818

Client Sample ID: OW19
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	290		282		mg/L		1	20

Method: 325.2 - Chloride

Lab Sample ID: MB 240-18694/3
Matrix: Water
Analysis Batch: 18694

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0		mg/L			10/11/11 10:54	1

Lab Sample ID: MB 240-18694/49
Matrix: Water
Analysis Batch: 18694

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.0		mg/L			10/11/11 11:44	1

Lab Sample ID: LCS 240-18694/4
Matrix: Water
Analysis Batch: 18694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Chloride	44.7	43.8		mg/L		98	88 - 114

Lab Sample ID: LCS 240-18694/50
Matrix: Water
Analysis Batch: 18694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Chloride	44.7	42.9		mg/L		96	88 - 114

Method: 375.4 - Sulfate

Lab Sample ID: MB 240-19585/13
Matrix: Water
Analysis Batch: 19585

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0		mg/L			10/18/11 10:00	1

Lab Sample ID: LCS 240-19585/34
Matrix: Water
Analysis Batch: 19585

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Sulfate	29.5	28.4		mg/L		96	80 - 112

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Method: 376.1 - Sulfide

Lab Sample ID: MB 240-18638/1
Matrix: Water
Analysis Batch: 18638

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		1.0		mg/L			10/11/11 09:19	1

Lab Sample ID: LCS 240-18638/2
Matrix: Water
Analysis Batch: 18638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Sulfide	16.5	16.4		mg/L		99	79 - 110

Method: 415.1 - TOC

Lab Sample ID: MB 240-19276/33
Matrix: Water
Analysis Batch: 19276

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0		mg/L			10/14/11 20:10	1

Lab Sample ID: LCS 240-19276/34
Matrix: Water
Analysis Batch: 19276

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Total Organic Carbon	29.9	28.9		mg/L		97	88 - 115

Lab Sample ID: 240-4639-8 MS
Matrix: Water
Analysis Batch: 19276

Client Sample ID: OW25
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	% Rec	% Rec. Limits
Total Organic Carbon	ND		25.0	26.8		mg/L		104	72 - 136

Lab Sample ID: 240-4639-8 MSD
Matrix: Water
Analysis Batch: 19276

Client Sample ID: OW25
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Total Organic Carbon	ND		25.0	26.7		mg/L		103	72 - 136	1	20

GC/MS VOA

Analysis Batch: 19255

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4639-4	SED 1	Total/NA	Solid	8260B	
240-4639-5	SED DUP	Total/NA	Solid	8260B	
240-4639-7	SED 2	Total/NA	Solid	8260B	
240-4639-7 MS	SED 2	Total/NA	Solid	8260B	
240-4639-7 MSD	SED 2	Total/NA	Solid	8260B	
LCS 240-19255/5	Lab Control Sample	Total/NA	Solid	8260B	
MB 240-19255/6	Method Blank	Total/NA	Solid	8260B	

Analysis Batch: 19459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4639-1	FB3	Total/NA	Water	8260B	
240-4639-2	SW1	Total/NA	Water	8260B	
240-4639-3	SW DUP	Total/NA	Water	8260B	
240-4639-6	SW2	Total/NA	Water	8260B	
240-4639-6 MS	SW2	Total/NA	Water	8260B	
240-4639-6 MSD	SW2	Total/NA	Water	8260B	
240-4639-8	OW25	Total/NA	Water	8260B	
240-4639-9	PUMP RINSE	Total/NA	Water	8260B	
240-4639-10	OW24	Total/NA	Water	8260B	
240-4639-11	OW18	Total/NA	Water	8260B	
240-4639-12	OW19	Total/NA	Water	8260B	
240-4639-13	TB3	Total/NA	Water	8260B	
LCS 240-19459/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-19459/5	Method Blank	Total/NA	Water	8260B	

GC VOA

Analysis Batch: 19746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4639-8	OW25	Total/NA	Water	RSK-175	
240-4639-10	OW24	Total/NA	Water	RSK-175	
240-4639-11	OW18	Total/NA	Water	RSK-175	
240-4639-12	OW19	Total/NA	Water	RSK-175	
LCS 240-19746/27	Lab Control Sample	Total/NA	Water	RSK-175	
LCS 240-19746/3	Lab Control Sample	Total/NA	Water	RSK-175	
MB 240-19746/28	Method Blank	Total/NA	Water	RSK-175	
MB 240-19746/4	Method Blank	Total/NA	Water	RSK-175	

General Chemistry

Analysis Batch: 18455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4639-8	OW25	Total/NA	Water	300.0	
240-4639-8 MS	OW25	Total/NA	Water	300.0	
240-4639-10	OW24	Total/NA	Water	300.0	
240-4639-11	OW18	Total/NA	Water	300.0	
240-4639-12	OW19	Total/NA	Water	300.0	
LCS 240-18455/6	Lab Control Sample	Total/NA	Water	300.0	
MB 240-18455/5	Method Blank	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 18487

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4639-4	SED 1	Total/NA	Solid	Moisture	
240-4639-5	SED DUP	Total/NA	Solid	Moisture	
240-4639-7	SED 2	Total/NA	Solid	Moisture	
240-4639-7 DU	SED 2	Total/NA	Solid	Moisture	

Analysis Batch: 18638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4639-8	OW25	Total/NA	Water	376.1	
240-4639-10	OW24	Total/NA	Water	376.1	
240-4639-11	OW18	Total/NA	Water	376.1	
240-4639-12	OW19	Total/NA	Water	376.1	
LCS 240-18638/2	Lab Control Sample	Total/NA	Water	376.1	
MB 240-18638/1	Method Blank	Total/NA	Water	376.1	

Analysis Batch: 18694

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4639-8	OW25	Total/NA	Water	325.2	
240-4639-10	OW24	Total/NA	Water	325.2	
240-4639-11	OW18	Total/NA	Water	325.2	
240-4639-12	OW19	Total/NA	Water	325.2	
LCS 240-18694/4	Lab Control Sample	Total/NA	Water	325.2	
LCS 240-18694/50	Lab Control Sample	Total/NA	Water	325.2	
MB 240-18694/3	Method Blank	Total/NA	Water	325.2	
MB 240-18694/49	Method Blank	Total/NA	Water	325.2	

Analysis Batch: 18818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4639-8	OW25	Total/NA	Water	310.1	
240-4639-10	OW24	Total/NA	Water	310.1	
240-4639-11	OW18	Total/NA	Water	310.1	
240-4639-12	OW19	Total/NA	Water	310.1	
240-4639-12 DU	OW19	Total/NA	Water	310.1	
LCS 240-18818/2	Lab Control Sample	Total/NA	Water	310.1	
LCS 240-18818/27	Lab Control Sample	Total/NA	Water	310.1	
MB 240-18818/28	Method Blank	Total/NA	Water	310.1	
MB 240-18818/3	Method Blank	Total/NA	Water	310.1	

Analysis Batch: 19276

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4639-8	OW25	Total/NA	Water	415.1	
240-4639-8 MS	OW25	Total/NA	Water	415.1	
240-4639-8 MSD	OW25	Total/NA	Water	415.1	
240-4639-10	OW24	Total/NA	Water	415.1	
240-4639-11	OW18	Total/NA	Water	415.1	
240-4639-12	OW19	Total/NA	Water	415.1	
LCS 240-19276/34	Lab Control Sample	Total/NA	Water	415.1	
MB 240-19276/33	Method Blank	Total/NA	Water	415.1	

Analysis Batch: 19585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4639-8	OW25	Total/NA	Water	375.4	
240-4639-10	OW24	Total/NA	Water	375.4	

General Chemistry (Continued)

Analysis Batch: 19585 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-4639-11	OW18	Total/NA	Water	375.4	
240-4639-12	OW19	Total/NA	Water	375.4	
LCS 240-19585/34	Lab Control Sample	Total/NA	Water	375.4	
MB 240-19585/13	Method Blank	Total/NA	Water	375.4	

Client Sample ID: FB3
Date Collected: 10/06/11 09:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19459	10/18/11 01:50	LE	TAL NC

Client Sample ID: SW1
Date Collected: 10/06/11 09:45
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19459	10/18/11 02:12	LE	TAL NC

Client Sample ID: SW DUP
Date Collected: 10/06/11 00:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19459	10/18/11 02:35	LE	TAL NC

Client Sample ID: SED 1
Date Collected: 10/06/11 09:55
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-4
Matrix: Solid
Percent Solids: 58.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19255	10/14/11 23:00	TL	TAL NC
Total/NA	Analysis	Moisture		1	18487	10/10/11 09:57	CN	TAL NC

Client Sample ID: SED DUP
Date Collected: 10/06/11 00:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-5
Matrix: Solid
Percent Solids: 61.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19255	10/14/11 23:21	TL	TAL NC
Total/NA	Analysis	Moisture		1	18487	10/10/11 09:57	CN	TAL NC

Client Sample ID: SW2
Date Collected: 10/06/11 10:40
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19459	10/18/11 02:58	LE	TAL NC

Lab Chronicle

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: SED 2

Date Collected: 10/06/11 10:50
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-7
Matrix: Solid
Percent Solids: 42.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19255	10/14/11 23:43	TL	TAL NC
Total/NA	Analysis	Moisture		1	18487	10/10/11 10:07	CN	TAL NC

Client Sample ID: OW25

Date Collected: 10/06/11 10:45
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19459	10/18/11 04:06	LE	TAL NC
Total/NA	Analysis	RSK-175		1	19746	10/19/11 18:22	DH	TAL NC
Total/NA	Analysis	300.0		1	18455	10/07/11 17:37	LG	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	325.2		1	18694	10/11/11 11:45	BR	TAL NC
Total/NA	Analysis	310.1		1	18818	10/11/11 16:45	JB	TAL NC
Total/NA	Analysis	415.1		1	19276	10/14/11 20:32	TH	TAL NC
Total/NA	Analysis	375.4		1	19585	10/18/11 10:28	JK	TAL NC

Client Sample ID: PUMP RINSE

Date Collected: 10/06/11 11:15
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19459	10/18/11 04:28	LE	TAL NC

Client Sample ID: OW24

Date Collected: 10/06/11 12:15
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19459	10/18/11 04:51	LE	TAL NC
Total/NA	Analysis	RSK-175		1	19746	10/19/11 18:55	DH	TAL NC
Total/NA	Analysis	300.0		1	18455	10/07/11 18:09	LG	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	325.2		1	18694	10/11/11 11:45	BR	TAL NC
Total/NA	Analysis	310.1		1	18818	10/11/11 16:53	JB	TAL NC
Total/NA	Analysis	415.1		1	19276	10/14/11 21:05	TH	TAL NC
Total/NA	Analysis	375.4		1	19585	10/18/11 10:28	JK	TAL NC

Lab Chronicle

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Client Sample ID: OW18

Date Collected: 10/06/11 13:25
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19459	10/18/11 05:14	LE	TAL NC
Total/NA	Analysis	RSK-175		2	19746	10/20/11 12:23	DH	TAL NC
Total/NA	Analysis	300.0		1	18455	10/07/11 18:26	LG	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	325.2		1	18694	10/11/11 11:45	BR	TAL NC
Total/NA	Analysis	310.1		1	18818	10/11/11 17:04	JB	TAL NC
Total/NA	Analysis	415.1		1	19276	10/14/11 21:15	TH	TAL NC
Total/NA	Analysis	375.4		1	19585	10/18/11 10:28	JK	TAL NC

Client Sample ID: OW19

Date Collected: 10/06/11 15:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-12
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19459	10/18/11 05:36	LE	TAL NC
Total/NA	Analysis	RSK-175		5	19746	10/20/11 12:56	DH	TAL NC
Total/NA	Analysis	300.0		1	18455	10/07/11 18:42	LG	TAL NC
Total/NA	Analysis	376.1		1	18638	10/11/11 09:19	BW	TAL NC
Total/NA	Analysis	325.2		5	18694	10/11/11 11:59	BR	TAL NC
Total/NA	Analysis	310.1		1	18818	10/11/11 17:15	JB	TAL NC
Total/NA	Analysis	415.1		1	19276	10/14/11 21:26	TH	TAL NC
Total/NA	Analysis	375.4		1	19585	10/18/11 10:30	JK	TAL NC

Client Sample ID: TB3

Date Collected: 10/06/11 00:00
Date Received: 10/07/11 09:00

Lab Sample ID: 240-4639-13
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	19459	10/18/11 05:59	LE	TAL NC

Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Cardinal Resources
Project/Site: C & D GW Sampling

TestAmerica Job ID: 240-4639-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica North Canton	ACLASS	DoD ELAP		ADE-1437
TestAmerica North Canton	California	NELAC	9	01144CA
TestAmerica North Canton	Connecticut	State Program	1	PH-0590
TestAmerica North Canton	Florida	NELAC	4	E87225
TestAmerica North Canton	Georgia	Georgia EPD	4	N/A
TestAmerica North Canton	Illinois	NELAC	5	200004
TestAmerica North Canton	Kansas	NELAC	7	E-10336
TestAmerica North Canton	Kentucky	State Program	4	58
TestAmerica North Canton	Minnesota	NELAC	5	039-999-348
TestAmerica North Canton	Nevada	State Program	9	OH-000482008A
TestAmerica North Canton	New Jersey	NELAC	2	OH001
TestAmerica North Canton	New York	NELAC	2	10975
TestAmerica North Canton	Ohio	OVAP	5	CL0024
TestAmerica North Canton	Pennsylvania	NELAC	3	68-00340
TestAmerica North Canton	USDA	USDA		P330-11-00328
TestAmerica North Canton	Virginia	NELAC Secondary AB	3	460175
TestAmerica North Canton	West Virginia	West Virginia DEP	3	210
TestAmerica North Canton	Wisconsin	State Program	5	999518190

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: _____
Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other _____

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager:	Site Contact:	Lab Contact:	COC No:
Company Name: Cardinal Resources, LLC	Brad Jones	Brad Jones	Nathan Preyras	034332
Address: 1505 E. Carson St.	Telephone: 412-374-0989	Telephone:	Telephone:	2 of 2 COCs
City/State/Zip: Pittsburgh-PA 15203	Email: BJones@CardinalRes.com	Analysis Turnaround Time (In BUS days)	Analyses	For lab use only
Phone: 412 374-0989		TAT if different from below _____ ☐ 3 weeks ☒ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client: ☐ Lab pickup: ☐ Lab sampling: ☐
Project Name: C+D	Method of Shipment/Carrier: FEDEX			
Project Number: 104-0012-0200	Shipping/Tracking No: 8693 7515 0671			Job/SDG No:
PO #				Sample Specific Notes / Special Instructions:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	TCL VOCs	Methane/Ethane/Ethene	Sulfate	Sulfide	Alkalinity	Chloride	Nitrate (N)	TDS								
Sed 2 MSD	10-6-11	1050			X								X				X														
OW25		1045		X				X		X		X	X				X	X	X	X	X	X	X	X							
Pump Rinse		1115		X						X							X														
OW24		1215		X				X		X		X	X				X	X	X	X	X	X	X	X							
OW18		1325		X				X		X		X	X				X	X	X	X	X	X	X	X							
OW19		1500		X				X		X		X	X				X	X	X	X	X	X	X	X							
TB3	Lab Prepared		X							X							X														

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☒ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
John Vogeding	Cardinal Resources	Oct 6, 2011 / 1630			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
				TAL	10-7-11 0900

TAL 0018-1 (04/10)

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: _____
Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other _____

TestAmerica Laboratories, Inc.

Client Contact

Company Name: Cardinal Resources, LLC	Client Project Manager: Brad Jones	Site Contact: Brad Jones	Lab Contact: Nathan Pietras
Address: 1505 E. Carson St. 15203	Telephone: 412 374 0989	Telephone:	Telephone:
City/State/Zip: Pittsburgh - PA	Email: BJones@CardinalRes.com		
Phone: 412-374-0989			
Project Name: C+D	Method of Shipment/Carrier: FEDEX		
Project Number: 104-0012-0200	Shipping/Tracking No: 8693 7515 0671		

Analysis Turnaround Time (In BUS days)
TAT if different from below _____
☐ 3 weeks
☒ 2 weeks
☐ 1 week
☐ 2 days
☐ 1 day

COC No: 034331
1 of 2 COCs

For lab use only
Walk-in client ☐
Lab pickup ☐
Lab sampling ☐
Job/SDG No:

PO#

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite-C/Grab-G	Analyses: TLC VOCs	Methane/Ethane/Ethene	Sulfate	Sulfide	Alkalinity	Chloride	Nitrate (N)	TOC	Sample Specific Notes / Special Instructions:
FB3	10-6-11	0900		X						X							X								
SW1		0945		X						X							X								
SW Dup		—		X						X							X								
Sed 1		0955			X								X				X								
Sed Dup		—			X								X				X								
SW2		1040		X						X							X								
SW2 MS		1040		X						X							X								
SW2 MSD		1040		X						X							X								
Sed 2		1050			X								X				X								
Sed 2 MS		1050			X								X				X								

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☒ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
John Vogelzang	Cardinal Resources	Oct 6, 2011 / 1630			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: TALE	Date/Time: 10-7-11 0900

TAL 0018-1 (04/10)

TestAmerica Cooler Receipt Form/Narrative **Lot Number:**_____
North Canton Facility

Client Cardinal Resources Project GED By: KW
Cooler Received on 10-7-11 Opened on 10-7-11 (Signature)
FedEx ☑ UPS ☐ DHL ☐ FAS ☐ Stetson ☐ Client Drop Off ☐ TestAmerica Courier ☐ Other_____
TestAmerica Cooler # _____ Multiple Coolers ☐ Foam Box ☐ Client Cooler ☑ Other _____

1. Were custody seals on the outside of the cooler(s)? Yes ☐ No ☑ Intact? Yes ☐ No ☐ NA ☑
   If YES, Quantity_____ Quantity Unsalvageable_____
   Were custody seals on the outside of cooler(s) signed and dated? Yes ☐ No ☐ NA ☑
   Were custody seals on the bottle(s)? Yes ☐ No ☑
   If YES, are there any exceptions? _____
2. Shippers' packing slip attached to the cooler(s)? Yes ☑ No ☐
3. Did custody papers accompany the sample(s)? Yes ☑ No ☐ Relinquished by client? Yes ☑ No ☐
4. Were the custody papers signed in the appropriate place? Yes ☑ No ☐
5. Packing material used: Bubble Wrap ☑ Foam ☐ None ☐ Other _____
6. Cooler temperature upon receipt 0.7 °C See back of form for multiple coolers/temps ☐
   METHOD: IR ☑ Other ☐ _____
   COOLANT: Wet Ice ☑ Blue Ice ☐ Dry Ice ☐ Water ☐ None ☐
7. Did all bottles arrive in good condition (Unbroken)? Yes ☑ No ☐
8. Could all bottle labels be reconciled with the COC? Yes ☑ No ☐
9. Were sample(s) at the correct pH upon receipt? Yes ☑ No ☐ NA ☐
10. Were correct bottle(s) used for the test(s) indicated? Yes ☑ No ☐
11. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☑ NA ☐
12. Sufficient quantity received to perform indicated analyses? Yes ☑ No ☐
13. Was a trip blank present in the cooler(s)? Yes ☑ No ☐ Were VOAs on the COC? Yes ☑ No ☐

Contacted PM _____ Date _____ by _____ via Verbal ☐ Voice Mail ☐ Other ☐
Concerning

14. CHAIN OF CUSTODY

The following discrepancies occurred:

15. SAMPLE CONDITION

Sample(s)_____ were received after the recommended holding time had expired.
Sample(s)_____ were received in a broken container.
Sample(s)_____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in Sample Receiving to meet recommended pH level(s). *Nitric Acid Lot# 110410-HNO_3; Sulfuric Acid Lot# 110410-H_2SO_4; Sodium Hydroxide Lot# 121809 -NaOH; Hydrochloric Acid Lot# 041911-HCl; Sodium Hydroxide and Zinc Acetate Lot#* 100108-$(CH_3COO)_2ZN$/NaOH. What time was preservative added to sample(s)? _____

Client ID	pH	Date	Initials
0025	12 7.9	10-7-11	KW
24	12 7.9		
18	12 7.9		
19	12 7.9		

TestAmerica Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH	Date	Initials

Cooler #	Temp. °C	Method	Coolant

Discrepancies Cont'd:

Login Sample Receipt Checklist

Client: Cardinal Resources

Job Number: 240-4639-1

Login Number: 4639
List Number: 1
Creator: Sutek, Nick

List Source: TestAmerica North Canton

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix B

Historic Groundwater, Surface Water, and Sediment Results

Table B-1
Historical Summary of Detected TCL Volatile Organic Compounds in Groundwater (ug/L)
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Analyte		Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloro-benzene	Chloroethane	Chloroform	Chloromethane	1,1-DCA	1,2-DCA	1,1-DCE	1,2-DCE (total)	Ethylbenzene	2-Hexanone	Methylene Chloride	1,1,2,2-PCA	PCE	Styrene	Toluene	TCE	Vinyl Chloride	Xylenes (total)
NYSDEC SGV		50 (G)	1 (S)	NA	5 (S)	5 (S)*	5 (S)*	7 (S)	1	5 (S)*	0.6 (S)	5 (S)*	5 (S)*	5 (S)*	50 (G)	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	2 (S)	5 (S)*
U.S. EPA MCL		NA	5	NA	5	100	NA	NA	5	NA	5	7	70	700	NA	5	NA	5	100	1,000	5	2	10,000
Well ID	Date																						
MW-1	03/22/93	NR	0.9 J	NR	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NR	<0.1 B	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	09/26/94	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NR	<10	<10	<10	-	<10	<10	<10	<10
	04/20/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10
	02/18/99	<10	0.66 J	<1.0	<1.0	0.40 J	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	01/05/00	<10	0.65 J,B	<1.0	<1.0	0.37 J	<2.0	0.083 J	<2.0	<1.0	<1.0	0.22 J	<1.0	0.14 J	<10	0.35 J,B	<1.0	<1.0	-	0.097 J	<1.0	<2.0	<1.0
	06/06/00	<10	0.57 J	<1.0	<1.0	0.30 J	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	03/15/01	10 UJ	0.40 J	<1.0	<1.0	0.38 J	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	08/29/01	<10	<1.0	<1.0	<1.0	0.32 J	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/25/02	10 U	<1.0	<1.0	<1.0	0.17 J	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	1.0 U	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	09/18/02	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/09/03	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/25/04	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	0.24 J	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	1.0
	02/15/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	2.0 U	1.0 U
	08/30/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	06/13/07	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/24/08	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/14/09	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/21/10	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	10/13/11	10U	1.0U	1.0U	1.0U	1.0U	2.0U	1.0U	2.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U	1.0 U	2.0U
MW-4	03/24/93	NR	18 J	NR	<0.5	0.4 J	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.3 J	<0.5	NR	<4.1 B,J	<0.5	<0.5	-	0.1 J	<0.5	<0.5	<0.5
	09/26/94	<10	11	<10	<1.0	<10	<10	<10	<10	<10	<10	<10	<10	<10	NR	<10	<10	<10	-	<10	<10	<10	<10
	04/24/95	<10	15	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10
	02/18/99	<10	5.7	<1.0	<1.0	0.20 J	<2.0	<1.0	<2.0	<1.0	<0.1	<1.0	9.8	<1.0	<10	<1.0	<1.0	0.16 J	-	0.16 J	0.20 J	<2.0	<1.0
	01/05/00	<10	6.9 B	<1.0	<1.0	0.26 J	<2.0	<1.0	<2.0	0.13 J	<1.0	0.45 J	3.3	<1.0	<10	0.11 J,B	<1.0	<1.0	-	0.090 J	0.15 J	0.30 J	<1.0
	06/06/00	<10	4.8	<1.0	<1.0	0.20 J	<2.0	<1.0	<2.0	0.11 J	<1.0	<1.0	3.8	<1.0	<10	<1.0	<1.0	0.30 J	-	<1.0	<1.0	0.18 J	<1.0
	03/14/01	<10	3.6	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.2	<1.0	<10	<1.0	<1.0	0.66 J	-	<1.0	0.42 J	<2.0	<1.0
	08/29/01	<10	12	<1.0	<1.0	0.21 J	<2.0	<1.0	0.26 J	<1.0	<1.0	<1.0	1.5	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/25/02	<10	10	<1.0	<1.0	0.21 J	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.2	<1.0	<10	1.0 U	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	09/18/02	<10	7.8	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/09/03	<10	2.2	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.84 J	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/26/04	10 U	2.5	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.50 J	<1.0	<10	<1.0	<1.0	0.72 J	-	<1.0	<1.0	<2.0	<1.0
	02/15/06	10 U	3.8	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.53 J	1.0 U	10 U	1.0 U	1.0 U	0.33 J	-	1.0 U	1.0 U	2.0 U	1.0 U
	08/29/06	10 U	9.1	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	06/13/07	10 U	7.1	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 UJ	1.0 U	0.26 J	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/24/08	10 U	4.4	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.48 J	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.28 J	2.0 U	1.0 U
	07/16/09	10 U	1.2	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	0.34 J	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/20/10	10 U	2.0	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	10/13/11	10 U	1.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0U

Table B-1
Historical Summary of Detected TCL Volatile Organic Compounds in Groundwater (ug/L)
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Analyte		Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloro-benzene	Chloroethane	Chloroform	Chloromethane	1,1-DCA	1,2-DCA	1,1-DCE	1,2-DCE (total)	Ethylbenzene	2-Hexanone	Methylene Chloride	1,1,2,2-PCA	PCE	Styrene	Toluene	TCE	Vinyl Chloride	Xylenes (total)
NYSDEC SGV		50 (G)	1 (S)	NA	5 (S)	5 (S)*	5 (S)*	7 (S)	1	5 (S)*	0.6 (S)	5 (S)*	5 (S)*	5 (S)*	50 (G)	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	2 (S)	5 (S)*
U.S. EPA MCL		NA	5	NA	5	100	NA	NA	5	NA	5	7	70	700	NA	5	NA	5	100	1,000	5	2	10,000
Well ID	Date																						
OW-2	03/23/93	NR	<0.5	NR	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	55	<0.5	NR	<1.3 B	<0.5	50	-	<0.5	22	<0.5	<0.5
	09/23/94	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	130	<10	NR	<10	<10	100	-	<10	24	<10	<10
	04/23/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	85	<10	<10	<10	<10	76	-	<10	22	<10	<10
	02/17/99	<50	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<10	<5.0	<5.0	<5.0	130	<5.0	<50	3.6 J,B	<5.0	86	-	<5.0	22	<10	<5.0
	01/05/00	<10	0.46 J	<5.0	<5.0	<5.0	<10	<5.0	<10	<5.0	<5.0	<5.0	150	<5.0	<50	<5.0	<5.0	80	-	<5.0	21	0.72 J	<5.0
	06/06/00	<33	<3.3	<3.3	<3.3	<3.3	<6.7	<3.3	<6.7	<3.3	<3.3	<3.3	99	<3.3	<33	<3.3	<3.3	80	-	<3.3	19	<6.7	<3.3
	03/15/01	<100	<10	<10	<10	<10	<20	<10	<20	<10	<10	<10	310	<10	<100	4.6 J	<10	160	-	<10	32	<20	<10
	08/29/01	<25	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<5.0	<2.5	<2.5	<2.5	69	<2.5	<25	<2.5	<2.5	61	-	<2.5	15	<5.0	<2.5
	04/25/02	<25	<2.5	<2.5	<2.5	<2.5	<5.0	<2.5	<5.0	<2.5	<2.5	<2.5	81	<2.5	<25	1.2 U	<2.5	60	-	<2.5	18	0.95 J	<2.5
	09/18/02	<29	<2.9	<2.9	<2.9	<2.9	<5.7	<2.9	<5.7	<2.9	<2.9	<2.9	85	<2.9	<29	<2.9	<2.9	68	-	<2.9	18	<5.7	<2.9
	04/09/03	<120	<12	<12	<12	<12	<25	<12	<25	<12	<12	<12	290	<12	<120	<12	<12	160	-	<12	29	<25	<12
	04/26/04	10 U	1.5 J	<6.7	<6.7	<6.7	<13	<6.7	<13	<6.7	<6.7	<6.7	170	<6.7	<67	<6.7	<6.7	110	-	1.3 J	22	<13	<6.7
	02/15/06	40 U	4.0 U	4.0 U	4.0 U	4.0 U	8.0 U	4.0 U	8.0 U	4.0 U	4.0 U	4.0 U	150	4.0 U	40 U	4.0 U	4.0 U	120	-	4.0 U	20	8.0 U	4.0 U
	05/23/06	80 U	8.0 U	8.0 U	8.0 U	8.0 U	16 U	8.0 U	16 U	8.0 U	8.0 U	8.0 U	250	8.0 U	80 U	8.0 U	8.0 U	130	8.0 U	8.0 U	22	16 U	8.0 U
	08/30/06	25 U	2.5 U	2.5 U	2.5 U	2.5 U	5.0 U	2.5 U	5.0 U	2.5 U	2.5 U	2.5 U	74	2.5 U	25 U	2.5 U	2.5 U	90	2.5 U	2.5 U	16	5.0 U	2.5 U
	11/29/06	120 U	12 U	12 U	12 U	12 U	25 U	12 U	25 U	12 U	12 U	12 U	280	12 U	120 U	12 U	12 U	140	12 U	12 U	24	25 U	12 U
	06/13/07	20 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	2.0 U	4.0 U	2.0 U	2.0 U	2.0 U	36	2.0 U	20 U	2.0 UJ	2.0 U	52	2.0 U	2.0 U	12	4.0 U	2.0 U
	07/24/08	20 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	2.0 U	4.0 U	2.0 U	2.0 U	2.0 U	30	0.96 J	20 U	2.0 U	2.0 U	59	2.0 U	2.0 U	11	4.0 U	1.1 J
	07/16/09	25 U	2.5 U	2.5 U	2.5 U	2.5 U	5.0 U	2.5 U	5.0 U	2.5 U	2.5 U	2.5 U	53	2.5 U	25 U	2.5 U	2.5 U	62	2.5 U	2.5 U	9.7	5.0 U	2.5 U
	07/21/10	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	39	1.0 U	10 U	1.0 U	1.0 U	77	1.0 U	1.0 U	12	2.0 U	1.0 U
	10/13/11	25 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	98	2.5 U	2.5 U	2.5 U	2.5 U	110	2.5 U	2.5 U	15	2.5 U	5.0 U
OW-5	03/23/93	NR	<3.0 J	NR	<0.5	0.1 J	<0.5	<0.5	<1.3	<0.5	<0.6	<0.5	8.0 R	<0.5	NR	<3.8	<0.6	1.0	-	<0.5	<1.3	1.8	<0.6
	09/29/94	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	19	<10	NR	<10	<10	<10	-	<10	<10	<10	<10
	04/25/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	7 J	<10	<10	<10	<10	<10	-	<10	<10	<10	<10
	02/18/99	<17	0.67 J	<1.7	<1.7	0.20 J	<3.3	<1.7	<3.3	<1.7	<1.0	<1.7	33	<1.7	<17	1.3 J,B	<1.0	7.8	-	<1.7	5.4	<3.3	<1.7
	01/06/00	1.3 J	0.66 J	<1.0	<1.0	0.29 J	<2.0	<1.0	<2.0	<1.0	<1.0	0.20 J	38	<1.0	<10	0.25 J,B	<1.0	18	-	0.041 J	9.0	0.26 J	<1.0
	06/07/00	<10	0.91 J	<1.0	<1.0	0.19 J	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.3	<1.0	<10	<1.0	<1.0	2.4	-	<1.0	1.7	<2.0	<1.0
	03/14/01	<10	0.46 J	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	14	<1.0	<10	<1.0	<1.0	6.2	-	<1.0	3.7	<2.0	<1.0
	08/29/01	<12	<1.2	<1.2	<1.2	0.21 J	<2.5	<1.2	<2.5	<1.2	<1.2	<1.2	29	<1.2	<12	<1.2	<1.2	7.0	-	<1.2	4.5	<2.5	<1.2
	04/24/02	14 U	0.35 J	<1.4	<1.4	0.20 J	<2.9	<1.4	<2.9	<1.4	<1.4	<1.4	37	<1.4	<14	1.4 U	<1.4	10	-	<1.4	5.3	<2.9	<1.4
	09/19/02	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	31	<1.0	<10	<1.0	<1.0	9.5	-	<1.0	5.3	<2.0	<1.0
	04/10/03	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.8	<1.0	<10	<1.0	<1.0	5.5	-	<1.0	3	<2.0	<1.0
	04/25/04	<10	0.38 J	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	8.6	<1.0	<10	<1.0	<1.0	5.2	-	<1.0	2.5	<2.0	<1.0
	02/16/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	6.2	1.0 U	10 U	1.0 U	1.0 U	4.3	-	1.0 U	2.0	2.0 U	1.0 U
	05/23/06	10 U	0.69 J	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	20	1.0 U	10 U	1.0 U	1.0 U	5.7	1.0 U	1.0 U	2.6	0.27 J	1.0 U
	08/29/06	14 U	1.4 U	1.4 U	1.4 U	1.4 U	2.9 U	1.4 U	2.9 U	1.4 U	1.4 U	1.4 U	34	1.4 U	14 U	1.4 U	1.4 U	6.1	1.4 U	1.4 U	2.8 J	0.82 J	1.4 U
	11/29/06	10 U	0.26 J	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	30	1.0 U	10 U	1.0 U	1.0 U	7.1	1.0 U	1.0 U	3.5	2.0 U	1.0 U
	06/12/07	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	8.7	1.0 U	10 U	1.0 UJ	1.0 U	4.0	1.0 U	1.0 U	1.9	2.0 U	1.0 U
	07/23/08	1.0 U	0.53 J	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	10	1.0 U	1.0 U	1.0 U	1.0 U	4.4	1.0 U	1.0 U	1.8	0.28 J	1.0 U
	07/14/09	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	3.7	1.0 U	1.0 U	1.5	2.0 U	1.0 U
	07/21/10	10 U	0.37 J	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	4.8	1.0 U	10 U	1.0 U	1.0 U	4.2	1.0 U	1.0 U	1.6	2.0 U	1.0 U
	10/13/11	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.4	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U

Table B-1
Historical Summary of Detected TCL Volatile Organic Compounds in Groundwater (ug/L)
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Analyte		Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloro-benzene	Chloroethane	Chloroform	Chloromethane	1,1-DCA	1,2-DCA	1,1-DCE	1,2-DCE (total)	Ethylbenzene	2-Hexanone	Methylene Chloride	1,1,2,2-PCA	PCE	Styrene	Toluene	TCE	Vinyl Chloride	Xylenes (total)
NYSDEC SGV		50 (G)	1 (S)	NA	5 (S)	5 (S)*	5 (S)*	7 (S)	1	5 (S)*	0.6 (S)	5 (S)*	5 (S)*	5 (S)*	50 (G)	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	2 (S)	5 (S)*
U.S. EPA MCL		NA	5	NA	5	100	NA	NA	5	NA	5	7	70	700	NA	5	NA	5	100	1,000	5	2	10,000
Well ID	Date																						
OW-6	03/23/93	NR	<1.3 J	NR	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.1 J	<1.3 J	<0.5	NR	<0.7 J,B	<0.5	13	-	<0.5	<2.9	1.1	<0.5
	09/27/94	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	4 J	<10	NR	<10	<10	17	-	<10	6.0 J	<10	<10
	04/23/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	19	-	<10	5.0 J	<10	<10
	02/18/99	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.8	<1.0	<10	3.7 B	<1.0	20	-	<1.0	4.6	<2.0	<1.0
	01/06/00	1.4 J	0.19 J,B	0.58 J	<1.0	<1.0	<2.0	<1.0	0.17 J	<1.0	<1.0	0.28 J	5.1	<1.0	<10	0.26 J,B	<1.0	21	-	<1.0	4.6	<2.0	<1.0
	06/07/00	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	2.2	<1.0	<10	<1.0	<1.0	14	-	<1.0	2.6	<2.0	<1.0
	03/15/01	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.9	<1.0	<10	<1.0	<1.0	19	-	<1.0	3.9	<2.0	<1.0
	08/29/01	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	6.7	<1.0	<10	<1.0	<1.0	12	-	<1.0	2.3	<2.0	<1.0
	04/24/02	10 U	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.7	<1.0	<10	1.1 U	<1.0	12	-	<1.0	2.9	<2.0	<1.0
	09/19/02	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	7.8	<1.0	<10	<1.0	<1.0	15	-	<1.0	3.9	<2.0	<1.0
	04/09/03	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	21	<1.0	<10	0.34 J	<1.0	28	-	<1.0	6.8	<2.0	<1.0
	04/25/04	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	21	<1.0	<10	<1.0	<1.0	32	-	<1.0	6.3	<2.0	<1.0
	02/16/06	17 U	1.7 U	1.7 U	1.7 U	1.7 U	3.3 U	1.7 U	3.3 U	1.7 U	1.7 U	1.7 U	19	1.7 U	17 U	1.7 U	1.7 U	39	-	1.7 U	7.9	3.3 U	1.7 U
	05/23/06	17 U	1.7 U	1.7 U	1.7 U	1.7 U	3.3 U	1.7 U	3.3 U	1.7 U	1.7 U	1.7 U	24	1.7 U	17 U	1.7 U	1.7 U	39	1.7 U	1.7 U	7.8	3.3 U	1.7 U
	08/31/06	14 U	1.4 U	1.4 U	1.4 U	1.4 U	2.9 U	1.4 U	2.9 U	1.4 U	1.4 U	1.4 U	20	1.4 U	14 U	1.4 U	1.4 U	40	1.4 U	1.4 U	7.7	2.9 U	1.4 U
	11/29/06	17 U	1.7 U	1.7 U	1.7 U	1.7 U	3.3 U	1.7 U	3.3 U	1.7 U	1.7 U	1.7 U	20	1.7 U	17 U	0.75 J	1.7 U	41	1.7 U	1.7 U	8.6	3.3 U	1.7 U
	06/12/07	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	19	1.0 U	10 U	1.0 UJ	1.0 U	36	1.0 U	1.0 U	9.0	2.0 U	1.0 U
	07/23/08	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	16	1.0 U	10 U	1.0 U	1.0 U	31	1.0 U	1.0 U	6.3	2.0 U	1.0 U
	07/14/09	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	16	1.0 U	10 U	1.0 U	1.0 U	30	1.0 U	1.0 U	5.5	2.0 U	1.0 U
	07/21/10	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 UJ	1.0 U	0.31 J	1.0 U	1.0 U	1.0 U	20	1.0 U	10 U	1.0 U	1.0 U	42	1.0 U	1.0 U	8.6	2.0 U	1.0 U
	10/13/11	17 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	40	1.7 U	1.7 U	1.7 U	1.7 U	52	1.7 U	1.7 U	11	1.7 U	3.3 U
OW-8	03/23/93	NR	<0.5	NR	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NR	<0.8 B	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
	09/26/94	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NR	<10	<10	<10	-	<10	<10	<10	<10
	04/20/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10
	02/18/99	<10	0.32 J	0.17 J	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<10	<10	0.32 J	<1.0	0.17 J	-	<1.0	<1.0	<2.0	<1.0
	01/06/00	<10	0.49 J	<1.0	<1.0	0.37 J	<2.0	0.083 J	<2.0	<1.0	<1.0	0.22 J	<1.0	0.14 J	<10	0.35 J,B	<1.0	<1.0	-	0.097 J	<1.0	<2.0	<1.0
	06/07/00	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	03/15/01	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	08/29/01	<10	0.20 J	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/24/02	10 U	0.20 J	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	1.0 U	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	09/19/02	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/09/03	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/25/04	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	02/16/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	2.0 U	1.0 U
	08/31/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	06/12/07	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/23/08	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/14/09	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/20/10	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	10/13/11	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U
OW-10	10/29/93	NR	37	NR	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NR	2.9 B	<1.0	<1.0	-	0.5 J	<1.0	<1.0	<1.0
	09/25/94	68	1,100	<10	<10	4 J	<10	<10	<10	<10	<10	<10	<10	9 J	NR	<10	<10	<10	-	8 J	<10	<10	53
	04/27/95	<50	2,600	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	-	<50	<50	<50	30 J
	02/16/99	<2,000	1,900	<200	<200	23 J	<400	<200	<400	<200	<200	<200	<200	<200	<2,000	100 J,B	<200	<200	-	25 J	<200	<400	<200

Table B-1
Historical Summary of Detected TCL Volatile Organic Compounds in Groundwater (ug/L)
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Analyte		Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloro-benzene	Chloroethane	Chloroform	Chloromethane	1,1-DCA	1,2-DCA	1,1-DCE	1,2-DCE (total)	Ethylbenzene	2-Hexanone	Methylene Chloride	1,1,2,2-PCA	PCE	Styrene	Toluene	TCE	Vinyl Chloride	Xylenes (total)
NYSDEC SGV		50 (G)	1 (S)	NA	5 (S)	5 (S)*	5 (S)*	7 (S)	1	5 (S)*	0.6 (S)	5 (S)*	5 (S)*	5 (S)*	50 (G)	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	2 (S)	5 (S)*
U.S. EPA MCL		NA	5	NA	5	100	NA	NA	5	NA	5	7	70	700	NA	5	NA	5	100	1,000	5	2	10,000
Well ID	Date																						
OW-10R	01/07/00	610	400	<17	<17	3.6 J,B	<33	<17	<33	<17	<17	<17	<17	4.3 J	<170	<17	<17	<17	-	8.5 J	<17	10 J	6.2 J
	06/06/00	<50	130 J	<5.0	<5.0	3.0 J	<10	<5.0	<10	<5.0	<5.0	<5.0	<5.0	2.2 J	<50	<5.0	<5.0	<5.0	-	0.52 J	<5.0	2.2 J	<5.0
	03/14/01	<10	35	<1.0	<1.0	3.6	0.80 J	<1.0	<2.0	<1.0	<1.0	<1.0	1.0	0.89 J	<10	<1.0	<1.0	<1.0	-	0.44 J	<1.0	2.4	<1.0
	08/29/01	<20	55	<2.0	<2.0	1.4 J	1.1 J	<2.0	<4.0	<2.0	<2.0	<1.0	3.5	<1.0	<20	<1.0	<2.0	<2.0	-	<1.0	<2.0	9.5	<2.0
	04/25/02	<10	30	<1.0	<1.0	4.0	2.8	<1.0	<2.0	<1.0	<1.0	<1.0	2.7	2.0 U	<10	1.2 U	<1.0	<1.0	-	1.0 U	<1.0	4.5	1.0 U
	09/19/02	<10	17	<1.0	<1.0	2.9	1.3 J	<1.0	<2.0	<1.0	<1.0	<1.0	1.5	0.91 J	<10	<1.0	<1.0	<1.0	-	0.39 J	<1.0	6.3	<1.0
	04/09/03	<10	6.8	<1.0	<1.0	3.1	0.54 J	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	0.43 J	<1.0	<1.0	-	<1.0	<1.0	0.72 J	<1.0
	04/26/04	<10	8.1	<1.0	<1.0	2.2	0.80 J	<1.0	<2.0	<1.0	<1.0	<1.0	0.57 J	0.22 J	<10	1.0 U	<1.0	<1.0	-	0.27 J	<1.0	0.99 J	<1.0
	02/15/06	10 U	3.2	1.0 U	1.0 U	1.4	0.52 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	0.47 J	1.3 U
	08/29/06	10 U	9.9	1.0 U	1.0 U	1.4	0.92 J	1.0 U	0.20 J	1.0 U	1.0 U	1.0 U	0.59 J	0.25 J	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.7 J	1.0 U
	06/13/07	10 U	4.7	1.0 U	1.0 U	1.4	0.94 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.47 J	1.0 U	10 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.89 J	1.0 U
	07/22/08	10 U	5.7	1.0 U	1.0 U	0.71 J	0.48 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.46 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.80 J	1.0 U
	07/15/09	10 U	2.7	1.0 U	1.0 U	2.3	0.62 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.33 J	1.0 U
	07/20/10	10 U	4.6	1.0 U	1.0 U	0.88 J	0.87 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.39 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.66 J	1.0 U
	10/13/11	10 U	2.4	1.0 U	1.0 U	5.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U
OW-13	10/28/93	NR	230	NR	<1.0	<1.0	<1.0	<1.0	<1.0	0.4 J	<1.0	<1.0	12	0.2 J	NR	1.2 J,B	<1.0	<1.0	-	4.8	0.9 J	<1.0	0.8 J
	09/29/94	<10	40	<10	<10	<10	<10	<10	<10	<10	<10	<10	6 J	<10	NR	<10	<10	<10	-	<10	<10	9 J	<10
	04/25/95	<10	350	<10	<10	<10	<10	<10	<10	<10	<10	<10	20	<10	<10	<10	<10	<10	-	<10	<10	34	<10
	02/16/99	<330	490	<33	<33	<33	<67	<33	<67	<33	<33	<33	52	<33	<330	18 J,B	<33	<33	-	7.6 J	<33	48 J	<33
	01/06/00	<200	620	<20	<20	<20	<40	3.5 J,B	<40	<20	<20	<20	56	2.3 J	<200	<20	<20	<20	-	2.7 J,B	1.3 J	58	<20
	06/07/00	<83	200	<8.3	<8.3	0.84 J	<17	<8.3	<17	<8.3	<8.3	<8.3	15	5.5 J	<83	<8.3	<8.3	<8.3	-	<8.3	<8.3	17	<8.3
	03/14/01	<50	130	<5.0	<5.0	<5.0	<10	<5.0	<10	<5.0	<5.0	<5.0	15	4.0 J	<50	3.0 J	<5.0	<5.0	-	<5.0	<5.0	12	<5.0
	08/29/01	<62	120	<6.2	<6.2	<6.2	<12	<6.2	<12	<6.2	<6.2	<6.2	12	<6.2	<62	<6.2	<6.2	<6.2	-	<6.2	1.1 J	9.9 J	<6.2
	04/24/02	<56	160	<5.6	<5.6	<5.6	<11	<5.6	<11	<5.6	<5.6	<5.6	11	<5.6	<56	<5.6	<5.6	<5.6	-	5.6 U	1.2 J	9.9 J	<5.6
	09/19/02	<33	81	<3.3	<3.3	<3.3	<6.7	<3.3	<6.7	<3.3	<3.3	<3.3	8.5	1.8 J	24 J	<3.3	<3.3	<3.3	-	<3.3	<3.3	5.9 J	<3.3
	04/10/03	<25	53	<2.5	<2.5	<2.5	<5.0	<2.5	<5.0	<2.5	<2.5	<2.5	5.9	1.6 J	<25	<2.5	<2.5	<2.5	-	<2.5	<2.5	4.9 J	<2.5
	04/25/04	<17	45	<1.7	<1.7	0.38 J	<3.3	<1.7	<3.3	<1.7	<1.7	<1.7	4.9	1.0 J	<17	<1.7	<1.7	<1.7	-	0.31 J	0.67 J	3.2 J	<1.7
OW-13R	02/20/06	10 U	15	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.60 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	-	0.29 J	1.0 U	1.1 J	1.0 U
	08/29/06	10 U	15	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.40 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.3 J	1.0 U
	06/12/07	10 U	11	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.42 J	1.0 U	10 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.86 J	1.0 U
	07/22/08	10 U/10 U	6.5 J/6.8 J	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	2.0 U/2.0 U	1.0 U/1.0 U	2.0 U/2.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	10 U/10 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	0.70 J/0.70 J	1.0 U/1.0 U
	07/14/09	10 U/10 U	13/12	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	2.0 U/2.0 U	1.0 U/1.0 U	2.0 U/2.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	2.4/2.3	1.0 U/1.0 U	10 U/10 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	0.64 J/0.63 J	1.6 J/1.6 J	1.0 U/1.0 U
	07/21/10	10 UJ/10 UJ	17/17	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	2.0 U/2.0 U	1.0 U/1.0 U	2.0 UJ/2.0 UJ	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	0.70 J/0.78 J	1.0 U/1.0 U	10 U/10 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	0.35 J/0.35 J	1.2 J/1.2 J	1.0 U/1.0 U
	10/13/11	10 U/10 U	1.0 U/1.3 J	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	2.0 U/2.0 U
OW-15	09/24/94	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NR	<10	<10	<10	-	<10	<10	<10	<10
	04/26/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10
	02/16/99	<10	1.1	<1.0	<1.0	0.52 J	<2.0	<1.0	<2.0	0.25 J	<1.0	<1.0	0.38 J	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	1.5 J	<1.0
	01/07/00	1.3 J	1.0 B	0.92 J	<1.0	0.64 J	<2.0	<1.0	<2.0	0.31 J	<1.0	0.57 J	<1.0	<1.0	<10	0.35 J,B	0.15 J,B	<1.0	-	0.074 J	<1.0	1.4 J	<1.0
	06/06/00	<10	0.91 J	<1.0	<1.0	0.60 J	<2.0	<1.0	<2.0	0.28 J	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	1.0 J	<1.0
	03/14/01	<10	1.2	<1.0	<1.0	0.67 J	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.37 J	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	1.1 J	<1.0
	08/28/01	2.2 J,B	0.61 J	<1.0	<1.0	0.35 J	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	0.52 J	<1.0
	04/25/02	<10	0.99 J	<1.0	<1.0	0.47 J	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	1.0 U	<1.0	<1.0	-	<1.0	<1.0	0.91 J	<1.0
	09/18/02	<10	0.69 J	<1.0	<1.0	0.43 J	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/08/03	<10	1.2	<1.0	<1.0	0.67 J	<2.0	<1.0	<2.0	0.33 J	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0 J	<1.0
	04/23/04	<10	1.2	<1.0	<1.0	0.67 J	<2.0	<1.0	<2.0	0.29 J	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	0.90 J	<1.0
	02/15/06	10 U	0.88 J	1.0 U	1.0 U	0.53 J	2.0 U	1.0 U	2.0 U	0.24 J	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	0.73 J	1.3 U
	08/29/06	10 U	0.78 J	1.0 U	1.0 U	0.51 J	2.0 U	1.0 U	0.37 J	0.22 J	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.82 J	1.0 U

Table B-1
Historical Summary of Detected TCL Volatile Organic Compounds in Groundwater (ug/L)
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Analyte		Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloro-benzene	Chloroethane	Chloroform	Chloromethane	1,1-DCA	1,2-DCA	1,1-DCE	1,2-DCE (total)	Ethylbenzene	2-Hexanone	Methylene Chloride	1,1,2,2-PCA	PCE	Styrene	Toluene	TCE	Vinyl Chloride	Xylenes (total)
NYSDEC SGV		50 (G)	1 (S)	NA	5 (S)	5 (S)*	5 (S)*	7 (S)	1	5 (S)*	0.6 (S)	5 (S)*	5 (S)*	5 (S)*	50 (G)	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	2 (S)	5 (S)*
U.S. EPA MCL		NA	5	NA	5	100	NA	NA	5	NA	5	7	70	700	NA	5	NA	5	100	1,000	5	2	10,000
Well ID	Date																						
OW-16	09/24/94	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NR	<10	<10	<10	-	<10	<10	<10	<10
	04/26/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10
	02/17/99	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	01/06/00	1.4 J	0.082 J,B	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	0.61 J	<1.0	<1.0	<10	0.30 J,B	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	06/07/00	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	03/14/01	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	08/28/01	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	0.36 J	<1.0	<1.0	<10	0.80 J	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/24/02	10 U	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	1.9 U	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	09/19/02	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/10/03	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/25/04	<10	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	02/17/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.37 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	2.0 U	1.0 U
	08/31/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.35 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
OW-17	02/20/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	2.0 U	1.0 U
	05/24/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	08/30/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	0.20 J	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	11/30/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
OW-18	09/23/94	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NR	<10	<10	<10	-	<10	<10	<10	<10
	04/29/95	<10	12	<10	<10	10 J	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	1 J	<10	<10	29
	02/17/99	<17	4.7	<1.7	<1.7	3.4	1.0 J	<1.7	<3.3	<1.7	<1.7	<1.7	0.54 J	<1.7	<17	1.0 J,B	<1.7	<1.7	-	<1.7	<1.7	<3.3	1.1 J
	01/07/00	2.7 J	5.6 B	1.0	<1.0	4.5	3.0	<1.0	<2.0	0.66 J	<1.0	0.29 J	<1.0	<1.0	<10	0.40 J,B	<1.0	<1.0	-	0.22 J	0.14 J	0.29 J	1.8
	06/08/00	<10	4.8	<1.0	<1.0	4.6	1.3 J	<1.0	<2.0	0.24 J	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	03/16/01	10 UJ	3.1	<1.0	<1.0	3.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.38 J	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	1.4
	08/28/01	2.3 J,B	2.4 J	<1.0	<1.0	3.6 J	<2.0	<1.0	<2.0	0.18 J	<1.0	<1.0	0.38 J	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	1.3 J
	04/24/02	10 U	1.5	<1.0	<1.0	4.3	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.28 J	<1.0	<10	1.6 U	<1.0	<1.0	-	1.0 U	<1.0	<2.0	1.7
	09/17/02	<10	2.9	<1.0	<1.0	5.5	1.3 J	<1.0	<2.0	0.36 J	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	2.0
	04/08/03	2.6 J	2.9	<1.0	<1.0	5.6	1.2 J	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	1.2
	04/23/04	10 U	3.3	<1.0	<1.0	7.3	0.74 J	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	1.2
	02/17/06	10 U	5.1	1.0 U	1.0 U	10	3.2	1.0 U	2.0 U	1.6	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	-	0.49 J	1.0 U	2.0 U	10
	08/30/06	10 U	3.7	1.0 U	1.0 U	7.8	0.91 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	06/14/07	10 U	1.2	1.0 U	1.0 U	6.5	0.46 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/22/08	10 U	1.5	1.0 U	1.0 U	6.9	0.40 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/16/09	10 U	2.3	1.0 U	1.0 U	9.6	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.34 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/22/10	1.6 J	2.8	1.0 U	1.0 U	11	0.41 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	0.63 J
	10/13/11	10 U	3.7	1.0 U	1.0 U	8.7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.5	2.0 U

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Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Analyte		Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloro-benzene	Chloroethane	Chloroform	Chloromethane	1,1-DCA	1,2-DCA	1,1-DCE	1,2-DCE (total)	Ethylbenzene	2-Hexanone	Methylene Chloride	1,1,2,2-PCA	PCE	Styrene	Toluene	TCE	Vinyl Chloride	Xylenes (total)
NYSDEC SGV		50 (G)	1 (S)	NA	5 (S)	5 (S)*	5 (S)*	7 (S)	1	5 (S)*	0.6 (S)	5 (S)*	5 (S)*	5 (S)*	50 (G)	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	2 (S)	5 (S)*
U.S. EPA MCL		NA	5	NA	5	100	NA	NA	5	NA	5	7	70	700	NA	5	NA	5	100	1,000	5	2	10,000
Well ID	Date																						
OW-19	09/27/94	<10	10 J	<10	<10	5 J	15	<10	<10	<10	<10	<10	<10	<10	NR	<10	<10	<10	-	<10	<10	<10	<10
	04/28/95	<10	8 J	<10	<10	6 J	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10
	02/17/99	<10	5.8	<1.0	<1.0	7.1	6.1	<1.0	<2.0	0.27 J	<1.0	<1.0	3.3	<1.0	<10	0.16 J,B	<1.0	<1.0	-	0.16 J	0.14 J	10	<1.0
	01/05/00	0.94 J	3.7 B	<1.0	<1.0	10	2.7	<1.0	<2.0	0.16 J	0.27 J	<1.0	1.5	<1.0	<10	0.25 J,B	<1.0	<1.0	-	0.15 J	0.15 J	2.1	<1.0
	06/08/00	<10	2.3	<1.0	<1.0	5.2	1.9 J	<1.0	<2.0	<1.0	<1.0	<1.0	1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	03/16/01	10 UJ	1.7	<1.0	<1.0	3.8	1.4 J	<1.0	<2.0	<1.0	<1.0	<1.0	0.96 J	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	1.3 J	<1.0
	08/28/01	2.7 J,B	1.9 J	<1.0	<1.0	7.2 J	0.92 J	<1.0	<2.0	<1.0	<1.0	0.35 J	0.46 J	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/23/02	10 U	1.3	<1.0	<1.0	6.5	0.71 J	<1.0	<2.0	<1.0	<1.0	<1.0	0.43 J	<1.0	<10	1.0 U	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	09/17/02	<10	0.64 J	<1.0	<1.0	4.9	0.73 J	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	<1.0
	04/08/03	2.5 J	3	<1.0	<1.0	4.9	1.7 J	<1.0	<2.0	<1.0	<1.0	<1.0	0.81 J	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	0.68 J	<1.0
	04/24/04	10 U	2.1	<1.0	<1.0	6	1.3 J	<1.0	<2.0	<1.0	<1.0	<1.0	0.58 J	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	0.56 J	<1.0
	02/17/06	10 U	3.4	1.0 U	1.0 U	5.6	1.9 J	1.0 U	<2.0	1.0 U	1.0 U	1.0 U	1.3	1.0 U	10 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	2.9	1.0 U
	08/31/06	3.1 J	3.3	1.0 U	1.0 U	13	1.8 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.85 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.1	1.0 U
	06/14/07	10 U	2.1	1.0 U	1.0 U	8.8 J	1.3 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.73 J	1.0 U	10 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.87 J	1.0 U
	07/22/08	10 U	1.4	1.0 U	1.0 U	11	0.91 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.49 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.62 J	1.0 U
	07/15/09	10 U	1.9	1.0 U	1.0 U	7.9	1.0 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.94 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.1	1.0 U
	07/22/10	1.3 J	1.2	1.0 U	1.0 U	11	0.85 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.65 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.63 J	1.0 U
	10/13/11	10 U	3	1.0 U	1.0 U	8.4	1.4	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.3	2.0 U
OW-21	09/22/94	6 J	5 J	<10	<10	<10	<10	10 J	<10	<10	<10	<10	<10	<10	NR	<10	<10	<10	-	<10	<10	<10	<10
	04/29/95	<10	8 J	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10
	02/16/99	<10	5.8	<1.0	<1.0	0.11 J	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.26 J	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	0.89 J	<1.0
	01/04/00	<10	3.8 B	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	0.11 J	<1.0	<1.0	<1.0	<1.0	<10	0.10 J,B	<1.0	<1.0	-	0.055 J	<1.0	0.46 J	<1.0
	06/07/00	<10	5.4	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	0.54 J	<1.0
	03/13/01	10 UJ	4.5	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	0.70 J	<1.0
	08/30/01	10 U	3.2	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	0.38 J	<1.0	<1.0	-	<1.0	<1.0	0.25 J	<1.0
	04/25/02	<10	2.4	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	1.0 U	<1.0	<1.0	-	<1.0	<1.0	0.33 J	<1.0
	09/18/02	<10	2.5	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	0.39 J	<1.0
	04/09/03	<10	3.7	<1.0	<1.0	<1.0	<2.0	<1.0	5.5	<1.0	<1.0	<1.0	<1.0	<1.0	<10	0.51 J	<1.0	<1.0	-	<1.0	<1.0	0.88 J	<1.0
	04/24/04	<10	2.9	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	0.56 J	<1.0
	02/16/06	10 U	3.0	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	0.52 J	1.0 U
	08/29/06	10 U	2.4	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	0.27 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.83 J	1.0 U
	06/13/07	10 U	2.1	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.67 J	1.0 U
	07/23/08	10 U	1.8	1.0 U	1.0 U	1.0 U	<2.0	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.74 J	1.0 U
	07/15/09	10 U	2.1	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.80 J	1.0 U
	07/20/10	10 U	1.9	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.71 J	1.0 U
	10/13/11	10 U	2.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U

Table B-1
Historical Summary of Detected TCL Volatile Organic Compounds in Groundwater (ug/L)
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Analyte		Acetone	Benzene	Carbon Disulfide	Carbon Tetrachloride	Chloro-benzene	Chloroethane	Chloroform	Chloromethane	1,1-DCA	1,2-DCA	1,1-DCE	1,2-DCE (total)	Ethylbenzene	2-Hexanone	Methylene Chloride	1,1,2,2-PCA	PCE	Styrene	Toluene	TCE	Vinyl Chloride	Xylenes (total)
NYSDEC SGV		50 (G)	1 (S)	NA	5 (S)	5 (S)*	5 (S)*	7 (S)	1	5 (S)*	0.6 (S)	5 (S)*	5 (S)*	5 (S)*	50 (G)	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	5 (S)*	2 (S)	5 (S)*
U.S. EPA MCL		NA	5	NA	5	100	NA	NA	5	NA	5	7	70	700	NA	5	NA	5	100	1,000	5	2	10,000
Well ID	Date																						
OW-22	09/24/94	<10	100	<10	<10	9 J	<10	<10	<10	<10	<10	<10	<10	<10	NR	<10	<10	<10	-	<10	<10	<10	5 J
	04/28/95	<10	48	<10	<10	10 J	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	1 J	<10	<10	<10
	02/17/99	<25	46	<2.5	<2.5	8.0	<5.0	<2.5	<5.0	<2.5	<2.5	<2.5	2.4 J	<2.5	<25	1.1 J,B	<2.5	<2.5	-	0.87 J	<2.5	4.2 J	3.5
	01/04/00	1.5 J	37 B	0.41 J	<1.2	5.8	<2.5	<1.2	<2.5	0.21 J	<1.2	<1.2	<1.2	0.098 J	<12	0.23 J,B	<1.2	<1.2	-	0.58 J	0.073 J	1.5 J	1.7
	06/07/00	<10	11	<1.0	<1.0	5.8	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	1.4
	03/13/01	10 UJ	12	<1.0	<1.0	8.2	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.70 J	<1.0	<10	<1.0	<1.0	<1.0	-	0.56 J	<1.0	0.76 J	1.9
	08/30/01	10 U	3.4	<1.0	<1.0	4.6	<2.0	0.34 J	<2.0	<1.0	<1.0	<1.0	0.36 J	<1.0	<10	0.36 J	<1.0	<1.0	-	0.45 J	<1.0	<2.0	1.7
	04/25/02	<10	4.2	<1.0	<1.0	3.7	<2.0	<1.0	<2.0	<1.0	0.29 J	<1.0	<1.0	<1.0	<10	1.2 U	<1.0	<1.0	-	1.0 U	<1.0	0.39 J	2.7 U
	09/18/02	<10	2.9	<1.0	<1.0	4.2	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	<1.0	<1.0	<2.0	1.8
	04/09/03	<10	8.7	<1.0	<1.0	8.5	0.66 J	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	0.40 J,B	<1.0	<1.0	-	<1.0	<1.0	0.56 J	1.6
	04/24/04	10 U	4.2	<1.0	<1.0	5.9	0.24 J	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	-	0.23 J	<1.0	0.32 J	1.1
	02/16/06	10 U	7.5	1.0 U	1.0 U	11	0.31 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.59 J	1.0 U	<10	0.59 J	1.0 U	1.0 U	-	0.26 J	1.0 U	0.29 J	1.0
	08/31/06	10 U	2.8	1.0 U	1.0 U	5.3	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.37 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	0.24 J	1.0 U	0.41 J	1.1
	06/14/07	10 U	3.5	1.0 U	1.0 U	4.8	0.26 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.50 J	1.0 U	10 U	1.0 UJ	1.0 U	1.0 U	1.0 U	0.21 J	1.0 U	0.37 J	0.76 J
	07/23/08	10 U	1.9	1.0 U	1.0 U	4.6	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	0.17 J	1.0 U	0.32 J	0.66 J
	07/15/09	10 U	5.1	1.0 U	1.0 U	7.8	0.34 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.53 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	0.19 J	1.0 U	0.35 J	1.0 U
	07/20/10	10 U	2.5	1.0 U	1.0 U	4.5	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	0.38 J	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.26 J	0.64 J
	10/13/11	10 U	5.3	1.0 U	1.0 U	18	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U
OW-23	02/17/06	10 U	0.38 J	1.0 U	1.0 U	1.0 U	0.31 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	0.66 J	1.0 U
	05/23/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	0.31 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	0.44 J	1.0 U	1.0 U	0.39 J	1.0 U
	08/30/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.42 J	1.0 U
	11/30/06	10 U	0.23 J	1.0 U	1.0 U	1.0 U	0.27 J	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	0.22 J	1.0 U	0.51 J	1.0 U
OW-24	02/20/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	-	0.22 J	1.0 U	2.0 U	<1.0
	05/24/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	0.45 J	1.0 U	1.0 U	2.0 U	1.0 U
	08/30/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	11/29/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	3.6 U	1.0 U	1.0 U	1.0 U	0.18 J	1.0 U	2.0 U	1.0 U
	07/22/10	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	0.47 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	3.6 U	1.0 U	1.0 U	1.0 U	0.18 J	1.0 U	2.0 U	1.0 U
	10/13/11	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U
OW-25	02/20/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	-	0.17 J	1.0 U	1.0 U	1.0 U
	05/23/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	08/31/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	11/29/06	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	06/12/07	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/23/08	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/16/09	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	07/22/10	10 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
	10/13/11	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U

Notes:
TCL = Target Compound List
NYSDEC SGV = New York State Department of Environmental Conservation Standards (S) and Guidance (G) Values for groundwater
U.S. EPA MCL= United States Environmental Protection Agency Maximum Contaminant Level for drinking/groundwater
* = The principal organic contaminant (POC) standard for groundwater of 5 ug/L applies to this substance.
U (DATA VALIDATION QUALIFIER) = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
< = Analyte not detected at reporting limit
B = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
Red = Concentrations detected at or above regulatory limit
Blue = Analyte detected at less than regulatory limit, or analyte detected but no regulatory criteria specified
UJ = (DATA VALIDATION QUALIFIER) = Analyte not detected above the reporting limit; however, the reporting limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Pre-1999 data from RETEC 1995
Pre-1999 analysis performed by Method 8240
1999 and later analyses performed by Method 8260B
NA = Not applicable; no criteria specified
NR = Analyte not reported
R = Data rejected during validation
J = Estimated result; result is less than reporting limit.

Table B-2
Historical Summary of Detected TCL Volatile and Semivolatile Organic Compounds in Surface Water (ug/L)
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Analyte		Acetone	Benzene	2-Butanone	Chloroethane	1,2-Dichloro-ethane	1,2-Dichloro-ethene (total)	Methylene Chloride	Toluene	Vinyl Chloride	Di-n-butyl phthalate
NYSDEC SGV		50 (G)	1 (S)	NE	5 (S)*	0.6 (S)	5 (S)*	5 (S)*	5 (S)*	2 (S)	50 (S)
U.S. EPA MCL		NE	5	NE	NE	5	70	5	1,000	2	NE
Sample ID	Date	*VOCs*									*SVOCs*
SW-1 (Down-stream)	02/18/99	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	10 U
	01/04/00	10 U	0.19 J,B	10 U	0.85 J	1.0 U	1.0 U	0.15 J,B	1.0 U	0.99 J	10 U
	06/08/00	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	10 U
	03/15/01	10 U	1.0 U	10 U	0.97 J	0.61 J	0.39 J	1.0 U	1.0 U	0.52 J	10 U
	08/28/01	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	10 U
	04/23/02	10 U	1.0 U	0.60 J	2.0 U	1.0 U	1.0 U	1.5 U	1.0 U	2.0 U	NA
	09/17/02	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	NA
	04/08/03	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	NA
	04/23/04	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	NA
SW-1 / Duplicate	02/18/06	10 U / 21 U	1.0 U / 1.0 U	10 U / 10 U	0.37 J / 2.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	0.34 J / 0.29 J	NA / NA
	06/14/07	10 U / 10 U	1.0 U / 1.0 U	10 U / 10 U	2.0 U / 2.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	2.0 U / 2.0 U	NA / NA
	07/24/08	10 U / 10 U	1.0 U / 1.0 U	10 U / 10 U	2.0 U / 2.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	2.0 U / 2.0 U	NA / NA
	07/15/09	10 U / 10 U	1.0 U / 1.0 U	10 U / 10 U	2.0 U / 2.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	2.0 U / 2.0 U	NA / NA
	07/22/10	10 U / 10 U	1.0 U / 1.0 U	10 U / 10 U	2.0 U / 2.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	2.0 U / 2.0 U	NA / NA
	10/13/11	10 U/10 U	1.0 U/1.0 U	10 U/10 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	1.0 U/1.0 U	NA/NA
SW-2 (Upstream)	02/18/99	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	10 U
	01/04/00	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	10 U
	06/08/00	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	10 U
	03/15/01	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	10 U
	02/18/06	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.53 J	NA
	06/14/07	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	0.21 J	1.0 U	2.0 U	NA
	07/24/08	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	NA
	07/15/09	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	NA
	07/22/10	10 U	1.0 U	10 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	NA

Table B-2
Historical Summary of Detected TCL Volatile and Semivolatile Organic Compounds in Surface Water (ug/L)
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Analyte		Acetone	Benzene	2-Butanone	Chloroethane	1,2-Dichloro-ethane	1,2-Dichloro-ethene (total)	Methylene Chloride	Toluene	Vinyl Chloride	Di-n-butyl phthalate
NYSDEC SGV		50 (G)	1 (S)	NE	5 (S)*	0.6 (S)	5 (S)*	5 (S)*	5 (S)*	2 (S)	50 (S)
U.S. EPA MCL		NE	5	NE	NE	5	70	5	1,000	2	NE
Sample ID	Date	*VOCs*									*SVOCs*
SW-2 / Duplicate	08/28/01	10 U / 10 U	1.0 U / 1.0 U	10 U / 10 U	2.0 U / 2.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	2.0 U / 2.0 U	10 U
	04/23/02	10 U / 10 U	1.0 U / 1.0 U	10 U / 10 U	2.0 U / 2.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.2 U / 1.0 U	1.0 U / 1.0 U	2.0 U / 2.0 U	0.77 J / 10 U
	04/23/03	10 U / 10 U	1.0 U / 1.0 U	10 U / 10 U	2.0 U / 2.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	2.0 U / 2.0 U	NA
	04/23/04	10 U / 10 U	1.0 U / 1.0 U	10 U / 10 U	2.0 U / 2.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	2.0 U / 2.0 U	NA
	04/23/05	10 U / 10 U	1.0 U / 1.0 U	10 U / 10 U	2.0 U / 2.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	1.0 U / 1.0 U	2.0 U / 2.0 U	NA
	10/13/11	10 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA

Notes:
TCL = Target Compound List
NE = Not established; no criteria specified.
NA = Not analyzed
NYSDEC SGV = New York State Department of Environmental Conservation Standards (S) and Guidance (G) values for groundwater.
* = The principal organic contaminant (POC) standard for groundwater of 5 ug/L applies to this substance.
U.S. EPA MCL = United States Environmental Protection Agency Maximum Contaminant Level for drinking/groundwater.
J = Estimated result; result is less than reporting limit.
B = Method blank contamination. The associated method blank contains the target analyte at a reportable level.
U (DATA VALIDATION QUALIFIER) = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
Blue = **Analyte detected at less than regulatory limit, or analyte detected but no regulatory criteria specified.**
Red = **Analyte detected at or above SGV or MCL.**

Table B-3
Historical Summary of Detected TCL Volatile and Semivolatile Organic Compounds in Sediment (ug/kg)
Carroll and Dubies Superfund Site
Town of Deerpark, Orange County, New York

Analyte		Acetone	Benzene	2-Butanone	Carbon Disulfide	Chlorobenzene	Chloroform	1,2-Dichloroethane	1,2-Dichloroethene (total)	Methylene Chloride	Toluene	Trichloroethene	Vinyl Chloride	bis(2-Ethylhexyl)phthalate	Di-n-butylphthalate	4-Methylphenol
Sample ID	Date	*VOCs*												*SVOCs*		
SED 1 (Downstream)	09/27/94	58	ND	20 U	NA	ND	ND	ND	ND	ND	ND	ND	20 U	ND	190 J,B	ND
	02/18/99	28 U	6.9 U	28 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	6.9 U	14 U	450 U	77 J	450 U
	01/04/00	370	31 U	82 J	31 U	31 U	31 U	31 U	31 U	31 U	31 U	31 U	6.9 J	2,000 UJ / 1,400 UJ	2,000 UJ / 1,400 UJ	2,000 UJ / 1,400 UJ
	06/08/00	60 JB	13 U	17 J	13 U	13 U	13 U	13 U	13 U	13 U	13 U	13 U	27 U	590 J	880 U	880 U
	03/15/01	55 J	16 U	62 U	16 U	16 U	16 U	16 U	16 U	16 U	16 U	16 U	31 U	1,000 U	1,000 U	1,000 U
	08/28/01	27 J	2.1 J	9.4 J	12 U	12 U	12 U	12 U	4.6 J	12 U	1.3 J	12 U	24 U	790 U	790 U	790 U
	04/23/02	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	09/17/02	180 BJ	2.7 J	58 J	3.5 J	17 U	17 U	17 U	2.1 J	17 U	54 J	17 U	34 UJ	NA	NA	NA
	04/08/03	110 J	3.4 J	34 J	21 UJ	21 U	21 U	21 U	5.7 J	21 U	21 U	21 U	3.0 J	NA	NA	NA
	04/23/04	28 J,FB,TB	10 U	7.2 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	20 U	NA	NA	NA
SED-1 / Duplicate	02/18/06	460 U / 180 U	11 U / 9.1 U	130 U / 54 U	11 U / 9.1 U	11 U / 9.1 U	11 U / 9.1 U	11 U / 9.1 U	11 U / 9.1 U	11 U / 9.1 U	1.2 J / 0.95 J	1.9 J / 9.1 U	23 U / 18 U	NA	NA	NA
	06/14/07	60 J / 18 J	12 U / 12 U	18 J / 6.9 J	0.62 J / 0.76 J	12 U / 12 U	12 U / 12 U	12 U / 12 U	12 U / 12 U	12 U / 12 U	12 U / 12 U	12 U / 12 U	24 U / 24 U	NA / NA	NA / NA	NA / NA
	07/24/08	24 U / 26 U	6.1 U / 6.5 U	2.9 J / 5.9 J	6.1 U / 6.5 U	6.1 U / 6.5 U	6.1 U / 6.5 U	6.1 U / 6.5 U	6.1 U / 6.5 U	6.1 U / 6.5 U	6.1 U / 6.5 U	6.1 U / 6.5 U	12 U / 13 U	NA / NA	NA / NA	NA / NA
	07/15/09	940 J / 300 J	13 J / 5.6 J	230 J / 96 J	17 J / 8.2 J	5.9 J / 3.2 J	25 U / 21 U	1.7 J / 21 U	12 J / 5.9 J	9.7 J / 21 U	3.1 J1.3 J	25 U / 21 U	8.7 J / 4.5 J	NA / NA	NA / NA	NA / NA
	07/22/10	45 J / 85 J	7.3 U / 15 U	29 U / 62 U	7.3 U / 15 U	7.3 U / 15 U	7.3 U / 15 U	7.3 U / 15 U	7.3 U / 15 U	7.9 J / 7.3 U	7.3 U / 15 U	7.3 U / 15 U	7.3 U / 15 U	NA / NA	NA / NA	NA / NA
	10/13/11	34 U / 33 U	8.6 U / 8.1 U	34 U / 33 U	8.6 U / 8.1 U	8.6 U / 8.1 U	8.6 U / 8.1 U	8.6 U / 8.1 U	8.6 U / 8.1 U	8.6 U / 8.1 U	8.6 U / 8.1 U	8.6 U / 8.1 U	8.6 U / 8.1 U	NA / NA	NA / NA	NA / NA
SED-2 (Upstream)	09/27/97	76	ND	23 U	NA	ND	ND	ND	ND	ND	ND	ND	23 U	ND	220 J,B	ND
	02/18/99	140 JB	44 U	50 J	44 U	44 U	44 U	44 U	44 U	44 U	44 U	44 U	88 U	2,900 U	370 J	2,900 U
	02/18/06	110 U	16 U	65 U	1.8 J	16 U	16 U	16 U	16 U	16 U	2.1 J	16 U	32 U	NA	NA	NA
	06/14/07	76 J	15 U	18 J	1.2 J	15 U	15 U	15 U	15 U	15 U	5.5 J	15 U	30 U	NA	NA	NA
	07/24/08	78 UJ	10 U	19 J	10 U	10 U	10 U	10 U	10 U	10 U	0.90 J	10 U	20 U	NA	NA	NA
	07/15/09	110 UJ	28 UJ	110 UJ	28 UJ	28 UJ	1.6 J	28 UJ	28 UJ	8.6 J	34 J	28 UJ	56 UJ	NA	NA	NA
	07/22/10	89 J	16 U	65 U	16 UJ	16 U	16 U	16 U	16 U	18 J	16 UJ	16 U	16 U	NA	NA	NA
	10/13/11	47 UJ	12 UJ	47 UJ	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	13 J	12 UJ	12 UJ	12 UJ	NA	NA	NA
SED-2 / Duplicate	01/04/00	180 J / 190 U	55 U / 47 U	220 U / 190 U	55 U / 47 U	55 U / 47 U	55 U / 47 U	55 U / 47 U	55 U / 47 U	55 U / 47 U	55 U / 47 U	55 U / 47 U	110 U / 94 U	3,600 U / 3,100 U	3,600 U / 3,100 U	3,600 U / 3,100 U
	06/08/00	150 J / 160 U	46 U / 41 U	49 J / 160 U	46 U / 41 U	46 U / 41 U	46 U / 41 U	46 U / 41 U	46 U / 41 U	46 U / 41 U	13 J / 41 U	46 U / 41 U	91 U / 81 U	2,900 J / 1,500 J	3,000 U / 2,700 U	480 J,# / 2,700 U
	03/15/01	36 UJ / 69 UJ	17 UJ / 17 UJ	70 UJ / 69 UJ	17 U / 17 U	17 U / 17 U	17 U / 17 U	17 U / 17 U	17 UJ / 17 UJ	17 UJ / 17 UJ	17 UJ / 17 UJ	17 U / 17 U	35 UJ / 35 UJ	1,200 U / 1,100 U	1,200 U / 1,100 U	1,200 U / 1,100 U
	08/28/01	44 J / 22 J	16 U / 13 U	14 J / 7.6 J	16 U / 13 U	16 U / 13 U	16 U / 13 U	16 U / 13 U	16 U / 13 U	16 U / 13 U	16 U / 13 U	16 U / 13 U	32 U / 25 U	1,100 U / 830 U	1,100 U / 830 U	1,100 U / 830 U
	04/23/02	63 J / 85 UJ	30 UJ / 21 UJ	21 J / 85 UJ	30 UJ / 21 UJ	30 UJ / 21 UJ	30 UJ / 21 UJ	30 UJ / 21 UJ	30 UJ / 21 UJ	30 UJ / 21 UJ	30 UJ / 21 UJ	30 UJ / 21 UJ	59 UJ / 42 UJ	2,000 UJ / 1,400 UJ	2,000 UJ / 1,400 UJ	2,000 UJ / 1,400 UJ
	09/17/02	40 B / 29 JB	9.6 U / 9.3 U	17 J / 9.3 J	9.6 U / 9.3 U	9.6 U / 9.3 U	9.6 U / 9.3 U	9.6 U / 9.3 U	9.6 U / 9.3 U	9.6 U / 9.3 U	1.0 J / 0.91 J	9.6 U / 9.3 U	19 U / 19 U	NA	NA	NA
	04/08/03	79 J / 27 J	41 U / 44 U	21 J / 180 U	41 U / 44 U	41 U / 44 U	41 U / 44 U	41 U / 44 U	41 U / 44 U	41 U / 44 U	41 U / 44 U	41 U / 44 U	83 U / 88 U	NA	NA	NA
	04/23/04	38 J,FB / 53 U	14 U / 13 U	12 J / 53 U	14 U / 13 U	14 U / 13 U	14 U / 13 U	14 U / 13 U	14 U / 13 U	14 U / 13 U	14 U / 13 U	14 U / 13 U	28 U / 27 U	NA	NA	NA

Notes:
TCL = Target Compound List
ND = Not detected at reporting limit prior to 06/08/00.
< = Not detected at the method detection limit.
B = Method blank contamination. The associated method blank contains the analyte at a reportable level.
NA = Not analyzed
J = Estimated result; result is less than method reporting limit
TB = Detected in trip blank
FB = Detected in field blank
R (DATA VALIDATION QUALIFIER) = The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria. The presence or absence of the analyte cannot be verified.
= This value represents a probable combination of 3-methylphenol (m-cresol) and 6-methylphenol (p-cresol).
UJ (DATA VALIDATION QUALIFIER) = Analyte not detected above the reporting limit; however, the reporting limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
Methylene chloride (2.6 ug/kg J, FB, TB) was detected in SED-1 during 4/04 sampling round.

Appendix C
Data Quality Review - Checklists

Tier II
VOA Organic Data Review Summary

SDG No./Matrix: Samples are:	240-4528-1 for Groundwater. OW-22, OW-21, FB1, OW2, OW-10R, MW-4, TB1.	**Completion Date:**	01/02/2012
Project No.:	Carroll & Dubies 104-0012	**Reviewer:**	Barbara Jones
Laboratory	TestAmerica, North Canton, OH		

Review Criteria	Data Qualified Yes / No	Samples Qualified
1. Data completeness	No	Complete searchable electronic package provided. Selected pages printed as necessary for data review.
2. Preservation/holding time	No	All samples collected on 10/04 and analyzed on 10/12, 10/13, and 10/14. Cooler temperature okay at arrival at laboratory.
3. GC/MS tuning	No	Form V provided and documented instrument tuning in accordance with protocols.
4. Calibration:		
4A - Initial	No	Form VIs reviewed. Some RRFs (ex. acetonitrile) were <0.05, but not for reported compounds. RSDs all okay.
4B - Continuing	No	Form VIIs reviewed. Maximum %D slightly exceeded for two compounds (bromoform at 28%; trans 1,4-dichloro-2-butene at 25.5%), but not reported compounds. Some RRFs < 0.05 (ex. acrolein), but not for reported compounds.
5. Blanks:		
5A - Laboratory blanks	Yes	Form IV and raw QC data reviewed. Methylene chloride detected in one method blank MB 240-18911/5. The only affected sample was TB1 (trip blank), where detect was qualified as 1.9U .
5B - Trip blanks	No	One methylene chloride detect in TB-1, but qualified as 1.9 B based on method blank results.
5C - Equipment rinsates and field blanks	No	Pump rinsate was not collected with this SDG. A field blank designated as FB-1 was collected. No detections, no qualifications.
6. Surrogate recovery	No	Form II reviewed. All surrogate recoveries within QC limits.
7. Lab-fortified blank	No	Form III reviewed. Two lab control sample recoveries were evaluated. All recoveries were within QC limits.
8. Matrix spike/matrix spike duplicates	NA	MS/MSD not performed with this SDG.
9. Field duplicates	NA	Field duplicates were not part of this SDG.

Tier II
VOA Organic Data Review Summary

SDG No./Matrix: Samples are:	240-4528-1 for Groundwater. OW-22, OW-21, FB1, OW2, OW-10R, MW-4, TB1.	**Completion Date:**	01/02/2012
Project No.:	Carroll & Dubies 104-0012	**Reviewer:**	Barbara Jones

Laboratory: TestAmerica, North Canton, OH

Review Criteria	Data Qualified	Samples Qualified
10. Internal standards performance	No	Form VIIIs were reviewed for two instruments. QC requirements were met.
11. Compound quantitation and reporting	No	Results were spot-checked for quantitation of OW2 and OW10R. Reported results were the same as the work sheet results.
12. Tentatively identified compounds	NA	Not required for this program.

Tier II
Inorganic Data Review Summary

SDG No./Matrix: Samples are:	Groundwater, 240-4528-1; OW-22, OW-21, OW2, OW-10R, MW-4	**Completion Date:**	01/03/2012
Project No.:	104-0012, Carroll & Dubies	**Reviewer:**	Barbara Jones
Laboratory:	TestAmerica, North Canton, OH		
Analyses:	Sulfate, sulfide, alkalinity, chloride, nitrate, TOC		

Review Criteria	Data Qualified Yes / No	Samples Qualified
1. Data completeness	No	Complete electronic package was provided, with selected pages printed as needed for QC review. Sample data, QC data, method detection limit information, run logs, raw data, and general chemistry prep data were provided in the package.
2. Preservation/holding time	No	All nitrate analyses performed within 48-hour holding time (on 10/5); all sulfide analyses performed within required 7-day holding time (by 10/11). All other holding times were met.
3. Calibration	No	Calibration quality control CCV and CCB information for chloride, nitrate, sulfate, and TOC provided on p. 403-408 and demonstrate recoveries within limits. See Form 2-IN.
4. Blanks:		
4A - Laboratory	No	Method blank summaries provided for all six parameters; all method blanks were nondetectable. See Form 3-IN.
4B - Equipment rinsates	NA	FB1 not analyzed for inorganic constituents.
5. Interference check sample	NA	Not applicable for these parameters.
6. Laboratory control sample	No	Lab control sample results provided for all six parameters. All LCS recoveries were within control limits. See Form 7A-IN.
7. Laboratory duplicate sample	No	Duplicate analysis of alkalinity for MW-4 was performed; RPD was 1%, within 20% limit. See Form 6-IN.
8. Field duplicate sample	NA	No field duplicates collected with this SDG.
9. Matrix spike sample analysis	No	MS performed for nitrate and alkalinity; MSD performed for alkalinity. % recovery and RPD within QC limits. See Form 5-IN.
10. ICP serial dilution	NA	Not applicable for these parameters.
11. Sample quantitation and reporting	No	Raw data for chloride and nitrate spot checked against reports, and no discrepancies were found.

Tier II
Inorganic Data Review Summary

SDG No./Matrix: Samples are:	Groundwater, 240-4528-1; OW-22, OW-21, OW2, OW-10R, MW-4	**Completion Date:**	01/03/2012
Project No.:	104-0012, Carroll & Dubies	**Reviewer:**	Barbara Jones
Laboratory:	TestAmerica, North Canton, OH		
Analyses:	Sulfate, sulfide, alkalinity, chloride, nitrate, TOC		

Review Criteria	Data Qualified	Samples Qualified

Inorganic Parameter:	Holding Time:
- Chloride	28 days
- Nitrate	48 hours
- Sulfate	28 days
- Total Alkalinity	14 days
- Total Organic Carbon	28 days
- Total Sulfide	7 days

Tier II
RSK Method Dissolved Gases Data Review Summary

SDG No./Matrix: Samples are:	240-4528-1 for Groundwater. OW-22, OW-21, OW2, OW-10R, MW-4	**Completion Date:**	01/02/2012
Project No.:	104-0012, Carroll & Dubies	**Reviewer:**	Barbara Jones
Laboratory:	TestAmerica, North Canton, OH		

Review Criteria	Data Qualified Yes / No	Samples Qualified
1. Data completeness	No	Complete electronic report with initial and continuing calibration results, QC summary and raw data, sample raw data, and run logs.
2. Preservation/holding time	No	All samples collected on 10/04, and analyzed on 10/13 or 10/14, so holding times were met. Cooler arrived at laboratory at acceptable chilled temperature.
3. GC/MS tuning	NA	GC method.
4. Calibration:		
4A - Initial	No	Form VIs reviewed; 9-level calibration dated 08/24/11. Results within RT window at all levels. RSD <30%;
4B - Continuing	No	Form VIIs reviewed. %Ds are less than 25%, and RTs are within the specified RT windows. Also see Form VIII for analytical sequence.
5. Blanks:		
5A - Laboratory blanks	No	Form IVs provided for two method blanks. Both blanks ND, no sample qualifications.
5B - Trip blanks	NA	Trip blank was not analyzed for dissolved gases.
5C - Equipment rinsates	NA	Equipment rinsate blank was not analyzed for dissolved gases.
6. Surrogate recovery	No	Form II was reviewed. Surrogate recoveries for field samples and QC samples were all within QC limits.
7. Lab-fortified blank	No	Two lab control samples analyzed and within QC limits (Form IIIs).
8. Matrix spike/matrix spike duplicates	NA	MS/MSD not analyzed for this SDG.
9. Field duplicates	NA	Field samples not analyzed for this SDG.
10. Internal standards performance	NA	Not applicable to this method.
11. Compound quantitation and reporting		OW-22 (10x dilution) and OW-21 (1x dilution) results were checked against work sheet and are okay.
12. Tentatively identified compounds	NA	Not required for this program.

Tier II
VOA Organic Data Review Summary

SDG No./Matrix:	SDG 240-4639-1 for Sediment, Surface Water, and Groundwater		
Samples are:	FB-3, SW-1, SW Dup, SED-1, SED Dup, SW-2, SED-2, OW-25, Pump Rinse, OW-24, OW-18, OW-19, TB-3.	**Completion Date:**	01/06/2012
Project No.:	104-0012, Carroll & Dubies	**Reviewer:**	Barbara Jones
Laboratory:	TestAmerica, North Canton, OH		

Review Criteria	Data Qualified Yes / No	Samples Qualified
1. Data completeness	No	Complete searchable electronic file provided. Selected pages printed as necessary for data review.
2. Preservation/holding time	No	All samples collected on 10/07 and analyzed on 10/14 (solid) or 10/18 (aqueous), so holding 14-day holding time was met. Cooler temperature was acceptable at <1 degree C.
3. GC/MS tuning	No	Form Vs for two instruments. Relative abundance criteria met and checks were applied to all relevant samples.
4. Calibration:		
4A - Initial	No	Form VIs reviewed for two different instruments and two different cal dates. Some RRFs (ex. acetonitrile) were <0.05, but not for reported compounds. RSDs all within limits.
4B - Continuing	No	Form VIIs reviewed for two different instruments. Maximum %D exceeded some compounds, but not those on reported list. Some RRFs < 0.05 (ex. acrolein), but not for reported compounds.
5. Blanks:		
5A - Laboratory blanks	No	Form IVs provided for aqueous and solid method blanks and raw QC data reviewed. Both MBs are ND, therefore no qualifications of field data.
5B - Trip blanks	No	No detections in TB-3, and no data qualifications.
5C - Equipment rinsates and field blanks	No	Pump rinsate was nondetectable, as was FB-3. No data qualifications.
6. Surrogate recovery	No	Form IIs provided for solid and aqueous samples. All surrogate recoveries within QC limits.
7. Lab-fortified blank	No	Two Form IIIs reviewed, one for aqueous and one for solid. All recoveries were within QC limits.

Tier II
VOA Organic Data Review Summary

SDG No./Matrix:	SDG 240-4639-1 for Sediment, Surface Water, and Groundwater		
Samples are:	FB-3, SW-1, SW Dup, SED-1, SED Dup, SW-2, SED-2, OW-25, Pump Rinse, OW-24, OW-18, OW-19, TB-3.	**Completion Date:**	01/06/2012
Project No.:	104-0012, Carroll & Dubies	**Reviewer:**	Barbara Jones
Laboratory:	TestAmerica, North Canton, OH		

Review Criteria	Data Qualified	Samples Qualified
8. Matrix spike/matrix spike duplicates	Yes	MS/MSD pairs analyzed for SW-2 (aqueous) and SED-2 (solid). For SW-2, all recoveries and RPDs were within QC limits. For the SED-2 pair, recoveries were within limits, but RPDs were out of limits for acetone, 2-butanone, and MTBE. None of these constituents were detected in the SED-2 sample, therefore the results are qualified as UJ.
9. Field duplicates	No	SED-Dup and SW-Dup were collected as duplicates to SED-1 and SW-1. All of the samples were nondetectable, therefore there are no qualifications.
10. Internal standards performance	Yes	Two Form VIIIs were for aqueous and solid samples. QC requirements were met for aqueous samples. For SED-2, SED-2MS, and SED-2MSD, area counts were outside of lower limits, attributed to matrix interference. Non-detectable results, qualified as UJ; one detect, methylene chloride, classified as J.
11. Compound quantitation and reporting	No	Results were spot-checked for quantitation of OW-19 and OW-18. Work sheet results compared to reports were accurate.
12. Tentatively identified compounds	NA	Not required for this program.

Tier II
Inorganic Data Review Summary

SDG No./Matrix:	SDG 240-4639-1 for Groundwater	**Completion Date:**	01/07/2012
Samples are:	OW-25, OW-24, OW-18, OW-19		
Project No.:	104-0012, Carroll & Dubies	**Reviewer:**	Barbara Jones

Laboratory: TestAmerica North Canton, OH

Review Criteria	Data Qualified Yes / No	Samples Qualified
1. Data completeness	No	Electronic file was provided, with selected pages printed for QC review. Sample data, QC data, method detection limit information, run logs, raw data, and general chemistry prep data were provided.
2. Preservation/holding time	No	All samples were collected on 10/06. Nitrate analyzed on 10/07; sulfide analyzed on 10/11, indicating holding time compliance. All other holding times were met.
3. Calibration	No	Form 2-INs with calibration quality control CCV and CCB information for chloride, nitrate, sulfate, and TOC. Spike amounts, recoveries, and recovery limits documented.
4. Blanks:		
4A - Laboratory	No	See Form 3-IN. Method blank summaries provided for all six parameters; all method blanks were nondetectable.
4B - Equipment rinsates	NA	FB-3 and TB-3 analyzed for VOCs only, not inorganics.
5. Interference check sample	NA	Not applicable for these parameters.
6. Lab-fortified blank	No	See Form 7A-IN. Lab control sample (LCS) results provided for all six parameters. All LCS recoveries were within control limits.
7. Laboratory duplicate sample	No	See Form 6-IN. Lab duplicate for alkalinity, OW-19: RPD was within control limits.
8. Field duplicate sample	NA	No field duplicate for inorganics with this RPD.
9. Matrix spike sample analysis	No	See Form 5-IN. Lab MS/MSD for TOC and nitrate. Recoveries and RPD within QC limits.
10. ICP serial dilution	NA	Not applicable for these parameters.
11. Sample quantitation and reporting	No	Sample reports for chloride and alkalinity were checked for OW-18, OW-24, and OW-25 between raw data and sample reports, and no discrepancies were found.

Tier II
Inorganic Data Review Summary

SDG No./Matrix:	SDG 240-4639-1 for Groundwater	**Completion Date**:	01/07/2012
Samples are:	OW-25, OW-24, OW-18, OW-19		
Project No.:	104-0012, Carroll & Dubies	**Reviewer**:	Barbara Jones
Laboratory: TestAmerica North Canton, OH			

Review Criteria	Data Qualified	Samples Qualified

Inorganic Parameter:	Holding Time:
- Chloride	28 days
- Nitrate	48 hours
- Sulfate	28 days
- Total Alkalinity	14 days
- Total Organic Carbon	28 days
- Total Sulfide	7 days

Tier II
RSK Method Dissolved Gases Data Review Summary

SDG No./Matrix:	SDG 240-4639-1 for Groundwater	**Completion Date:**	01/06/2012
Samples are:	OW-25, OW-24, OW-18, OW-19		
Project No.:	104-0012, Carroll & Dubies	**Reviewer:**	Barbara H. Jones
Laboratory:	TestAmerica, North Canton, OH		

Review Criteria	Data Qualified Yes / No	Samples Qualified
1. Data completeness	No	Complete electronic file provided with initial and continuing calibration results, QC summary and raw data, sample raw data, and run logs.
2. Preservation/holding time	No	All samples collected on 10/06, and analyzed on 10/19 or 10/20, therefore met holding time of 14 days. Cooler was adequately chilled to <1 degree C.
3. GC/MS tuning	NA	GC method.
4. Calibration:		
4A - Initial	No	Form VIs reviewed; 9-level calibration dated 08/24/11. Results within RT window at all levels. RSD <30%;
4B - Continuing	No	Form VIIs reviewed for 10/19 and 10/20. %Ds are less than 25%, and RTs are within the specified RT windows. Also see analytical sequence Form VIII.
5. Blanks:		
5A - Laboratory blanks	No	Form IVs provided for two method blanks, both of which were ND. No sample qualifications.
5B - Trip blanks	NA	Trip blank was not analyzed for dissolved gases.
5C - Equipment rinsate or field blank	NA	Equipment rinsate blank, FB not analyzed for dissolved gases.
6. Surrogate recovery	No	Form II was reviewed. Surrogate recoveries for field samples, LCS and method blank samples were all within QC limits.
7. Lab-fortified blank	No	Form IIIs provided; two lab control samples analyzed and were within QC limits.
8. Matrix spike/matrix spike duplicates	NA	MS/MSD of field sample was not analyzed with this SDG.
9. Field duplicates	No	No gw field duplicate provided with this SDG.
10. Internal standards performance	NA	Not applicable to this method.
11. Compound quantitation and reporting	No	OW-18 and OW-19 were checked against worksheets and are consistent (both samples were diluted, 2x and 5x respectively).
12. Tentatively identified compounds	NA	Not required for this program.

Tier II
VOA Organic Data Review Summary

SDG No./Matrix: Samples are:	240-5493-1 for Groundwater OW-8, MW-1, FB-2, OW-5, OW-6, OW-13R, Dup-1, TB-2	**Completion Date:**	01/04/2012
Project No.:	104-0012, Carroll & Dubies	**Reviewer:**	Barbara Jones
Laboratory:	TestAmerica, North Canton, OH		

Review Criteria	Data Qualified Yes / No	Samples Qualified
1. Data completeness		
2. Preservation/holding time	Yes	All samples collected on 10/05. All analyses performed by 10/16, except for FB-2, which was analyzed on 11/1, outside of holding time. No detections, but results qualified as UJ. Analysis of this sample outside of lab holding time was described in narrative as "lab error."
3. GC/MS tuning	No	Form Vs provided for two instruments. Instrument tuning was performed and documented. Performance was in accordance with specified criteria.
4. Calibration:		
4A - Initial	No	Form VIs provided. Initial calibration 10/15, 6 levels. Percent RSDs within limits. Some RRFs < 0.05 (ex. acetonitrile), but not for reported compounds. No qualifications.
4B - Continuing	No	Form VIIs provided. Some RRFs < 0.05 (ex. vinyl acetate), but not for reported compounds. %D okay except for a few instances of compounds that are not reported. No qualifications.
5. Blanks:		
5A - Laboratory blanks	No	Form IVs and raw MB Form Is reviewed. Three method blanks were analyzed; all were nondetectable.
5B - Trip blanks		TB-2: One detection for methylene chloride at 2.1 ug/L. Methylene chloride was not detected in any of the associated samples; therefore there were no data qualifications.
5C - Equipment rinsates or field blanks	No	FB-2: Lab-pure water transferred to sample container in the field to check for airborne VOCs; no detects.
6. Surrogate recovery	No	Form II reviewed. All surrogate recoveries within limits except for OW-5 MSD, where the BFB recovery was outside of limits at 125% (limit is 117%). Results were not qualified because this is a QA/QC sample, not reported with field data.

Tier II
VOA Organic Data Review Summary

SDG No./Matrix: Samples are:	240-5493-1 for Groundwater OW-8, MW-1, FB-2, OW-5, OW-6, OW-13R, Dup-1, TB-2	**Completion Date:**	01/04/2012
Project No.:	104-0012, Carroll & Dubies	**Reviewer:**	Barbara Jones
Laboratory:	TestAmerica, North Canton, OH		

Review Criteria	Data Qualified	Samples Qualified
7. Lab-fortified blank	No	Form IIIs reviewed. Three LCSs analyzed. All recoveries within QC limits.
8. Matrix spike/matrix spike duplicates	Yes	OW-5 was used for MS/MSD. All recoveries and RSDs met criteria except for RPD for trichlorofluoromethane (both recoveries were within QC limits). Trichlorofluoromethane in sample was nondetectable; will be qualified as UJ.
9. Field duplicates	Yes	Dup-1 is duplicate of OW-13R. Benzene was detectable at 1.3 ug/L in Dup-1 (reporting limit of 1.0 ug/L), but was nondetectable in OW-13R. Flag positive result as J, nondetectable result as UJ.
10. Internal standards performance	No	Form VIII reviewed. Internal standards met QC criteria.
11. Compound quantitation and reporting	No	Checked Form I and worksheet for OW-5 and OW-6. Note OW-6 was 1.67x dilution. Form Is were consistent with worksheets.
12. Tentatively identified compounds	NA	Not required for this analysis program.

Tier II
Inorganic Data Review Summary

SDG No./Matrix: Samples are:	240-5493-1 for Groundwater OW-8, MW-1, OW-5, OW-6, OW-13R, Dup-1	**Completion Date:**	01/04/2012
Project No.:	104-0012, Carroll & Dubies	**Reviewer:**	Barbara Jones
Laboratory:	TestAmerica, North Canton, OH		

Review Criteria	Data Qualified Yes / No	Samples Qualified
1. Data completeness		Complete electronic file was provided, with selected pages printed for QC review. Sample data, QC data, method detection limit information, run logs, raw data, and general chemistry prep data were provided in the package.
2. Preservation/holding time	Yes	All samples were collected on 10/05. All holding times were met with the exception of nitrate for Dup-1. Qualified as J-, for estimated low.
3. Calibration	No	Form 2-INs with calibration quality control CCV and CCB information for chloride, nitrate, sulfate, and TOC provided on p. 456-461and demonstrate recoveries within limits.
4. Blanks:		
4A - Laboratory	No	See Form 3-IN. Method blank summaries provided for all six parameters; all method blanks were nondetectable.
4B - Equipment rinsates or other blanks	NA	FB-2 and TB-2 analyzed for VOCs only, not inorganics.
5. Interference check sample	NA	Not applicable for these parameters.
6. Lab-fortified blank	No	See Form 7A-IN. Lab control sample (LCS and LCS duplicates) results provided for all six parameters. All LCS recoveries were within control limits.
7. Laboratory duplicate sample	No	LCS duplicates were provided for nitrate and TOC.
8. Field duplicate sample	No	RPDs calculated for all inorganics but sulfide, which was not detected. Results were all less than 50%, the acceptance limit for aqueous samples.
9. Matrix spike sample analysis	Yes	MS/MSDs performed on OW-5 for all parameters. All within QC limits except for sulfide, where the percent recovery and RPD were slightly high. Sulfide on field sample qualified as J for estimated. See Form 5-IN.
10. ICP serial dilution	NA	Not applicable for these parameters.
11. Sample quantitation and reporting	No	Sample reports for chloride and alkalinity were spot-checked between raw data and sample reports, and no discrepancies were found.

Tier II
Inorganic Data Review Summary

SDG No./Matrix: Samples are:	240-5493-1 for Groundwater OW-8, MW-1, OW-5, OW-6, OW-13R, Dup-1	**Completion Date:**	01/04/2012
Project No.:	104-0012, Carroll & Dubies	**Reviewer:**	Barbara Jones
Laboratory:	TestAmerica, North Canton, OH		

Review Criteria	Data Qualified	Samples Qualified

Inorganic Parameter:	Holding Time:
- Chloride	28 days
- Nitrate	48 hours
- Sulfate	28 days
- Total Alkalinity	14 days
- Total Organic Carbon	28 days
- Total Sulfide	7 days

Tier II
RSK Method Dissolved Gases Data Review Summary

SDG No./Matrix: Samples are:	240-5493-1 for Groundwater OW-8, MW-1, OW-5, OW-6, OW-13R, Dup-1	**Completion Date:**	01/04/2012
Project No.:	104-0012, Carroll & Dubies	**Reviewer:**	Barbara Jones
Laboratory:	TestAmerica, North Canton, OH		

Review Criteria	Data Qualified Yes / No	Samples Qualified
1. Data completeness	No	Complete electronic file. Contains initial and continuing calibration results, QC summary and raw data, sample raw data, and run logs.
2. Preservation/holding time	No	All samples collected on 10/05, and analyzed on 10/13, therefore met holding time of 14 days. Cooler was adequately chilled to <5 degrees C.
3. GC/MS tuning	NA	GC method.
4. Calibration:		
4A - Initial	No	Form VIs reviewed; 9-level calibration dated 08/24/11. Results within RT window at all levels. RSD <30%;
4B - Continuing	No	Form VIIs reviewed for 10/13 and 10/14. %Ds are less than 25%, and RTs are within the specified RT windows. Also see Form VIII for analytical sequence.
5. Blanks:		
5A - Laboratory blanks	No	Form IVs provided for one method blank, which was ND. No sample qualifications.
5B - Trip blanks	NA	Trip blank was not analyzed for dissolved gases.
5C - Equipment rinsates	NA	Equipment rinsate blank was not analyzed for dissolved gases.
6. Surrogate recovery	No	Form II was reviewed. Surrogate recoveries for field samples and OW-5 MS/MSD samples were all within QC limits.
7. Lab-fortified blank	No	Form III provided; one lab control sample analyzed and within QC limits.
8. Matrix spike/matrix spike duplicates	No	OW-5 MS/MSD spiked and recoveries/ RPDs were within control limits (Form III).
9. Field duplicates	Yes	OW-13R and Dup-1: ND except for methane, which was ND in OW-13R and at the limit of detection (0.50 ug/L) in Dup-1. Dup-1 result is qualified as J for estimated, non-detectable OW-13R as UJ.
10. Internal standards performance	NA	Not applicable to this method.
11. Compound quantitation and reporting	No	MW-1, OW-5, and Dup-1 were checked against work sheet and are consistent.
12. Tentatively identified compounds	NA	Not required for this program.